INDEX

3.3.2 Details of research papers published with the link of the journal, Category (UGCcare list/Scopus/Web of Science/Others) and screenshot of the research article

S. No	Details	Page No
1	Detail of Research Publications (2016-2021)	01
2	Year wise details of research papers	02
3	Screen shots of research articlesfor 2020-21	18
4	Screen shots of research articlesfor 2019-20	32
5	Screen shots of research articlesfor 2018-19	60
6	Screen shots of research articlesfor 2017-18	110
7	Screen shots of research articlesfor 2016-17	158

PRINCIPAL
Kings College of Engineering,
PUNALKULAM - 613 303.

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Approved by AICTE, New Delhi
Affiliated to Anna University, Chennai
CERT ISO 9001

Detail of Research Publications (2016-2021)

Dept.	2020-21				2019-20				2018-19				2017-18				2016-17			
	No. of papers published	UGC Care List	Web of Science	SCOPUS	No. of papers published	UGC Care List	Web of Science	SCOPUS	No. of papers published	UGC Care List	Web of Science	SCOPUS	No. of papers published	UGC Care List	Web of Science	SCOPUS	No. of papers published	UGC Care List	Web of Science	SCOPUS
CIVIL	1	1	--	--	--	--	--	--	14	--	--	3	4	--	--	1	1	--	--	1
CSE	18	--	--	--	2	--	--	--	13	--	--	--	2	--	--	--	8	--	--	--
ECE	2	1	1	2	6	2	--	1	2	--	--	--	2	--	--	2	14	--	--	2
EEE	4	--	--	--	--	--	---	--	12	--	--	--	10	--	1	4	7	--	--	--
MECH	5	5	5	3	14	5	4	11	3	2	2	3	12	--	--	--	3	1	1	1
S&H	1	1	--	1	6	5	--	--	5	3	--	--	18	7	--	--	15	--	--	1
Total	31	8	6	6	28	12	4	12	49	5	2	6	48	7	1	7	48	1	1	5

No. of journals publications : 204

UGC Care list : 33

Web of Science : 14

SCOPUS : 36

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Details of Faculty publication in National and International Journals / 2016-21

Title of paper	Name of the author/s	Name of journal	Link to the Journal website	Link landing to the paper/article	UGC CARE list/Scopus/ Web of Science/ others
2020-21					
CIVIL					
Performance of recycled paper pulp and flyash in production of light weight bricks	Dr.R.Saravanan	International Journal of creative research thoughts	www.ijcrt.org	www.ijcrt.org/papers/IJCRT21A6020.pdf	UGC
CSE					
A New hybrid Genetic Search Algorithm and Invasive Weed Optimization Algorithms for Skin Lesion Cancer Classification	Dr. S. M. Uma, Dr. D. Sivakumar	International Journal of Engineering Research & Technology (IJERT)	https://www.ijert.org	https://www.ijert.org/a-new-hybrid-genetic-search-algorithm-and-invasive-weed-optimization-algorithms-for-skin-lesion-cancer-classification	other
A Novel Approach to Solve Class Imbalance by using Ensemble Classifier	Dr. S. M. Uma, Dr. D. Sivakumar	International Journal of Engineering Research & Technology (IJERT)	https://www.ijert.org	https://www.ijert.org/a-novel-approach-to-solve-class-imbalance-by-using-ensemble-classifier	other
Automated Water Management and Leakage Detection System using IOT	Mrs. R. Sugantha Lakshmi , Mrs. G. Chandra Praba, Mrs.K.Abhirami	International Journal of Engineering Research & Technology (IJERT)	https://www.ijert.org	https://www.ijert.org/automated-water-management-and-leakage-detection-system-using-iot	other
BIIoT: Provenance of Industrial IoT Data with Blockchain Technology	J. Chandra Priya,S. Puvaneswari, et.al	International Journal of Engineering Research & Technology (IJERT)	https://www.ijert.org	https://www.ijert.org/biiot-provenance-of-industrial-iot-data-with-blockchain-technology	other
Biometric based Secured ATM Transaction incorporating GSM Technology	Dr. S. M. Uma, et.al	International Journal of Engineering Research & Technology (IJERT)	https://www.ijert.org	https://www.ijert.org/biometric-based-secured-atm-transaction-incorporating-gsm-technology	other
Covid-19 Facemask Detection with Deep Learning and Computer Vision	Ms. R. Suganthalakshmi, et.al	International Journal of Engineering Research & Technology (IJERT)	https://www.ijert.org	https://www.ijert.org/covid-19-facemask-detection-with-deep-learning-and-computer-vision	other
Criminal Investigation Tracker with Suspect Identification	Mrs. S. Puvaneswari, et.al	International Journal of Engineering Research & Technology (IJERT)	https://www.ijert.org	https://www.ijert.org/criminal-investigation-tracker-with-suspect-identification	other
Detection of Gas Leakage in Polymer Industries using IOT	S.Puvaneswari & J.Chandrapriya	International Journal of Engineering Research & Technology (IJERT)	https://www.ijert.org	https://www.ijert.org/detection-of-gas-leakage-in-polymer-industries-using-iot	other
Digitized Banking Transactions using QR Scanner	Dr. S. M. Uma, et.al	International Journal of Engineering Research & Technology (IJERT)	https://www.ijert.org	https://www.ijert.org/digitized-banking-transactions-using-qr-scanner	other
Fake Education Document Detection using Image Processing and Deep Learning	Mrs. G. Chandra Praba, et.al	International Journal of Engineering Research & Technology (IJERT)	https://www.ijert.org	https://www.ijert.org/fake-education-document-detection-using-image-processing-and-deep-learning	other

Food Conservation Application - Mobile App Connecting Provider and Consumer	Mr. M. Arun, et.al	International Journal of Engineering Research & Technology (IJERT)	https://www.ijert.org	https://www.ijert.org/food-conservation-application-mobile-app-connecting-provider-and-consumer	other
Handwritten Digit Recognition for Banking System	Ms.K. Abhirami, et.al	International Journal of Engineering Research & Technology (IJERT)	https://www.ijert.org	https://www.ijert.org/handwritten-digit-recognition-for-banking-system	other
Intrusion Detection System using Deep Learning	Mr. S. Rajarajan, et.al	International Journal of Engineering Research & Technology (IJERT)	https://www.ijert.org	https://www.ijert.org/intrusion-detection-system-using-deep-learning	other
IOT Based Paddy Crop Disease Identification and Prevention System using Deep Neural Networks and Image Processing	Ms.K. Abhirami, Ms.G. Chandra Praba, Ms.R. Sugantha Lakshmi	International Journal of Engineering Research & Technology (IJERT)	https://www.ijert.org	https://www.ijert.org/iot-based-paddy-crop-disease-identification-and-prevention-system-using-deep-neural-networks-and-image-processing	other
Iris Detection based Authentication for Secure Voting System	Mrs. K. Abhirami, et.al	International Journal of Engineering Research & Technology (IJERT)	https://www.ijert.org	https://www.ijert.org/iris-detection-based-authentication-for-secure-voting-system	other
Prediction and Analysis of Key Performance Indicators (Kpi) For Students using Data Science	Mrs. G. Chandra Praba, Mrs. K. Abhirami, Mrs. R. Suganthalakshmi	International Journal of Engineering Research & Technology (IJERT)	https://www.ijert.org	https://www.ijert.org/prediction-and-analysis-of-key-performance-indicators-kpi-for-students-using-data-science	other
Smart E-Marketing in Agricultural Products	Dr. D. Sivakumar, et.al	International Journal of Engineering Research & Technology (IJERT)	https://www.ijert.org	https://www.ijert.org/smart-e-marketing-in-agricultural-products	other
Wireless IoT based Solution for Women Safety	N. Deepa, et.al	International Journal of Engineering Research & Technology (IJERT)	https://www.ijert.org	https://www.ijert.org/research/wireless-iot-based-solution-for-women-safety-IJERTCONV9IS05016.pdf	other
ECE					
Design, Testing and Performance Evaluation of Beam Positioning System for Free Space Optical Communication System	T Pasupathi, J Arputha Vijaya Selvi	Radio Engineering	https://www.radioeng.cz	https://www.radioeng.cz/fulltexts/2021/21_01_0016_0024.pdf	Scopus
Experimental Study and Analysis of Meteorological and Wavefront Profile for Terrestrial Free Space Optical Communication Link at Lat. 10.66° and Long. 79.05°	T Pasupathi, J Arputha Vijaya Selvi	Proceedings of National Academy of Physical Sciences: Section A	https://www.springer.com/journal/40010	https://link.springer.com/article/10.1007/s40010-021-00743-y	Others
EEE					
IoT Based Monitoring and Control of Distribution Transformer & Transmission Lines	S.R. Karthikeyan J. Arokiaraj	International journal of Advances in Engineering and Management (IJAEM)	https://ijaem.net	https://ijaem.net/issue_certificate/517358.pdf	Other
Implementation of Electric Vehicle for Agricultural Purpose	Mr. R. Sundaramoorthi	International journal of Advances in Engineering and Management (IJAEM)	http://ijaem.net	http://ijaem.net/issue_dcp/Implementation%20of%20Electric%20Vehicle%20for%20Agricultural%20Purpose.pdf	Other
Touch Free Smart Gadget	Mr.J.Arokiaraj	International journal of Advances in Engineering and Management (IJAEM)	http://ijaem.net	http://ijaem.net/issue_dcp/Touch%20Free%20Smart%20Gadget.pdf	Other
A Bidirectional Electric Drive Reconstructed Onboard Converter for Electric Vehicle Applications	A.Albert Martin Ruban, M.Meenalochani	International journal of Advances in Engineering and Management (IJAEM)	http://ijaem.net	http://ijaem.net/issue_dcp/A%20Bidirectional%20Electric%20Drive%20Reconstructed%20Onboard%20Converter%20for%20Electric%20Vehicle%20Applications.pdf	Other

Mech					
Effect of Silicon Carbide on Microstructural, Mechanical and Corrosion Behavior of Electrolytic Copper Matrix Composite Produced by the Powder Metallurgy Route	M Melwin J Sridhar, M Ravichandran, M Meignanamoorthy, V Mohanavel	Silicon	https://www.springer.com/journal/12633	https://link.springer.com/article/10.1007/s12633-021-01369-w	UGC CARE list/Scopus/ SCI
Investigation on Performance and Emission Characteristics of CI Engine Fuelled with Cucurbita Pepo L. and Prosopis Juliflora Seed Oil Biodiesel Blends	V Vinothkannan, T Pushparaj	Tierärztliche Praxis	https://tierarztliche.com	https://tierarztliche.com/gallery/v40.15.pdf	UGC CARE list/Web of Science
Experimental Investigation on Performance, combustion and Emission Characteristics of CI Engine Fuelled with Pumpkin and Maize Biodiesel blends.	N Magesh, T Pushparaj, V Vinothkannan	Tierärztliche Praxis	https://tierarztliche.com	https://www.tierarztliche.com/gallery/v41.5.pdf	UGC CARE list/Web of Science
Comprehensive Assessment of Performance and Emission Characteristics of Pumpkin Seed Oil with (C2H5)2O and Jojoba Seed Oil with C5H12O in C.I Engine	H Agilan, T Pushparaj, J Rajaparthiban	Tierärztliche Praxis	https://tierarztliche.com	https://tierarztliche.com/gallery/v41.30.pdf	UGC CARE list/Web of Science
Influence of different reinforcements on properties of copper matrix composites: A review	M Melwin Jagadeesh Sridhar, M Ravichandran, M Meignanamoorthy	AIP Conference Proceedings	https://aip.scitation.org/journal/apc	https://aip.scitation.org/doi/abs/10.1063/5.0029257	Web of Science/Scopus
S&H					
Isomorphic Single Values Neutrosophic Graphs and their Complements	Mrs.T.Gnanajeya	Advances and Applications in Mathematical sciences,Vol.:20, Issue No.8, ISSN No.:0974-6803, pp.: 1375-1388	https://www.mililink.com/journals_desc.php?id=59	https://www.mililink.com/upload/article/495896844aams_vol_208_june_2021_a4_p1375-1388_j._malarvizhi_and_t._geetha.pdf	UGC CARE
2019-20					
CSE					
A Data Sharing Protocol To Minimize Security And Privacy Risks In Cloud Storage Using Steganography Techniques	S. Rajarajan et al.	IRJET	https://www.irjet.net	https://www.irjet.net/archives/V7/i2/IRJET-V7I2230.pdf	other
A new hybrid squirrel search alagorithm and invasive weed optimization alogorithm for skin lesion classification	Dr.S.M.Uma	International Reaearch journal of engineering and technology	https://www.irjet.net	https://www.irjet.net/archives/V7/i2/IRJET-V7I2204.pdf	other
ECE					
Sewer Effluent Gas Monitoring System Using Reconfigurable Architecture	N Mangaiyarkarasi, J Arputha Vijaya Selvi	Studies in Indian place names	https://tpnsindia.org	https://tpnsindia.org/index.php/sipn/article/view/8735/8364	UGC CARE list(as on March 2020)
High rate structured error correcting code for realtime wireless optical communication	T Pasupathi, J Arputha Vijaya Selvi	Studies in Indian place names	https://tpnsindia.org	https://tpnsindia.org/index.php/sipn/article/view/8737/8366	UGC CARE list(as on March 2020)
Channel Scheduling Based on Orchestrator Live Node-Wavelength Reservation for Optical Burst Switching Networks	S Manisekar, J Arputha Vijaya Selvi	Current Signal Transduction Therapy	https://www.eurekaselect.com	https://www.eurekaselect.com/167197/article	Scopus
An Enhanced Proactive Transmission Protocol for Optical Burst Switching Networks	Manisekar S. & Arputha Vijaya Selvi J	Applied Mathematics & Information Sciences	https://www.naturalspublishing.com/show.asp?JorID=1&pgid=0	http://www.naturalspublishing.com/files/published/u3g385h436c797.pdf	Others

Using Fuzzy Inference System for Interference Mitigation in Cognitive Radio based Heterogeneous Wireless Sensor Network(FIS-CoRHAN)	T.Shanthi et al	International Journal of Recent Technology and Engineering	https://www.ijrte.org/	https://www.ijrte.org/wp-content/uploads/papers/v8i2/B3409078219.pdf	Others
A smart caretaking system for uncomplainable patients and babe in arms using IoT	R.Thandayuthapani et al	Comprehensive advanced specific summarised studies(CASS),	http://hebnicin.hostgator.co.in/casss	http://heb-nic.in/cass/admin/freePDF/j5mw6s39py0qrmyfgevd.pdf	Others
Mech					
Experimental Study of High Velocity Oxygen Fuel Sprayed Cr3C2-Ni-Cr-B-Si Coatings on Inconel 718 Using Design of Experiments	R Shankar	Materials Science Forum	https://www.scientific.net/MSF	https://www.scientific.net/MSF.969.48	Scopus
Application of Pin-on-Disc technique for the study of wear behavior in Aluminium composites	M Aswin, et al	Studies in Indian Place Names	https://tpnsindia.org	https://tpnsindia.org/index.php/sipn/article/view/9425	UGC Care List
Influence on Machining Characteristics of Duplex Stainless Steel 2205 Grade	J Rajaparthiban et al	Studies in Indian Place Names	https://tpnsindia.org	https://tpnsindia.org/index.php/sipn/article/view/9516	UGC Care List
Machining of EN31 Steel Using Carbide Insert–A Statistical Approach	J Rajaparthiban, M Ravichandran, B Stalin, P Ramesh Kumar	Studies in Indian Place Names	https://tpnsindia.org	https://www.sciencedirect.com/science/article/pii/S2214785320321660?via%3Dihub	UGC Care List
Performance and emission characteristic analysis of Cucurbita Pepo L. and Tectona Grandis seed oil biodiesel blends in CI engine with additive	V Vinothkannan, T Pushparaj	Energy Sources, Part A: Recovery, Utilization, and Environmental Effects	https://www.tandfonline.com/toc/ueso20/current	https://www.tandfonline.com/doi/abs/10.1080/15567036.2020.1849453	UGC CARE list/Scopus/SCI/Web of Science
Performance and emission characteristics analysis of Elaeocarpus ganitrus biodiesel blend using CI engine	V Vinothkannan, T Pushparaj	Fuels	https://www.sciencedirect.com/journal/fuel	https://static.mygov.in/rest/s3fs-public/mygov_161320860883149681.pdf	Scopus/SCI/Web of Science
Investigation on Performance and Emission Characteristics of CI Engine Fuelled with Cucurbita Pepo L. and Prosopis Juliflora Seed Oil Biodiesel Blends	V Vinothkannan, T Pushparaj	Tierärztliche Praxis	https://tierarztliche.com	https://tierarztliche.com/gallery/v40.15.pdf	UGC CARE list/Web of Science
Thermal performance analysis of a low volume fraction Al 2 O 3 and deionized water nanofluid on solar parabolic trough collector	Ramalingam Senthil & R. Karunakaran G. Vijayan, P. P. Shantharaman	Journal of Thermal Analysis and Calorimetry	https://www.springer.com/journal/10973	https://link.springer.com/article/10.1007%2Fs10973-020-10313-w	UGC CARE list/Scopus/SCI
Hot corrosion behavior of nanostructured and conventional HVOF Cr3C2NiCrBSi coatings on superalloy	R. Shankar K R Balasubramanian S. P. Sivapirakasam	Materials today proceedings	https://www.sciencedirect.com/journal/materials-today-proceedings	https://www.sciencedirect.com/science/article/pii/S2214785320325840?via%3Dihub	Scopus
Oxidation resistance of Ni-Cr-TiO2 powder HVOF coating on carbon steel at elevated temperature	K Premkumar, KR Balasubramanian SP Sivapirakasam, R Shankar	Materials today proceedings	https://www.sciencedirect.com/journal/materials-today-proceedings	https://www.sciencedirect.com/science/article/pii/S2214785320302728	Scopus
ANN and RSM models approach for optimization of HVOF coating	R Shankar, KR Balasubramanian SP Sivapirakasam, K Ravikumar	Materials today proceedings	https://www.sciencedirect.com/journal/materials-today-proceedings	https://www.sciencedirect.com/science/article/pii/S2214785320302777	Scopus

Investigation on effect of machining parameters using TGRA approach for AISI 316 steel	J Rajaparthiban, S Saravanavel, M Ravichandran, K Vijayakumar, B Stalin	Materials today proceedings	https://www.sciencedirect.com/journal/materials-today-proceedings	https://www.sciencedirect.com/science/article/pii/S2214785320330650?via%3Dihub	Scopus
Microstructural and tribological characterization of Al/Egg shell ash composites prepared by liquid metallurgy process	MM Pavithra V Mohanavel, M Ravichandran, S Suresh Kumar, M Melwin Jagadeesh Sridhar, S Dineshkumar	Journal of the Balkan Tribological Association	https://scibulcom.net/en/journal/1310-4772	https://www.researchgate.net/publication/340818544_Microstructural_and_tribological_characterization_of_AlEgg_shell_ash_composites_prepared_by_liquid_metallurgy_process	Scopus
Analysis of high temperature oxidation behaviour of SS316 by Al2O3 and Cr2O3 coating	S Sabanayagam S Chockalingam	Materials today proceedings	https://www.sciencedirect.com/journal/materials-today-proceedings	https://www.sciencedirect.com/science/article/pii/S2214785320302844?via%3Dihub	Scopus
S&H					
Review of some Applications of Chitin/Chitosan with Metal/Metal Oxide Composite	Dr.AL.Kavitha	International Journal for Research in Applied Science & Engineering Technology	https://www.ijraset.com	https://www.ijraset.com/fileserve.php?FID=23810	EUROPUB-UK Indexed Journal
Split and Non Split Eccentric Domination In Fuzzy Graphs	S.Geetha	International Journal of Management Technology and Engineering,	http://www.ijamtes.org/	https://app.box.com/s/jdv77ebrwlmjphhmczsbq81u595b6qme	UGC CARE TILL 2019
The equitable bondage and non-bondage number of a fuzzy graph	S.Revathi	International Journal of Management Technology and Engineering	http://www.ijamtes.org/	https://app.box.com/s/f7ng5f8um5xsuqky4j695jpw1xd1fnjm	UGC CARE TILL 2019
Ecofriendly ultrasonic natural dyeing of wool fabric with natural dyes obtained from wrightiatinctoria	Dr.P.Saravanan	International Journal Of Scientific Research And Reviews	http://www.ijsrr.org	http://www.ijsrr.org/pdf/82659.pdf	UGC CARE
Latice points on the homogeneous equation 7 (x2+y2) – 13 xy = 31 Z2	Mr.G.Jeyakrishnan	Journal of Information and computational Science	http://www.jo ics.org/	https://drive.google.com/file/d/1jyvLt3DiQ3RPAJnNLNeV0tHmOmZ247Je/view	UGC CARE
Octagonal Numbers, Square Numbers and Pythagorean triangles	Mr.G.Jeyakrishnan	Journal Of Analytical And Experimental Model Analysis	http://www.ijaema.com/	https://app.box.com/s/sa1yfikn9zd2h74scfe0io4ck8hr2e49	UGC CARE
2018-19					
CIVIL					
Experimental study on recycled coarse aggregate in concrete by using m-sand and silica fume	Ms.R.Revathi	International Journal of Advanced Research in Basic Engineering Sciences and Technology	https://www.ijarbest.com/	https://www.ijarbest.com/journal/v5i5/1853	Others
Experimental Investigation on Concrete by Replacement of Fine Aggregate with Stabilized Soil	Ms.R.Revathi	SSRG International Journal of Civil Engineering (SSRG-IJCE)	https://www.internationaljournalssrg.org/IJCE/index.html	http://www.internationaljournalssrg.org/uploads/specialissuepdf/ICCREST/2019/CE/IJCE-ICCREST-P102.pdf	Scopus
Experimental report on Flexible Pavement by using Hydrophobic Silica sand, Zeolite and Steel Mesh	Mr.R.Sundharam	SSRG International journal of Civil Engineering (SSRG-IJCE)	https://www.internationaljournalssrg.org/IJCE/index.html	https://www.internationaljournalssrg.org/IJCE/2019/Volume6-Issue6/IJCE-V6I6P108.pdf	Scopus
Experimental Investigation of Carbon Nanotube Concrete.	Mr.R.Sundharam	SSRG International journal of Civil Engineering (SSRG-IJCE)	https://www.internationaljournalssrg.org/IJCE/index.html	http://www.internationaljournalssrg.org/uploads/specialissuepdf/ICMR-2019/2019/CE/IJCE-ICMR-P101.pdf	Scopus

Experimental investigation on partial replacement of clay using boiler ash to make eco black brick.	Mr.R.Sundharam	International journal of Advanced Research in Basic Engg. Sci. & Tech (IJARBEST)	https://www.ijarbest.com	https://www.ijarbest.com/journal/v5i5/1847	Others
Experimental study on partially replacement of cement by using sugarcane bagasse ash in concrete.	Mr.K.Arun	International journal of Advanced Research in Basic Engg. Sci. & Tech (IJARBEST)	https://www.ijarbest.com	https://www.ijarbest.com/journal/v5i5/1855	Others
Comparative study of polymer fibre reinforced concrete with conventional concrete.	Mr.K.Arun	International journal of Advanced Research in Basic Engg. Sci. & Tech (IJARBEST)	https://www.ijarbest.com	https://www.ijarbest.com/journal/v5i5/1857	Others
Experimental study on partial replacement of coarse aggregate by ceramic tiles and fin aggregate by quarry dust and copper slag in concrete.	Ms.V.Ishwarya	International journal of Advanced Research in Basic Engg. Sci. & Tech (IJARBEST)	https://www.ijarbest.com	https://www.ijarbest.com/journal/v5i5/1852	Others
Experimental investigation on roofing tiles by partial replacement of seashell and using coconut fibre as an admixture.	Mr.S.R.Elwin guru chanth	International journal of Advanced Research in Basic Engg. Sci. & Tech (IJARBEST)	https://www.ijarbest.com	https://www.ijarbest.com/journal/v5i5/1851	Others
Experimental investigation on composite bricks with partial replacement of weed ash.	Mr.S.R.Elwin guru chanth	International journal of Advanced Research in Basic Engg. Sci. & Tech (IJARBEST)	https://www.ijarbest.com	https://www.ijarbest.com/journal/v5i5/1856	Others
Manufacturing of bricks by using Phospogypsum	Mr.S.Kamaraj	International journal of Advanced Research in Basic Engg. Sci. & Tech (IJARBEST)	https://www.ijarbest.com	https://www.ijarbest.com/journal/v5i5/1850	Others
Experimental investigation on strength of fly ash brick with the addition of lime, M-Sand and Gypsum.	Mr.S.Kamaraj	International journal of Advanced Research in Basic Engg. Sci. & Tech (IJARBEST)	https://www.ijarbest.com	https://www.ijarbest.com/journal/v5i5/1854	Others
Experimental study on partial replacement of sand by sawdust in paver blocks	Ms.K.Bhavarohini	International journal of Advanced Research in Basic Engg. Sci. & Tech (IJARBEST)	https://www.ijarbest.com	https://www.ijarbest.com/journal/v5i5/1848	Others
Experimental investigation on cement by partial replacement by using rice husk ash.	Mr.M.Mohamed ilyas	International journal of Advanced Research in Basic Engg. Sci. & Tech (IJARBEST)	https://www.ijarbest.com	https://www.ijarbest.com/journal/v5i5/1849	Others
CSE					
IOT driven Automated Object detection algorithm for Urban Surveillance System	Dr.S.M.Uma	International Journal of Technology in Computer Science and Engineering	https://medium.com/ijtcse-research-issn-2349-1582	https://medium.com/ijtcse-research-issn-2349-1582/iot-driven-automated-object-detection-algorithm-for-urban-surveillance-systems-97486a5a039d	other
Autonomous Self Parking Robot	Dr.S.M.Uma, et.al	International Journal of Technology in Computer Science and Engineering	https://www.ijarbest.com	https://medium.com/ijtcse-research-issn-2349-1582/automatic-smart-parking-system-3f6405d94f40	other

A new hybrid squirrel search algorithm and invasive weed optimization algorithm for skin lesion cancer classification	Dr.S.M.Uma, et.al	Int. Research Jounal of Engg& Tech – IJRET	https://www.irjet.net	https://www.irjet.net/archives/V7/i2/IRJET-V7I2204.pdf	other
Design and implementation of Smart Sensor Integrated Chair for Medical Diagnosis	Ms.K.Abhirami, etal	International Journal of trends in Scientific Research and Development	https://www.ijtsrd.com/	https://www.ijtsrd.com/papers/ijtsrd19182.pdf	other
An Intelligent SOLAR LED street lighting system´	Mr.S.Rajarajan , etal	International Journal of Technology in Computer Science and Engineering	https://medium.com/ijtcse-research-issn-2349-1582	https://medium.com/ijtcse-research-issn-2349-1582/an-intelligent-solar-led-street-lighting-system-433a27cee1ee	other
A Data Sharing Protocol to Minimize Security and Privacy Risks in Cloud Storage	Mr.S. Rajarajan, etal	International Journal Of Trend In Scientific Research & Development	https://www.ijtsrd.com	https://www.ijtsrd.com/papers/ijtsrd29345.pdf	other
Accountable protocols for Big data trading against dishonest Consumers	Ms.R.Ranitha, etal	International Journal of Technology in Computer Science and Engineering	https://medium.com/ijtcse-research-issn-2349-1582	https://medium.com/ijtcse-research-issn-2349-1582/accountable-protocols-for-big-data-trading-against-dishonest-consumers-d1caa876f58f	other
Computer Interfaced Smart A.I Battle Field Tank	Dr.D.Sivakumar, etal	International Journal of Trend in Scientific Research and Development	https://www.ijtsrd.com	https://www.ijtsrd.com/papers/ijtsrd19183.pdf	other
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A New Architecture Using Polynomial Matrix Multiplication For Advanced Wireless Communication	V. Filomin Joseena	International Research Journal of Engineering and Technology (IRJET)	https://www.irjet.net	https://www.irjet.net/archives/V3/i3/IRJET-V3I3172.pdf	Others
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Performance of Recycled Paper Pulp And Fly Ash In Production of Light Weight Bricks

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Abstract

In terms of sustainable and cleaner production, the utilization of Paper wastes in the manufacturing of eco-friendly building materials has attracted attention in recent years. In the present study, Papercrete fly ash based bricks were produced to determine the influences of paper pulp and fly ash on the physical, mechanical, and thermal properties of bricks. The following parameters were examined for the bricks produced at Office paper and newspaper; water absorption, apparent porosity, efflorescence, bulk density, compressive strength, and thermal conductivity. For the brick production, Fly ash was used up to 30% up to 50%.

Keyword: *Papercrete, Fly ash brick, Thermal insulation, Lightweight brick*

1. Introduction

Papercrete is a sustainable construction material that consists of re-pulped paper fiber with Portland cement. It is apparent as an environmentally friendly material due to significant recycled content. Its annual energy consumption exceeds that of all the other engineering materials[1,2]. These days carbon emission from construction sites due to the use of cement is globally issued[3,4]. The brick places a major role in the protection of building from the outer environment and their physical and mechanical properties helps to determine the energy demand of the building and provide the thermal comfort to the occupant [5 9].

On the other hand, people's desire to live eco-environment is continuously increasing. An probable seven percent of the global carbon dioxide emits during manufacturing process of the concrete [2,4]. Papercrete is new composite material. By using the waste paper, papercrete is reducing the dead load for the structure[10,11].And the papercrete have good impact absorbing property[12,13].

The huge requirement has been positioned on construction building material industry particularly in the most recent decade owing to the growing population which causes a chronic scarcity of construction materials, This experimental study investigates the potential use of waste paper for producing low-cost and lightweight composite concrete[14 16]. This alternative concrete was made with papercrete.

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A New hybrid Genetic Search Algorithm and Invasive Weed Optimization Algorithms for Skin Lesion Cancer Classification

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Abstract - **Skin disease is a primary hassle amongst people global. Different learning algorithm getting to know. Strategies can be implemented to perceive lessons of pores and skin sickness. Accurately diagnosing skin lesions to discriminate among benign and malignant skin lesions is critical to make certain suitable affected person treatment. Skin malignant growth is one of most dangerous maladies in people. As per the high closeness among melanoma and nevus sores, doctors set aside substantially more effort to explore these sores. This paper displays another technique dependent on enhancement calculation to order and foresee skin malignant growth maladies tried utilizing certifiable disease datasets. This philosophy going to joins new two sort of calculation. One is genetic algorithm(GA) and another is Invasive weed optimization (IWO)algorithm to arrange and anticipate malignant growth prior. The proposed framework is assessed by arranging and expectation malignant growth sicknesses in skin sore disease datasets and assessment measures. The outcomes are thought about with (convolution algorithm)SVM execution benchmark. Framework can defeat to diagnosing the malady rapidly and exactness. Contrasting with other calculation proposed calculation has more precision.**

Key Words: IWO, SVM, SSA data set, Analysis, Clustering, Accuracy

1. INTRODUCTION

Information mining is the procedure where esteemed data is separated from the enormous dataset. It has arrived at the high development over recent years. Because of the convenience of information mining approaches in wellbeing world, it has become the great innovation in medicinal services area. Malignant growth is a speculatively last ailment caused fundamentally by conservational issues that change qualities encoding basic cell administrative proteins. Resultant Many highlights of the cutting edge Western eating routine (high fat, low fiber content) will expand malignant growth recurrence.

2. METHODOLOGY SYSTEM IMPLEMENTATION

The following actions are carried out in the proposed system. They are;

1. Dataset Acquisition
2. Preprocessing
3. Feature Selection
4. Disease Diagnosis
5. Evaluation Criteria

DATASET ACQUISITION

In this module, transfer the datasets. The dataset might be microarray dataset. Accumulate the information from emergency clinics, server farms and disease inquires about focuses. The gathered information is pre-handled and put away in the information base to fabricate the model.

PREPROCESSING:

Data pre-handling is a significant advance in the information mining process. The expression "manure in, trash out" is for the most part relevant to information mining and machine ventures. Information gathering strategies are regularly shakily controlled, coming about in out-of-go values, inconceivable information blend, missing qualities, and so forth. Investigating information that has not been deliberately screened for such issues can deliver equivocal outcomes.

FEATURE SELECTION:

In this module is utilized to choose the highlights of the given dataset. Credit choice was performed to decide the subset of highlights that were exceptionally related with the class while having low inter correlation.

DISEASE DIAGNOSIS:

Based on the values acquired from training phase, the performance of the NN network is analyzed to obtain appropriate values for testing phase. In order to find the optimum structure, the NN network performance has been analyzed for the optimum number of hidden nodes and epochs. For this situation, the epochs will be set to a definite preset value. Then, the NN network was trained at the appropriate range of hidden nodes. The number of hidden

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A Novel Approach to Solve Class Imbalance by using Ensemble Classifier

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Abstract - Security is a key controversy to both computer and computer networks. An Intrusion Detection System is a software that superintend a single or a network of a computers for denmastry activities which are pursued at purloining or inspecting information or deprave network protocols. IDS can be grouped into Signature based Detection (SBD) and Anomaly based Detection (ABD). Machine Learning Techniques have been scrutinized and emulated in label of their detection potentiality for identifying the different groups of attacks. In this Paper, we Proposed a comprehensive evaluation of diverse machine learning techniques for locating the root of complications in recognizing Intrusion Activities. Controversies that are analogous to discerning low-frequency attacks utilizing network attack datasets are also explored and effective methods are recommended for betterment. Numerous Data Mining tools for Machine Learning have also been incorporated in this paper. By using Sampling Technique, the efficiency and scalability was improved better compared to formal approaches.

Keywords: Intrusion Detection System, Machine Learning, Precision, ROC, True Positive, False Negative

INTRODUCTION

A lay of skill used for perception of anomalous etiquette of networks. Based on the speculation that the etiquette of intruder is contradictory from that a usual user. As the elegant attack intensifies, the skillful Intrusion Detection approach is essential to overcome the annoying activities. In Common ,the potency of IDS is a survey of its proficiency to identify intrusion, to the least those that could possibly cause detrimental destruction. Few common parameters for estimates are detection rate, false positive, false negative, true positive ,false alarm. Much of the Existing strategy focused on upgrading the detection rate and therefore to some extent, the field has been massively well researched. In this Paper, we inspect an aggregate of ABD methodologies that has been developed for IDS. Each Method was tested using various available datasets targeting a number of attacks. Our main review is to find the key advantages of each technique as well as their drawbacks. In Succeeding period, this paper can benefit as a reference point and furnish scope to improve the existing approach for further research.

Intrusion Detection System

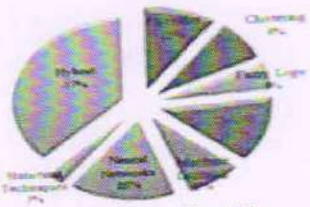

Figure 1.1

Machine Learning based IDS contributes a Learning based system to find category of attacks based on the learned normal and attack performance. The ultimate aim of machine learning based IDS is to imitate a common representation of known attack. Anomaly based IDS are depends on the speculation that attacker behavior differs from normal users' behavior which helps in identifying the enlarging attacks.

Single classifier

Single machine learning classifier can be used to address the problem of intrusion detection. Several Techniques such as Support Vector Machine (SVM), Self-Organizing Maps (SOM) and K-Nearest Neighbor (KNN) have been used to resolve the problem and the results have shown some significant achievements. The data sets are pre-processed to be used by SVM classifier. SVM is trained over the training dataset and as a result, decision model is generated.

Strategies in Machine Learning

a) Artificial Neural Network

Neural Network Learning methods impart a powerful approach for approximating real valued, discrete-valued and vector-valued target functions. Neural Networks are suitable for the problems where a) Instances are represented by many attribute-value pairs. b) Training sample may contain errors. c) The learned function is typically difficult to understand by humans and this ability to understand the learned target function is not important by human.

b) Fuzzy Logic

Automated Water Management and Leakage Detection System using IOT

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Abstract: **Water is essential to human life. It is most precious not only for the human race but also for all the living things in the planet. It serves us in 360 degrees starting from households to hydroelectric plants of our life and so on. So it is very important and responsibility of everyone to manage the water in an efficient way. In this paper we propose an efficient water monitoring system based on the Internet of Things. If we keep wasting water continuously it can be very dangerous problem in future. We should start saving water from ourselves. There are various ways through which water get wasted. Leakage plays a vital role in water wastage. Whenever there is leakage somewhere we couldn't get it in initial stage but when it becomes a huge problem it causes large wastage of water. So it is better to take action immediately as soon as leakage takes place. In order to give a solution, we put forward a system that monitors the water level, water quality and water leakage using various sensors. The ultrasonic sensor and flow sensor senses the water level and the water leakage respectively. Once the flaw is identified, it is informed to control room through the internet (Email, twitter, SMS) and also nearby people can be informed in time. By placing this system, we will be able to collect and analyze the water usage patterns of the residents and save a lot of water in small as well large scale in future.**

Keywords : Water, IoT, Sensors, Internet

I. INTRODUCTION

Water is an essential need for human survival but due to rapid pace of industrialization and greater emphasis on agricultural growth combined with latest advancements, agricultural fertilizers and no enforcement of laws have led to water pollution to a large extent. The availability of good quality water is paramount in preventing outbreaks of water-borne diseases as well as improving the quality of life. In order to ensure the safe supply of the drinking water the quality needs to be monitor in real time.

Water quality refers to the chemical, physical, biological, and radiological characteristics of water. In this work Water quality is calculated by considering waters physical (temperature. Water pollution monitoring system can help to detect the water pollution that means temperature of the water.

The pipe leakage detection is also the important thing to avoid the wastage of water. A lack of appropriate leakage analysis and monitoring can result in repairs that are ineffective in controlling or reducing leakage

The internet of Things (IoT) is a revolutionary concept that has the potential to turn virtually anything to smart. IoT provide interface to monitor and operate remotely from anywhere and anytime. To ensure safe supply of drinking water and to avoid wastage of water we are proposing a Water monitoring automation System using the techniques of different sensors (Internet of Things).

II. RELATED WORKS

Various efforts have been made up till now in monitoring water level & accordingly controlling dam gate. The input of work in this area is mentioned below IOT based water supply monitoring and controlling system [1]

The paper is mainly based on the nonstop and real time monitoring of water supply in IOT platform. Water supply with continuous monitoring makes a proper distribution so that, we can have a record of available amount of water in dams, flow rate, abnormality in distribution line. Monitoring is performed from anywhere as administrative center. The free server pushes data continuously on cloud so that we can see and manipulate the data in real time operation. Using different sensors with controller and raspberry pi as Minicomputer can monitor data and also control operation from cloud with efficient client server communication.

Advantages:

Using this system ,we can have a secure and continuous monitoring

No need to go on field for monitoring so manual work has reduced it makes system more efficient, reliable, low cost and accurate

we can monitor the data from anywhere and controlling is possible from a remote server

Disadvantage:

Need of continuous monitoring, water supply scheduling and proper distribution

Water Level Monitoring and Dam Gate Control over IOT[2]

A dam is a barrier that arrests water. Dam serves the purpose of storing water while other structures such as floodgates are to prevent water flow into specific land regions. The dam gate collapse when the water level in the dam exceeds certain level. Water level in a dam needs to be maintained effectively to avoid such complications. The quantity of water released

BIIoT: Provenance of Industrial IoT Data with Blockchain Technology

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Abstract - The Internet of Things (IoT) is the collection of internets connected devices that are embedded with electronics, sensors, and hardware that can be observed and controlled. IoT appears to be a double-edged sword: it has a range of possibilities for ultra-low-power communications and makes such communication vulnerable to malicious attacks because all IoT devices are wireless. To improve security in IoT devices, blockchain technology is utilized here. Hybrid industrial architecture is used for various branches of an organization and is located in more than one country. Although IoT devices are used in several organizations, they reduce their product prices along with improving quality. Various threats can occur in IoT devices perpetrated by different intruders. Attackers compromise IoT devices by performing malicious activities. For example, a company's workers can steal some product. Blockchain technology is used to provide privacy and protect the control system in real-time conditions to prevent such problems. In this paper, the researcher has discussed using a Blockchain mechanism to extract data from IoT devices and keep the blockchain records to maintain transparency among different users located at different places.

Keywords - Internet of Things, Industrial Internet of Things, Blockchain, Data Provenance

I. INTRODUCTION

An Internet of Things (IoT) network is formed with the networking of internet-connected devices that are embedded with electronics, sensor devices, and other hardware that can be remotely observed and controlled. Things on the Internet can be associated with an automobile with sensors imparted to notify the driver when tire pressure is reduced, or any natural or human-made item dispensed an IP can move information over a system. Differently, enterprises utilize IoT to work all the more productively, better comprehend clients to convey upgraded client assistance, improve essential leadership, and increment the business's estimation. IoT is not a Internet-associated buyer gadget. IoT is the innovation that manufactures frameworks fit for detected by its own and reacting to upgrades from this present reality without human intercession. To build up a strategy stream for a distinct structure over which an IoT arrangement is assembled.

Actuators are a thing regarding the Internet of Things, ought to be outfitted with sensors and actuators in this manner enabling to produce, acknowledge, and procedure signals. Data Acquisition Systems is the sensors' information begins in simple structure and changed over into computerized streams for further examination. Information procurement frameworks play out these information agglomeration and transformation techniques. Edge Analytics is the IoT information that has been digitalized, collected, and might require further handling before it enters the server farm. Cloud Analytics is the information that needs extra top to bottom procedure gets sent to physical server farms or cloud-based frameworks.

II. RELATED WORKS

Yigit et al (2019) proposed a system the Internet of Things (IoT) contains a different gathering of sensors, actuators, and alternative Internet-connected devices communicating, processing information, and performing a different technique. Attack graphs give analytical support to stop multi-step network attacks by showing all potential sequences of vulnerabilities and their collaborations. Attack graphs generally consist of a vast number of nodes, and it is computationally challenging to analyze them for network hardening—greedy algorithm using compact attack graphs to search for a cost-effective solution to secure IoT frameworks. The algorithm scales almost linearly with the network size, and it tends to be applied to enormous-scale graphs with an incredibly massive number of IoT nodes. In addition to network-hardening, the proposal measures the network's security level in each progression to exhibit the framework's vulnerability grade.

Huh et al (2017) proposed a technique Blockchain technology emerged as the next revolutionary technology. IoT gadgets need to impart and synchronize with each other. The current model of server-client may have some limitations and issues while in synchronization. They were using blockchain to build IoT systems. Ethereum is our blockchain platform because using its smart contract, using Ethereum, blockchain computing platform. To save data coming from meter and smartphone. Using an Ethereum account, the meter continually sends power. Technology does not need to worry about synchronization and denial of service attacks while serving them productively and quickly.

Lundqvist et al (2017) proposed a system of thing-to-thing payments is a critical empowering influence in the Internet of Things (IoT) era, to ubiquitously allow for gadgets to pay each other for services with no human interaction. Blockchain technology is Bitcoin, with its decentralized structure and simplicity of record creation. A crucial drawback is the exchange expenses in the Bitcoin network when doing microtransactions. The proof-of-concept shows that trustless, self-ruling, and ubiquitous thing-to-thing micro-payments is no longer a future innovation. One severe

Biometric based Secured ATM Transaction incorporating GSM Technology

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Abstract:- **This project deals with the solutions related to the ATM (Automated Teller Machine) transaction security. Today, ATMs and Debit cards are used for the purpose of money transactions which play a vital role in the nature of trade. The weaknesses of existing authentication scheme such as password and PIN number caused the leakage of information stored in ATM smartcard which lead to the lost of money in bank account and private information misuses. To overcome this shortcoming of piracy in money transactions. All these factors are verified for the authentication purpose of the user along with atm scanning and biometric verification. Parameter are differing and then the link is generated to the User's Mobile number for further more secure authentication system. In the modification phase, an automation user Internet (Bank server) recognition model using mobile is designed to enhance the user comfort and detection of the time span spend by the user in the ATM machine.**

Keywords: Classification, Fraud Detection, K-Nearest Neighbor Algorithm, Outlier Detection.

I.INTRODUCTION

In the war of functionality versus security, the functionality wins more often. Security has always been viewed upon as an overhead or afterthought by software developers. But in the case of banking and money transactions, the security should hold highest priority. Increase in daily attacks on ATM and banking security the developers getting on right track and putting security their important aspect in developing projects. The multifactor authentication is an approach to authentication, which requires the presentation of two or more authentication factors: a knowledge factor ("something only the user knows"), a possession factor ("something only the user has"), and an inherence factor ("something only the user is"). After presentation, the other party for authentication to occur must validate each factor. In present days the ATM holds only one thing (i.e. PIN) to secure the money saved in the bank if we are not considering the physical attacks. In our system, we are going beyond this level of security to enhance ATM security for money transactions. We introduce the concept of Biometric verification and SESSION LINK in ATM banking. Our system will provide the second level of security using different factors to generate SESSION LINK. This will send over customer's mobile number & stored in records.

In secure ATM, user will have to register mobile and its IMEI number in bank system. When user puts/swipes card into machine, user get request to insert PIN (which is current way of ATM banking). In the proposed system user will get SESSION LINK on mobile. When user enters SESSION LINK to the system, he/she will be having access to the machine else no transaction can be made. First word ATM stands for Automated teller machine, a machine that allows customers of a Banking institution to transact banking business without any help of a cashier i.e.

Human clerk known or human bank teller. Automated teller machine also called automated banking machine. In some part of world it is also known as whole in the wall or cash point or cash line. An automated teller machine is a computerized telecommunications device. With rapid growth in Information technology sector in from the past decade, daily new inventions

are taking place in market. In financial sector especially the banking sector there are so many new technologies are taking place in financial operations. ATM is an important invention for banking sector. The innovations of modern and information technology have made it feasible for bank clients to interact and carry out banking facility with Automated teller machine and to receive the cash directly from the machine or make deposit including checks without assistance of human Being. Automated teller machine is part of Electronic banking and is new services which are being offered by at present by most of banks in core banking sector to its customers. Electronic banking offers other services also apart from Automated Teller Machine such as direct business deal purchase/ sale through Point-Of-Sale (POS) and Telephone banking and so on. One of the main reasons for banks more inclinations toward Automated teller machine is day by day rising cost of setting up and operating bank branch whether full-fledged branch or extension counters and it has lead to sharp increase in Automated teller machine being installed by the banks.

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Covid-19 Facemask Detection with Deep Learning and Computer Vision

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Abstract - **The corona virus COVID-19 pandemic is causing a global health crisis so the effective protection methods is wearing a face mask in public areas according to the World Health Organization (WHO). The COVID-19 pandemic forced governments across the world to impose lockdowns to prevent virus transmissions. Reports indicate that wearing facemasks while at work clearly reduces the risk of transmission. We will use the dataset to build a COVID-19 face mask detector with computer vision using Python, OpenCV, and Tensor Flow and Keras. In our proposed system we will use live video stream and finally in output it gives alert sound(buzzer) when someone not wearing mask.Our goal is to identify whether the person on image/video stream is wearing a face mask or not with the help of computer vision and deep learning.**

Keywords : DeepLearning, Computer Vision, OpenCV, Tensorflow, Keras.

I. INTRODUCTION

The trend of wearing face masks in public is rising due to the COVID- 19 corona virus epidemic all over the world. Before Covid-19, People used to wear masks to protect their health from air pollution. While other people are self-conscious about their looks, they hide their emotions in the public to hide their faces.

More than five million cases were infected by COVID-19 in less than 6 months across 188 countries. The virus spreads through close contact and in crowded and overcrowded areas.

We can tackle and predict new diseases by the help of new Technologies such as artificial intelligence, Iot, Big data, and Machine learning. In order to better understand infection rates might be decrease through our technique. People are forced by laws to wear face masks in public in many countries. These rules and laws were developed as an action to the exponential growth in cases and deaths in many areas. However, the process of monitoring large groups of people is becoming more difficult in public areas. So we will create a automation process for detecting the faces.

Here we introduce a facemask detection model that is based on computer vision and deep learning. The proposed model can be integrated with Surveillance Cameras to impede the COVID-19 transmission by allowing the detection of people who are wearing masks not wearing face masks. The model is integration between deep learning and classical machine learning techniques with Open cv, Tensor flow and Keras. We will achieve the highest accuracy and consume the least time in the process of training and detection.

II. LITERATURE REVIEW

1.TITLE : "Face Mask Detector"

Single Shot Detector architecture is used for the object detection purpose. In this system face mask detector can be deployed in many areas like shopping malls, airports and other heavy traffic places to monitor the public and to avoid the spread of the disease by checking who is following basic rules and who is not.It takes excessive time for data loading in Google Colab Notebook. It did not allow the access of webcam which posed a hurdle in testing images and video stream.We have modeled a facemask detector using Deep learning. We are processed a system computationally efficient using MobileNetV2 which makes it easier to Extract the data sets. We use CNN architecture for better performance.We can fix it in any kind of cameras.

2.TITLE :"Face detection techniques: a review," Artificial

Criminal Investigation Tracker with Suspect Identification

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Abstract - **Whenever a case against the crime is filed the investigation always starts from the scratch right away from the evidences found at the crime location and the eye witnesses present at the crime location. On the basis of the statement given by the eye witnesses about the crime and the criminal who committed that crime. The process of the investigations starts. As to reduce the stress of the police officers we implemented a system as criminal investigation tracker with suspect identification that will help the officers to speed up the process of investigation and track status of ongoing case by predicting out the primary suspects on the basis of the records which consists of compendium of the people associated to the case, former criminal background proofs recovered from crime location, etc. This digitized system makes the work easy for an officer to check the status of the case online and even allows him to add up the new important information related to the case as it's when needed. The proposed system consists of suspect prediction algorithm to predict and suggest the suspects in the logical order.**

I. INTRODUCTION

We here propose a criminal investigation tracker system that tracks the investigation status of criminal cases with logs and also predicts primary suspects. The system is proposed to help agencies like CBI, CID and other such bureau's to sped up investigation process and track status of multiple cases at a time. The system keeps logs of a case which includes case summary, people involved, disputes, past criminal history of those involved, Items recovered on scene and other details. The system realizes the type of case, allows admin to update the status of investigation, upload more images of crime, items found on scene etc. This allows authorized officers to check case status and look into its status online and also update any important info as and when needed. The system also consists of a suspect prediction algorithm. Based on type of case, property, land, love or other entities involved the system studies past cases, it studies past criminal records of those involved and based on this data it provides suggestions of suspected persons in a logical order. The system is designed to aid investigation teams to work collectively on cases, coordinate and also speed up the process by suggesting logical suspects based on data provided.

[1] Dongyuan Li, Xiaojun Bai "Criminal Investigation Image Retrieval Based on Deep Learning", 2020 International Conference on Computer Network, Electronic and Automation (ICCNEA) In this paper CSI image retrieval technology based on low-level features uses a content-based image retrieval (CBIR) framework to extract low-level features of the image or to fuse different low-level features, which confirms the feasibility of CBIR technology in CSI image retrieval.
The author proposes to combine low level features of image dominant color descriptors as color features, gray-level co-occurrence matrix as texture features to improve CSI image retrieval performance.
Advantage:
Final experimental results show that the algorithm can effectively describe the content of CSI image and maintain a high average precision.

[2] Bagus Priambodo, Yuwan Jumaryadi, Zico Pratama Putra "Comparison of Local Binary Pattern and Eigenfaces for Predict Suspect Positive Drugs"2020 2nd International Conference on Broadband Communications, Wireless Sensors and Powering (BCWSP). In this paper The dataset is generated from online sources by collecting and pre-processing 30 images of people before and after drug. We compare two algorithm local binary pattern and Eigenfaces for predicting suspect positive drugs based on face images.The experiment shows that the result of the prediction using Local binary pattern is better than the prediction using Eigenfaces. However, a higher accuracy of prediction reaches only 75 %.
Advantage:
Local binary pattern is better than the prediction using eigenfaces.

[3] Neil Veira, Student Member, IEEE, Zissis Poulos, Member, IEEE, and Andreas Veneris, Senior Member, IEEE "Searching for Bugs using Probabilistic Suspect Implications" IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (Volume: 39, Issue: 12, Dec. 2020).In this paper Due to the excessive cost associated with manual RTL design debugging, automated tools are often employed to identify a set of suspect bug locations.behaviour of these tools allows partial results to be analyzed before the suspect search is complete.In this paper proposes a new SAT-based debugging algorithm which predicts where solutions are most likely to be found and prioritizes examining these locations.
Advantage:
This debbugging algorithm is proven to be better than the VLSI models reaching an accuracy rate of 87 percent.

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Detection of Gas Leakage in Polymer Industries using IOT

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Abstract: **Gas leakage is one of the major issues in polymer industries. The leakage of gas leads to major fire accidents which lead to heavy damage inside the industry as well as the loss of human beings. It is feasible to detect the gas leakage before any disaster happened. So industries need a very efficient gas leakage detection system. The aim of this paper is to propose an industrial safety system for workers working in these types of polymer industries by automatically detect, alert and control gas leakage, fire and smoke using IOT based system.**

I.INTRODUCTION

Gases leaked from polymer and carbide industries are very harmful to all living things. Major disaster happened at Bhopal on December 3, 1984. Recently an industrial accident occurred at LG polymers chemical plant in the Vishakapattinam. As per the National Disaster Response Force (NDRF), the death toll was 11, and more than 1,000 people became sick after being exposed to the gas. To prevent from these types of accidents, safety system should build in high quality standards. Safety should be ensured by all levels. To incorporate technology in the Safety System, Internet of Things (IOT) technology is used to detect the gas leakage and prevent the disaster before it happened. Internet of Things [IOT] is a system of interrelated computing devices without human – human or human– computer interaction. IOT is used to automating the daily tasks, the benefits of IOT can also be extended for enhancing the existing safety standards.

Safety is the most important criterion while designing polymer industries. The spread of highly concentrated gases in the atmosphere can produce extremely dangerous condition. These gases might be flammable at certain temperature and humidity conditions, toxic after exceeding the specified concentrations limits or even a contributing factor in the air pollution of an area leading to problems such as smoke and reduced visibility which can in turn cause several accidents and also have adverse effect on the health of people.

II. EXISTING SYSTEM

In the existing method, **gas sensing technology** is used. The LPG leakage is detected by the semiconductor sensor. The leakage of gas may happen due to the human error, false chemical reaction, lack of service done in the gas valve. In the existing method, periodic check done by manually and partial sensing methodology is used. When the leakage was happened, it leads to major fire accident. Before controlling the fire major accident may happen which leads to heavy loss in industry as well as human life. In addition to that the leak of gas may spread in the atmosphere, it may affect all the living things in an around them.

In the existing system MQ5 sensor is used to detect gas leakage. Exhaust fans are used to suck out the gases when the leakage occurs. In the existing method, it raises only alarm whenever Gas leaked or fire is detected at any place in a factory. Due to this alarm, people could start to run haphazardly. Fire Service truck vehicle only control the fire accident.

III. PROPOSED SYSTEM

In order to overcome problems exists in the existing system, the proposed system consist of sensors which is capable of detecting and classifying the gases, fire, smoke and used to prevent from explosive gases. If the system detects a gas leakage, then the systems shuts down the production unit and also switch off the main power supply by automatically. The system now starts an exhaust fan to out of all the leaked gas. Also the system sends information of this event to the authorized user through an SMS message using GSM

modem. The system has a fire sensor to detect fire if it happened beyond the consequences. While a fire is detected, the system should activate the existing fire extinguisher to control the fire.

This system also avoids the concept of wastage of

28

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Digitized Banking Transactions using QR Scanner

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Abstract **- Challan is official form or there kind of document, piece of paperwork, citation etc. It is a way of crediting the money to one's bank account through a form. people are waiting in queue for withdraw and deposit money and taking DD in bank. They need some one's help for filling the challan if they are less educated. To reduce incidents of failed transactions and transactional errors in ATMs, Mobile banking and POS terminals, need to come up with an application that can be used to enhance digital banking, facilitation of ICT skills. Digitized challan can also be defined as a specific format used for Depositing, Withdrawing and DD payment at a bank. Banking payment technology that uses digitized challan using QR code to identify the user and authorized persons account from a bank account. It based on QR Scanning is the most common code accessing method.In this system weuses a secure factor authentication, in which the QR code scan takes the place of the user at the time it automatically generated the account holder's number and name of the person. And it shows three main functional processes such as Deposit, Withdraw and DD.**

Keywords : DD-Demand Draft, QR-Quick Response, ATM-Automated Teller Machine, POS-Point Of Sale.

I. INTRODUCTION

Now a days,. A bank challan is same as a deposit slip by which you can deposit an amount in someone's account by cash or NEFT/RTGS, but the only difference is in deposit slip you need to fill in the details of the recipient but in the bank challan, the recipient details along with the amount is pre-filled. The bank challan is generated by a merchant/institution for paying some fees or bill and so you needn't worry about the recipient details and the amount is pre-specified, so you needn't fill it.

A bank challan normally comes in a doublet or a triplet - One part always remain with the customer and the other part is kept with the bank, and another part if available is submitted to the merchant/recipient. All the parts are duly signed and stamped by the bank official who received the amount and a transaction id is also written on it for the same. Passbook is predicted to become a major player in the mobile wallet space in the next few years. This trend will increase the necessity for high performance barcode scanners that can not only read fast but also validate the barcodes within passes with servers.

A QR code consists of black squares arranged in a square grid on a white background, which can be read by an imaging device such as a camera, and processed using Reed–Solomon error correction until the image can be appropriately interpreted. QR codes have become common in consumer advertising. Android App is a software designed to run on an Android device or emulator. The term also refers to an APK file which stands for Android package. This file is a Zip archive containing app code, resources, and meta information. Android apps can be written in Kotlin, Java, and C++ and are run inside Virtual Machine. The official development environment is Android Studio.

II. LITERATURE REVIEW

T.K.Anusiya et al [1] the author uses finger scanning, is the most common biometric accessing method. In this system we uses a secure factor authentication, in which the finger scan takes the place of the user at the time it automatically generated the account holder's number and name of the person. And it shows three main functional processes such as Deposit, Withdraw and DD.

Fake Education Document Detection using Image Processing and Deep Learning

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Abstract - **The forgery of official documents becomes familiar and this made a lot of problems and difficulties to the official institutions .With the new the sophisticated powerful digital printers and a lot of software tools it become very simple to edit scanned document and create new one with different information that is very difficult to distinguish from the original and the forgeryone. The current document detection is not so efficient, so some people make fake document and do illegal activities. The proposed system contain two methods to detect the fake documents .First, the QR-code scanner which scan the QR-code of the document and detect that document is original or fake. Second, the image processing techniques undergoes three stages : training phase, testing phase, classification to detect the fake documents. In this proposed project, the originality of document is discussed and focused on making the detection of forgery document more robust and reliable. By the Neural network and error value analysis algorithm using image processing system to detect the forgery document.**

I. INTRODUCTION

In modern world the documents can now be altered and manipulated easily, Trustworthinessofdocumentsisnowmoreindemand.Manypeopl eusethiswayto get jobs throw out forgery their certificate. Formally, many technologies were less effective in countering the danger of faking identity documents. So new methods mustbeimprovedtorestrictthatthreat.Manypreventive measureshavebeentaken by the government to stop these forgery activities but still has not affected the growing rate of these crimes and has remainedunaffected.Many preventive measures have been taken by the government to stop these forgery activities but still has not affected the growing rate of these crimes and has remained unaffected. The proposed system use image processing techniques to detection forgery in official scanned document. The aim of proposed system is design a quick and most efficient system for detecting forgery in official documents. Theproposedsystemcontaintwomethodstodetectthefakedocum ents.First, the QR-code scanner which scan the QR-code of the document and detect that document is original or fake. Second the image processing uses neural network concept. In this proposed project, the originality of document is discussed and focusedonmakingthedetectionofforgerydocumentmorerobusta ndreliable.The system is needed at the time of submission of individual'sidentity documents on various web portals like Scholarship and Educational systems where it checks whether the document is real or not .So this system is needed in such cases where the user submits the forged that is manipulated documents on the webportal.

II. METHODOLOGY

The software that we implement first scanned the QR-code of the document and the sign, stamp and logo of the document using Image processing techniques in deeplearning.The Image Processing Module basically includes of two parts:Error Level Analysis and NeuralNetwork.These parts in combination help to detect whether the documentimage is manipulated by any means ornot.Deployment phase of the system is the main part that is how the systemis to be used in the reallife.

Two parts in deploymentmodule :

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30

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Food Conservation Application - Mobile App Connecting Provider and Consumer

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Abstract : **We propose an application that helps people to conserve food efficiently by providing that food to people in hunger. The idea behind this project is to serve the exceeded food from hotels and marriage halls to the people in need specifically the ones in home and orphanage. In this project, a mobile application assists donor to find nearby orphanage and home and lets the donor contact the acceptor and share details about the availability of food and related information in just few clicks. Then the nearby acceptors can see the food ready to be donated and claim that food after confirmation with donor. This application will be an impactful changeover of many lives.**

Keywords : Mobile Application, Excess Food, Food Donation.

I. INTRODUCTION

These days, in highly populated countries like India, food wastage is a big issue. A lot of food is thrown away in garbage bins, streets, and landfills have proof to prove it. Marriages, canteen, restaurants, social and family get-together and functions expel out so much of food. Food wastage is not only an indication of pollution or hunger, but also of many economic problems. Instead of wasting food we can put them in use by donating them to various organizations such as orphanages, old age home, NGOs, etc.

It has become a habit to waste food exceeded from the large amount of preparation in hotels and similar areas without giving a second thought. It sounds normal just because it happens everywhere, so it's no longer a problem. But the truth is that it has a huge impact on many lives.

Food wastage happens because there is no alternative to save them at ease. We people must pay attention to this issue and bring possible improvement over it cause it greatly concerns today' unprivileged people and also our successors on this planet. That is where our project shows up and solves the major problem. Thus, this application is not only useful for avoiding wastage of foods but also to feed those people in need.

II. LITERATURE REVIEW

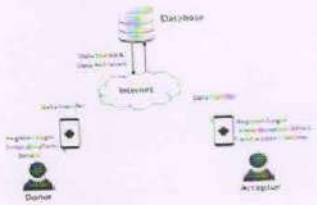
I. FOOD WASTAGE REDUCTION THROUGH DONATION APPLICATION - The users need to register into the application and can offer or request for donation. The notification will be sent to the other and they can either accept or deny the service given. This can be tracked by the participants to ensure the food delivery.

II. This is an internet based mobile application for the NGO named 'Jan Visas Singh' This system creates a common collaboration between a donor and a volunteer from the NGO where the donor uploads all the food details at the same time volunteer receives a notification ofavailability of the food once the donor uploads its successfully.

III. This system will create a common collaboration portal for hotels/restaurants and charities, charity can directly contact restaurants who have food remaining and report generation which will show how much food is donated by which restaurant and providing reward points for them.

IV. This paper introduces the basic architecture and application framework of Android operating system, gives a detailed description of main structure of Android applications and the methods of developing applications based on Android application framework.

V. This research project aims to create an app that the encourages smart use of food in the consumer's household, reducing food waste and its effects on budget, energy & bringing attentions to consumer's food. This is achieved through alerts on expiration dates, allowing input of groceries, & providing tips on food storage.



III. ARCHITECTURE DIADRAM

IV. METHODOLOGIES

The proposed application is android-based, developed on Android Studio using java and xml requires internet connection and will provide a platform for donors and seekers after they successfully register into the system.

Handwritten Digit Recognition for Banking System

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Abstract - The aim of a handwriting digit recognition system is to convert handwritten digits into machine readable formats. The main objective of this work is to ensure effective and reliable approaches for recognition of handwritten digits and make banking operations easier and error free. Handwritten digit recognition system (HDR) is meant for receiving and interpreting handwritten input in the form of pictures or paper documents. Traditional systems of handwriting recognition have relied on handcrafted features and a large amount of prior knowledge. Training an Optical character recognition (OCR) system based on these prerequisites is a challenging task. Convolutional neural networks (CNNs) are very effective in perceiving the structure of handwritten characters/words in ways that help in automatic extraction of distinct features and make CNN the most suitable approach for solving handwriting recognition problems. Our aim in the proposed work is to recognizing written character on cash deposit/ withdrawal/ and other transaction, we are proposing to develop an automatic banking deposit number recognition system which is able to recognize the handwritten account number and amount number on the cash deposit slip and thus automate the cash deposit process at bank counter.

I. INTRODUCTION

Handwritten digit recognition for banking system aims at ensuring effective and reliable approaches for recognition of handwritten digits and make banking operations easier and error free. In the current age of digitization, handwriting recognition plays an important role in information processing. A lot of information is available on paper, and processing of digital files is cheaper than processing traditional paper files. The aim of a handwriting recognition system is to convert handwritten characters into machine readable formats. Handwritten digit recognition has not only professional and commercial applications, but also has practical application in our daily life and can be of great help to the visually impaired. It also helps us to solve complex problems easily thus making our lives easier. Handwritten digit recognition has gained so much popularity from the aspiring beginner of machine learning and deep learning to an expert who has been practicing for years. Developing such a system includes a machine to understand and classify the images of handwritten digits as 10 digits (0–9). Handwritten digits from the MNIST database are already famous among the community for many recent decades now, as decreasing the error rate with different classifiers and parameters. Digit recognition system is the working of a machine to train itself or recognizing the digits from different sources like emails, bank cheque, papers, images, etc. and in different real-world scenarios for online handwriting recognition on computer tablets or system, recognize number plates of vehicles, processing bank cheque amounts, numeric entries in forms filled up by hand (say — tax forms) and so on. The handwritten digits are not always of the same size, width, orientation and justified to margins as they differ from writing of person to person, so the general problem would be while classifying the digits due to the similarity between digits such as 1 and 7, 5 and 6, 3 and 8, 2 and 5, 2 and 7, etc. This problem is faced more when many people write a single digit with a variety of different handwritings. Lastly, the uniqueness and variety in the handwriting of different individuals also influence the formation and appearance of the digits.

II. RELATED WORKS

Handwritten digit recognition (HDR) is considered one of trivial and critical machine learning problems. It has been used widely by researchers as experiments for theories of machine learning algorithms for many years. In recent years, neural networks and conventional neural network currently provide the best solutions to many problems in handwritten digit recognition. A novel hybrid CNN–SVM model for handwritten digit recognition. This hybrid model automatically extracts features from the raw images and generates the predictions. For this work, the author used non-saturating neurons and a very efficient GPU implementation of the convolution operation to reduce overfitting in the fully-connected layers. The author introduces a novel visualization technique that gives insight into the function of feature layers and the procedure of the classifier have observed convolutional net architecture that can be used even when the amount of learning data is limited. It has used new network structure, called Spatial

27/12/21

32

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Intrusion Detection System using Deep Learning

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***Abstract*— Intrusion Detection System (IDS) defined as a Device or software application which monitors the network or system activities and finds if there is any malicious activity occur. Outstanding growth and usage of internet raises concerns about how to communicate and protect the digital information safely. In today's world hackers use different types of attacks for getting the valuable information. Many of the intrusion detection techniques, methods and algorithms help to detect those several attacks. The main objective of this paper is to provide a complete study about the intrusion detection, types of intrusion detection methods, types of attacks, different tools and techniques, research needs, challenges and finally develop the IDS Tool for Research Purpose That tool are capable of detect and prevent the intrusion from the intruder.**

Index Terms*— *Intrusion Detection System, Need, Type of IDS, Detection Techniques, Functioning of IDS, Components, Application based IDS, Tools of IDS.

I. INTRODUCTION

In today's world internet security has become a challenge for organisations. To protect credential data from the intruders. In process of safeguarding the data Web Firewalls, encryption, authentication and Virtual Private Networks (VPN) have been deployed since a long time to secure the network infrastructure and communication over the internet. Intrusion detection is a relatively new addition to set of securitytechnologies.

IDS is an evolution which enhance the network security and safeguarding the data of the organisation. The IDS helps the network administrator to detect any malicious activity on the network and alerts the administrator to get the data secured by taking the appropriate actions against thoseattacks.

An intrusion refers to any unauthorized access or malicious utilization of information resources. An intruder or an attacker is a real world entity that tries to find a means to gain unauthorized access to information, causes harm or engage in other malicious activities.

The Intrusion detection system is about the firewall security. The firewall protects an organization from the malicious attacks from the Internet and the IDS detects if someone tries to access in through the firewall or manages to break in the firewall security and tries to have an access on any system in the organization and alerts the system administrator if there is an undesired activity in the firewall.

Therefore, an Intrusion detection system (IDS) is a security system that monitors network traffic and computer systems and works to analyse that traffic for possible hostile attacks originating from outside the organization and also for misuse of system or attacks originating from inside the organization.

II. NEED

Now a day's internet has become part of our daily life infect, the business world is getting connected to Internet. Number of peoples are getting connected to the Internet every day to take advantage of the new business model which is known as e-Business. Connectivity enhancement has therefore become very critical aspect of today's e- business.

There are two phases of business on the Internet. First phase is the Internet brings in outstanding potential to business in terms of reaching the users and at the same time it also brings a lot of risk to the business. There are both harmless and harmful users on the Internet. Whereas an organization makes its information system accessible to harmless Internet users. Malicious users or hackers can also get an access to organization's internal systems in various reasons. These are.

- Software bugs called vulnerabilities in asystem
- Failure in administration security
- Leaving systems to default configuration

The intruders are use different types of techniques like Password cracking, peer-to-peer attack, Sniffing attack, Dos attacks, Eavesdropping attack, Application layer attack etc. to exploit the system vulnerabilities mentioned above and compromise critical systems. Therefore, there required to be some kind of security to the private resources of the organization from the Internet as well as from users inside the organization.

III IDPS METHODOLOGY

There are many different methodologies used by IDPS to detect changes on the systems they monitor. These changes can be external attacks or misuse by internal personnel. Among the many methodologies, four stand out and are widely used. These are the signature based, anomaly based, Stateful protocol analysis based, and hybrid based. Most current IDPS systems use the hybrid methodology which the combination of other methodologies to offer better detection and prevention capabilities. All the methodologies use the same general model and the differences among them is mainly on how they process information they gather from the monitored environment to determine if a violation of the set policy has occurred. Fig.

IOT Based Paddy Crop Disease Identification and Prevention System using Deep Neural Networks and Image Processing

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***Abstract*-Human population on earth is expected to reach 9.7 billion by 2050 as per FAO projections and to feed this population production to be increased by 70%. This magnificent population growth brings a lot of challenges with food production the major issue to be addressed. Pests and diseases cause heavy losses through deaths, reduced productivity and loss of markets for products. Crop pests and diseases reduce yields substantially, sometimes by over 50 per cent or even total crop failure. Technology enabled farming supported by IoT and Image processing techniques for disease prediction entiles new dimensions in the field of precision farming. Vision-based detection of plant diseases is beneficial in monitoring large fields of crop and symptoms that appear on the plant leaves by deep neural network. Proposed methodology combines IoT and Image processing and performs classification using deep learning model that helps in crop disease prediction and thereby supports increased productivity.**

Keywords—Crop Disease prediction, Deep Neural Networks, Image Processing, Precision Farming.

I. INTRODUCTION

Traditional methods of farming, decreasing farm labour availability, server water scarcity problem, depletion of soil conditions makes agriculture economically unavailable and inefficient. It is also the right time to focus on nurturing the nature, do technology enabled farming to feed the existing and the anticipated population. According to the report by United Nation of food and Agriculture Organization the population will get doubles in 2050. The increased production of the agriculture will support huge economic boost to the nation. Agriculture practices suitably supported by technological inventions are essential for efficient and timely agriculture operations, facilitating multiple cropping & thereby increasing production, convenience. Farm products should provide only nutrients to the consumers and ensure healthy living. The county GDP will get improved by the agriculture production. Agriculture contribution in India is about total GDP of 16% and total exports of 10%. Backbone of Indian economy is depending on the agriculture production. When compare with the growth of other sectors, the overall share of agriculture on GDP of the country has decreased.

The growing interest in technology and automation is apparent to address every aspect of agriculture production cycle. Production life cycle of a farm is a complex operation, with dozens of factors affecting every decision. To monitor crops, various sensors, camera and IT unit are used to capture images at regular intervals and then integrated into imaging system (uses advanced Machine learning and Artificial Intelligence techniques) to get better yield and reduces crop failure. In future, machines integrated with Internet of Things and Image processing could entirely replace the need for humans to manually weed or monitor crops. Integrating advanced technology into existing farm practices, provide quality and high yield products.

In the field of precision agriculture, expansion in the practices of precise plant protection and market for various technology enabled farming techniques comes into existence. Integrating image processing techniques such as color analysis and threshold values to detect and classify plant diseases results in crop protection. Various different approaches are currently used for detecting plant diseases and most common are artificial neural networks. In machine learning and cognitive science, ANN is an information-processing paradigm that was inspired by the way biological nervous systems, such as the brain, process information. The brain is composed of a large number of highly interconnected neurons working together to solve specific problems.

II. BACKGROUND AND RELATED WORK

To enhance the productivity of the crop there by supporting both farmer and nation, it was proposed to use the technology which estimates the quality of crop and provide suggestions. The real time images of various rice blast diseases are acquired using web camera. The interfacing of camera with Raspberry pi was found very easy. The Raspberry pi board is used to process the images of the crops from camera output. Raspberry pi is perfect for any automation. Then various image processing methods are applied to the acquired images to getting useful feature that are important for next analysis process. The image comparison by optimization techniques using open CV [1]. For overcoming the problems of agriculture, system was

27/12/21

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Iris Detection based Authentication for Secure Voting System

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Abstract - **India being a democracy that too worlds largest,still conducts its elections using either Secret Ballet Voting or Electronic Voting Machines (EVM) both of which involves high costs, manual labor and are inefficient. So, the system must be optimized to be made efficient which would not leave room for unwanted means of voting. The most familiar issue faced by the election commission is inappropriate confirmation with respect to the arrangement of casting the votes, duplication or illegal casting of votes**

The proposed biometric electoral authentication system allows the user to scan s so that his or her credentials can be compared to existing iris images already stored in the system's database. Present Aadhar database will be integrated into voting authentication system.Using detection of iris based authentication decreases the chance of duplicating a vote and those who are registered prior to the election and are recognized by the system will be allowed to vote. Hence, the approach makes the system the best way to vote.In proposed project, biometric based authentication avoids anonymity and the focus is on making the voting system more robust and reliable by eliminating dummy voters. By using Daughman's algorithms will scan IRIS and check those details in our database for match.

Keywords - Iris Detection, Authentication , Voting System

I. INTRODUCTION

The election system is the pillar of the every democracy . The depth of democracy is voting. The voting process must be reliable, and the voting record must be accurately and reasonably recorded. The success of democratic administration is totally dependent on the results of the election. The election process provides the right to every citizen of a country to select a legitimate representative among themselves who can guide the democratic system towards the welfare of the society. The voting system has observed many effective changes over the past few decades, right from the traditional paper ballot voting to electronic voting and now towards the online voting. The voting system is improving step by step; advancement in the new system eliminates the drawbacks of the previous system. Every system tries to overcome the loop holes of the previous system. The primary goal of this paper is to understand the traditional voting system with the recently proposed voting system.In modern world, many new techniques such as voting process play an important role in any democratic country . Democracy is meant to allow people to vote freely and the election result is accepted by voters group.

The concept of Iris Recognition was first proposed by Dr. Frank Burch in 1939.It was first implemented in 1990 when Dr. John Daughman created the algorithms for it.
Iris recognition is a method of biometric authentication that uses pattern-recognition techniques based on high-resolution images of the irises of an individual's eyes. Iris is a muscle within the eye that regulates the size of pupil, controlling the amount of light that controls the eye.

II. BACKGROUND

"Smart Voting" is used to identify people who are trying to vote a second time, and once the fingerprint print And iris are scanned, authentication is complete, and the user is locked into login.[1]. Face detection, which is the major part of this project is done by using the Haar Cascade method. It is a machine learning object detection algorithm used to identify objects in an image or video[2]. The process of election data is recorded, stored and preceded as digital information. Electronic voting system is used to fling vote as well as counting number of votes. The electronic voting system uses AVISPA technique[3]

Canny Edge detection algorithm for localizing the iris and pupils.[4]. Iris recognition system consists of five stages, such as, image acquisition, segmentation, normalization, feature extraction and matching.[5]. In security of voting system by bringing advanced technologies of neural networks with multimodal biometrics (face recognition, fingerprint scan, retina scan etc).[6]

Iris recognition refers to the automated method of verifying a match between two human IRIS. Iris scanner Capture the iris image and compare or match to database.[7]. RFID tags have been used. Each and every tag contains the information related to individual voters[8].

The voter identity card is replaced by smart card in which all the detail of the person is updated. Only the specified person can poll using their smart card[9]. The incorporation of biometric technologies can be as simple as using a single biometric. However, a single biometric measure is always subject to security breaches, if not properly attended and administered.[10].

Prediction and Analysis of Key Performance Indicators (Kpi) For Students using Data Science

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ABSTRACT-**Many organizations need future analysis data to overcome the pitfalls or the improvements to be made, by using analytical tools.Predicting student's performance is the mostintricate task due to the large volume of data in student's databases. The performance of a student is predicted mainly by considering their academic details. Better anticipation of student's success in higher academic institutions is one approach to attain top level of quality in education system. This can be used to concentrate more on the students who needs a bit higher attention and to train them for reaching better in academics.Students' data can be evaluated with the help of various techniques. Data science is the most prevalent techniques to evaluate students' performance and is widely usedin educationalsector.The main objective of this paper is to identify the key performance indicators that affect the results (success and failure) of the student in the course and to analyze the various classification models and identify a high accuracy prediction model to predict the result.**

Keywords: KPI, Student's Performance

I.INTRODUCTION

In this modern era, all has become digitized and because of that numerous data are retrieved from various sources. Making the most useful information from these data has become a tedious and a very important task. Especially, in the educational sector, more data are collected. Using these data to forecast the future result of the student makes sense in collecting those data. Data science can help more objectively, evaluate the candidates androot out inefficiencies and biases to predict the future using machine learning algorithms. Key performance indicator helps in measuring the performance of the student and is essential to use in data science for good communication. Student's performance measurement is a necessary part in educational institutions. There are a lot of algorithms to calculate the student's performance. It can be obtained by measuring the academic performance like assessment and co-curriculum activities. The existing methodology about the grades in school being the measure of student's success. The most of higher educational institutions uses the final grades to evaluate overall performance of students. Finally prediction are based on course structure, assessment mark, and also extracurricular activities.

The evaluation is important to maintain student's performances and the effectiveness of learning process. By investigating the students' performance a strategic program can be well planned during their period of studies in an institution for better outcome. Currently, there are many techniques being proposed to evaluate performance of students. Data science has been widely applied in educational field.

The proposed system also helps the learner, institutions and faculties to work according to the learning criteria of the students. Actually data science help in the education sector. To understand, analyse and then find the difference between different prediction methods of data Science in education.

II. RELATED WORKS

In [1], educational data science is widespread nowadays due to increase in e- resources, usage of online tools for education and Internet. Lots of research is taking place to make best of education tools and technologies. The usage of these techniques is to predict or analyse the students' performance and improve the students who are falling below satisfactory grades, an artificial neural network classifier model was built which can be beneficial for both students and teachers to discover knowledge from huge data present in educational sector. Student's behavioural features were considered with other featuresandamodelwasproposedbasedon data science techniques which yielded 22.1% high accuracy after removing behavioural features. Further by employing ensemble methods there was found 25.8%increase in accuracy. Academic data set consisting of 473 instances, and found that 70% accuracy was yielded by Bayesian classifier. The naive Bayes classifiers, KNN were used to categorize student'sdropouts. 87% and 79.7% accuracy was yielded by K- nearest neighbours and decision trees applying 10-foldcross-validation.

In [2], it represents the data science techniques used for analysing pupil performance. Educational institutions contain an enormous amount of academic database containing student details. These student databases along with other attributes are taken into consideration like family background, family income, etc. It will helps to identifying promising students and by providing a chance to refine those students who likely get low marks. To prepare a structure which will investigate the performance from their previous performancesusingconceptsofDatascience under Classification? Classification Algorithms like Decision Tree, Naive Bayes and Support Vector Machine (SVM) can

Smart E-Marketing in Agricultural Products

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Abstract - **Our proposed idea is E-market is to develop an Application which will help civilian; the farmer will get best from his input. The project "Smart E-Marketing in Agricultural" is Mobile application which maintains a transparency between the Farmer and civilian. This application also makes a selection for civilian for the farmer's requirement and to make it easy. With the help of this application farmer can be able to know the best value for his products cheat by the marketers. This application makes the farmers requirement become easy . By using this application farmers can get the complete information about eradicating black marketing and inflation. It helps in proper maintenance of data and information. One can easily browse through the various details using the well defined interfaces provided by the system. It is used by all over India's farmer and the basic advantages are it is feasible in all languages and also including the voice recognition for illiterate farmers . Then finally the payment process will be proceeding in online mode.**

Keywords : E - Market , Mobile application , Farmers ,Civilian , Internet and technology.

INTRODUCTION:

Now farmers will be able to sell their produce through e-market platform i.e. the National Agriculture Market (NAM) which was launched by our Prime Minister Narendhra Modi. Agriculture is the backbone of India. More than 60% of Indian workers are involved in Agriculture. It was the key development in the rise of sedentary human civilization, whereby farming of domesticated species created food surpluses that enabled people to live in cities. More than one third of the world's workers are employed in agriculture. After agriculture second only to the service sector but over the past several years the number of agricultural workers in developed countries have decreased significantly. There are some applications available in playstore i.e. eFarming, Farmers eMaret, Aggrigate, eNam these all applications have some disadvantages to overcome these problems is our project concept. The eNam was launched by our Prime Minister Narendhra Modi, after this eNam all other applications had some more added features and introduces into the society.

BENEFITS OF E-MARKETING:

1. Save effort and time.
2. Good quality at better price along with transparent pricing information
3. Quality and variety segregation for the ease of buying and exploration
4. Eliminate time variable from pricing and quality so that the system becomes more accessible.
5. Destroy dependency on vendors in pricing (increase trust) .
6. Replace bargaining by standardization.
7. regularizing the consumption will help; reduce wastage and betterment of storage on both ends.
8. Encourage formation of cooperatives.
9. Profit for all with minimum wastage by regular buying (on both ends).

SYSTEM EVALUATION:

The purpose of this project is to collect and analyze all assorted ideas that have come up to define the system, its requirements with respect to consumers. Also, we shall predict and sort out how we hope this product will be used in order to gain a better understanding of the project, outline concepts that may be developed later, and document

27/12/21 36

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Wireless IoT based Solution for Women Safety

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Abstract - In today's era, women still feel scared to step out of their homes at late nights due to the fear of sexual harassment. This problem is compounded when one shifts the focus from urban to rural sector and interior areas of villages where there is erratic electric supply and poor cellular network connectivity.This paper proposes a system, by creating a wireless network using IoT technology with a portable device for alerting the concerned authorities to prevent any mishap. Women will be provided with a beacon device consisting of a help button. In case of any emergency, the beacon information will reach the central stations and an alarm will be triggered at the prominent places of the village.

INTRODUCTION

Even though we live in the 21st century with much technological advancement and social awareness, women face the problem of harassment of any form and get abused physically or mentally. Areas like streets and public spaces have been the territory of such violence. This issue worsens for women living in remote and rural areas, where they might not be aware about these crimes or hesitate to report these crimes to the concerned authorities. There are many existing applications and devices for women security through smartphones. Though the smartphones have increased rapidly, it is not possible that the smartphones and cellular network will be available all the times in rural areas. Also, many people in the village do not have smartphones which can assist them in contacting the concerned authorities, otherwise. Literacy rate of villages is low and parents do not send girls to schools due to the fear of sexual harassment.

In this system, women safety is based on BLE (Bluetooth Low Energy) Beacon device due to their low cost, ease of deployment, ease of accessibility to the users and superior interior localization as described in . Kang EunJeon, James She, Perm Soonsawad, and Pai Chet Ng [2] specify that BLE has low energy requirements and battery life of BLE Beacon devices can be extended upto 2-3 years on a single coin cell battery if broadcast intervals are set appropriately based on the application. BLE is 60 - 80% cheaper than traditional Bluetooth and is compatible with a wide range of IoT(Internet of Things) boards, mobile phones, tablets and computers. It is ideal for the proposed system which requires small periodic broadcast of data at regular interval of 1 - 1.5 seconds.

OBJECTIVES

Objective of this proposal system is in today's era, women still feel scared to step out of their homes at late nights due to the fear of sexual harassment. This problem is compounded when one shifts the focus from urban to rural sector and interior areas of villages where there is erratic electric supply and poor cellular network connectivity.Our Work proposes a system, by creating a wireless network using IoT technology with a portable device for alerting the concerned authorities to prevent any mishap. Women will be provided with a beacon device consisting of a help button. In case of any emergency, the beacon information will reach the central stations and an alarm will be triggered at the prominent places of the village.Multiple solar powered street light poles are arranged in an optimized formation of triangular geometry such that each pole is within the range of its adjacent poles on either side of it. IoT boards [1] will be positioned on these street poles and will be powered using the solar energy taking into account the unpredictable electricity supply to the rural areas. It will act as an Access Point (AP) of the local wireless network through which the communicationm between a Beacon device and an AP willoccur. Women will be provided with the Beacon device which will consist of a help button. Based on Beacon device's UUID (Universally Unique Identifier), the user will be identified uniquely and the

27/12/21

37

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Design, Testing and Performance Evaluation of Beam Positioning System for Free Space Optical Communication System

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Abstract. *Beam wandering and the wavefront distortion are the significant sources for the power loss in Wireless Optical Communication (WOC). In this paper Full Factorial Design (FFD) and Back Propagation Neural Network (BPNN) controller based autonomous beam monitoring, positioning and recovery system for fine steering of the laser beam at the focal point of the FSOC receiver is proposed. The proposed controllers process the intensity information of the received optical beam as inputs and produce the control signals as outputs. These control signals bring the beam at the focal point of the receiver and avoid the power loss of the optical link. The work describes performance analysis of Field Programmable Gate Array (FPGA) based novel digital architecture of FFD and BPNN controller. Real time experimental verification of the stability and suitability of the developed adaptive controllers are tested for percentage of prediction error, Bit Error Rate (BER) and beam wander reduction ability and the same is demonstrated with suitable results. The experimental result shows that the BPNN controller gives high accurate approximation towards the control for the control signals C_x and C_y with the minimum and maximum values of 99.29% and 99.86% respectively. With the chosen parameters, the neuro-controller exhibits fast response for the error changes. The proposed BPNN controller provides prediction error very close to –0.5 to +1.0%, the values lie in the range of –0.06781% and 0.9862% which shows that the BPNN controller is efficient for the real time tracking and control for FSOC, LIDAR imaging, micro/nano positioning, atomic force microscopes, scanning tunneling microscopes, etc.*

Keywords

Optical communications, attenuation, opto-electronic, adaptive optics, neural network, beam steering

1. Introduction

FSOC attracts considerable interest for a large number of applications in telecommunications field due to its high data rate, low cost, free spectrum licensing, frequency coordination, interference free and fast installation. FSOC uses a visible Light Emitting Diode (LED), laser or invisible infrared for data communication which is similar to fiber optic communications. In FSOC beam of light, operating at very high frequency in the order of Terahertz region of the electromagnetic spectrum is collimated and transmitted over the atmosphere. Further, these are focused on a high sensitivity optical receiver through receiving telescope [1–3]. The random fluctuations in the atmosphere rigorously degrade the quality of the wavefront, thus resulting in intensity fluctuation and sometimes unavailability of the signal at the receiver end. In particular, beam wandering effect limits the use of the communication system. Incorporation of the beam steering system at the receiver end is the only possible solution to effectively mitigate and resolve the beam wandering and the received beam wavefront distortion effects respectively [4–8]. Mitigation of beam wandering (pointing error) to establish a perfect coupling of Power In Bucket (PIB): receiver aperture, to the communication optical detector plane becomes the most important as well as the very first essential need to effectively reduce the intensity fluctuation, beam outage and consequently recover the link quality and improve the overall performance of the FSOC system [9]. When using the FSOC link for fiber coupling, mobile and/or moving vehicle connectivity, it is necessary to align the optical axes of the both transmitting and receiving beam with sufficient accuracy and dynamic beam stabilization to improve the coupling efficiency and stability [10], [11].

Designing a suitable control scheme to minimize the beam displacement thereby significantly improving the beam stability and receiving power at the receiver detector plane becomes very necessary. To carry out this objective the experimental setups with the required optoelectronic components have been built for the transmission distance of 70 m. In this paper adaptive controller design for beam steering is proposed using (i) Full Factorial Design (FFD) and (ii) Back Propagation Neural Network (BPNN) controller. Prediction error and focal point wander are considered as the performance metric.

The remainder of the paper is organized as follows: Section 2 presents the necessary backgrounds of the beam

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RESEARCH ARTICLE

Experimental Study and Analysis of Meteorological and Wavefront Profile for Terrestrial Free Space Optical Communication Link at Lat.10.66° and Long.79.05°

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Abstract In this paper, experimental investigation of terrestrial free space optical communication (TFSOC) at latitude 10.66° and longitude 79.05° under different weather is proposed. Optical signal intensity fluctuations, optical path length, meteorological parameters and wavefront profile study have been measured over a range of visibility (m), temperature (°C), pressure (kPA), relative humidity (%) and wind speed (ms^{-1}) variations. Strhel ratio (SR), bit error rate (BER) and atmospheric turbulence strength (C_n^2) are taken into account for the performance analysis of TFSOC link and necessary results are presented.

Keywords Optical communication · Optoelectronic architecture · Meteorological parameters · Wavefront profile

1 Relevance of the Work

Free space optical (FSO) communications have numerous features compared with other technologies such as radio frequency (RF) or fiber optic. More recently, FSO has drawn much attention among the researchers to provide wide bandwidth communications due to its remarkable advantages including license-free spectrum, flexibility, easy of deployment, high speed (terabits/second -Tb/s) and electromagnetic interference (EMI) free solutions. As the FSO system is strongly affected by the atmospheric turbulence, it is significant to analyze the characteristics of the link under different weather conditions. In this paper, investigation of terrestrial free space optical communication (TFSOC) at latitude 10.66° and longitude 79.05° under different weather condition has been studied. Strhel ratio (SR), bit error rate (BER) and atmospheric turbulence strength (C_n^2) are investigated in this experimental study.

2 Introduction

Free space optical (FSO) communications have numerous features compared with other technologies such as radio frequency (RF) or fiber optic communication. More recently, FSO has drawn much attention to provide wide bandwidth communications due to its remarkable advantages including license-free spectrum, flexibility, easy of deployment, high speed (terabits/second—Tb/s) and electromagnetic interference (EMI) free solutions [1]. FSO communication is an alternative and attractive solution for the last mile problem. In FSOC, laser or high-power light-emitting diodes (LEDs) are used as a transmitter to encode the given information into an optical beam using necessary modulation techniques, whereas photodetector is used as a receiver to reconstruct the information from the received optical signal.

The performance of FSO is influenced by the parameters wavelength, power of the optical source used, transmission bandwidth and BER. Internal parameters can be corrected during the time of installing the setup. External parameters often known as system independent parameters which include visibility, attenuation (due to rain, drizzle, fog and haze) of the atmosphere, laser beam intensity variation,

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Implementation of Electric Vehicle for Agricultural Purpose

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ABSTRACT-In this paper Implementation of Electric vehicle is presented. In the past few years Agriculture has been growing fast. Many technologies associated in this field. Agriculture is the backbone of Indian Economy.Lot of technology's grow up very fast and advanced but the field of agriculture development of technology is very less. In this paper we proposed the concept of Automation of Agricultural processing Electric Vehicle. There are various process includes such as preparation of land, sowing of seeds, irrigation system, and fertilization, planting, harvesting of crops and packing of final product.

Keywords-photo voltaic cell, battery, Ultrasonic sensor, Node MCU, pumping motor, gear motor.

I. INTRODUCTION.

The electrical vehicle plays a major role in precision farming, which is to improve the efficiency of crop production without influencing the different agriculture variables and reducing production costs. This paper discusses the current developments and future perspectives of Precision Agriculture (PA) in the field of crop production in the construction of an autonomous vehicle. It offers a better solution which optimizes the quality and quantity of the crop by reducing costs, intervening humanly and changing environment as a result of unpredictable nature. Reducing environmental impacts and the dependency on fossil fuels are considered as important issues in energy policies globally. In many countries, the utilization of green vehicles, for example, battery electric vehicles (BEVs), power module vehicles

(FCVs), module half and half electric vehicles (PHEVs), and crossover electric vehicles (HEVs), is elevated by governments to supplant ordinary inside burning motor vehicles (ICEVs). For example, ranch structures, water system frameworks, crop treatment, item handling and capacity. The fundamental target of this paper is to talk about the future difficulties for farming vehicles from the perspective of joining elective sustainable power sources (RESs). This can improve the self-rule of vehicles by expanding the proficiency and lessening the reliance on petroleum product sources in the horticultural hardware division. At present the electric vehicles are either charged by the network or separate sustainable assets. They have their own sun-based board and are utilized for short separations. Charging from the network creates an additional heap on the age of power, inexhaustible sources are temperamental. Just a sun powered board on the vehicle isn't sufficient to control it altogether. Vehicle-to-Lattice innovation has been fruitful in utilizing electric vehicles for putting away overabundance vitality from the matrix during off-top burden request time and giving vitality during pinnacle request time. The proposed framework uses both the matrix just as the vitality from photovoltaic boards. The vehicles have their own PV boards. The batteries are charged utilizing both sun powered power and the vitality from the network which is used if all else fails and during off top occasions. The framework likewise encourages power move between vehicles without other vitality sources. Some of the researchers developed autonomous technologies to help with working in an agricultural field, to reduce human errors and being able to work continuously for example, autonomous steering, autonomous watering cars, plant growth measuring devices,etc.

II. LITERATURE SURVEY

For the past ten year many researchers have been involved in the field of Electric vehicle Technology. In this Literature Survey, various

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Touch Free Smart Gadget

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ABSTRACT: In today's world carrying a number of plastic smartcard to establish our identity has become an integral segment of our routine lives. BIO-METRIC fingerprint systems have a major problem of viral spread among the people. To overcome this problem we come with some new innovative idea that is touch free smart gadget. Wi-Fi Modem is used for tracking and identification purpose. In this paper, the principle aim is to discuss the viability of Touch free smart gadget technology. Our Touch free smart gadget consi st of Wi-Fi module for tracking, fingerprint sensor for identification, MEMS sensor to recognize abnormal moment like EPILEPSY, vibration sensor as a reminder and an emergency switch to give alter signal. The additional aim of our system is to propose a viable technological solution for a single multipurpose touch free smart gadget to avoid malfunction or fraud in large companies.

I. INTRODUCTION:

The present invention relates to the field of Internet of things (IOT) in Smart Identity Card. Recent advancements in smart technologies have led to development of smart card/chip card that comprises embedded chip for several and various purposes. Technologies in this field have developed new ways to use the smart card in every possible day-to-day activity such as credit/debit purchases, visiting libraries, theatres, etc. In our proposed system we developed a touch free smart gadget for university/college /power plant/company purpose.

1. An active RFID present within the identity card.
2. A prepaid system for various transactions within the university/power plant/company.
3. Biometric attendance
4. A prepaid wallet has the individuals' registration number as the account number used for all the transactions.
5. Emergency purpose.

An automatic attendance management system aims at solving the issues of manual methods of existing systems. A prototype of Smart attendance system based on ESP8266 smart card has been proposed. The concept of Smart attendance is to implement a system that marks the attendance of a particular person within a limited time period.A smart card is a device that includes an embedded integrated circuit chip (ICC) that can be either a secure microcontroller or equivalent intelligence with internal memory or a memory chip alone.

The card connects to a reader with direct physical contact or with a remote contactless radio frequency interface.With an embedded microcontroller, smart cards have the unique ability to store large amounts of data, carry out their own on-card functions (e.g., encryption and mutual authentication) and interact intelligently with a smart card reader. Smart card technology conforms to international standards (ISO/IEC 7816 and ISO/IEC 14443) and is available in a variety of form factors, including plastic cards, fobs, subscriber identity modules (SIMs) used in GSM mobile phones, and USB-based tokens.

II. EXISTING SYSTEM:

There are plenty of projects which are going on for the attendance system by different scenario and concepts. In this existing system, attendance system is used only for identification. The existing system largely consists of physical register where the supervisor manually inputs the attendance record of all students.. Other technologies which have been developed to replace this manual system include fingerprint, retina scan, voice recognition etc. The problem with existing system is that the manual system is time consuming and the advanced technologies are too expensive to be implemented on a large scale in any organization.

RFID system is one of the example of existing system,

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A Bidirectional Electric Drive Reconstructed Onboard Converter for Electric Vehicle Applications

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ABSTRACT: In this paper, an Electric-drive-reconstructed onboard converter (EDROC) based on a switching network in the DC side is proposed. The system can utilize the existing hardware of electric vehicles and does not need extra equipment. When the EDROC connects to the power grid through the power outlet at the office or home, there is not by additional equipment(relay) on the AC side. Compare with traditional EDROC, the proposed EDROC has advantages in cost and volume. The EDROC can realize the unity power factor in the charging mode and discharges to drive the motor in the driving mode. A proof-of-concept prototype has been built to verify the charging function and driving function of the proposed EDROC.

KEYWORDSPower conversion, electric vehicles, bidirectional converters, electric-drive-reconstructed systems.

I.INTRODUCTION

An electric vehicle charging station, also called EV charging station, electric recharging point, charging point, charge point, electronic charging station (ECS), and electric vehicle supply equipment (EVSE), is an element in an infrastructure that supplies electric energy for the recharging of plug-in electric vehicles including electric cars, neighbourhood electric vehicles and plug-in hybrids for charging at home or work, some electric vehicles have converters on board that can plug into a standard electrical outlet or a high-capacity appliance outlet. Others either require or can use a charging station that provides electrical conversion, monitoring, or safety functionality. These stations are also needed when traveling, and many support faster charging at higher voltages and currents than are available from residential EVSEs. Public charging stations are typically on-street facilities provided by electric utility companies or located at retail shopping station, restaurants and parking places, operated by a range of private companies, Charging stations provides range of heavy duty or special connectors that conform to the variety of standards. For common DC rapid charging , multi-standard chargers equipped with two or three of the Combined Charging System (CCS), CHAdeMO, and AC fast charging has become the de facto market standard in many regions.

II.RELATED WORK

Smart grid communication:

Recharging a large battery pack presents a high load on the electrical grid, but this can be scheduled for periods of reduced load or reduced electricity costs. In order to schedule the recharging, either the charging station or the vehicle can communicate with the smart grid. Some plug-in vehicles allow the vehicle operator to control recharging through a web interface or smartphone app. Furthermore, in a vehicle-to-grid scenario the vehicle battery can supply energy to the grid at periods of peak demand. "Communication between Plug-in Vehicles and the Utility Grid" ISO and IEC are also developing a similar series of standards known as ISO/IEC 15118: "Road vehicles -- Vehicle to grid communication interface".

Renewable electricity and RE charging stations:

Charging stations are usually connected to the electrical grid, which often means that their electricity originates from fossil-fuel power stations or nuclear power plants. Solar power is also suitable for electric vehicles. Solar City is marketing its solar energy systems along with electric car charging installations. The company has announced a partnership with Rabo bank to make electric car charging available for free to

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ORIGINAL PAPER

Effect of Silicon Carbide on Microstructural, Mechanical and Corrosion Behavior of Electrolytic Copper Matrix Composite Produced by the Powder Metallurgy Route

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Abstract
In this work Copper based composites were synthesized from Cu and SiC powders using Powder Metallurgy (PM) technique. The composition of the composites are Cu, Cu-5 wt% SiC, Cu-10 wt% SiC and Cu-15 wt% SiC were made using 400 kN hydraulic press and sintered at 900 °C using muffle furnace for 4 h. Scanning Electron Microscope (SEM) analysis was done on ball milled powders and sintered samples showed the uniform dispersal of SiC in the Cu. EDAX analysis evident the occurrence of SiC in the matrix. The addition of SiC in Cu improved the hardness and compressive strength (CS). Salt spray corrosion test resulted that, the improved corrosion resistance was obtained for the composite contain 10 wt.% of SiC. The corrosion rate was accomplished for the Cu – 10 wt.% SiC composite as 0.000894535 mm/year. Highest CS was attained for the sample contain 10 wt.% of SiC and highest hardness was observed for the sample contain 15 wt.% of SiC. The strengthening mechanism was discussed with the help of SEM images. The density was decreased and the % porosity was increased for the increasing wt.% of SiC in Cu matrix. The sintered density is higher than the green density for all the samples. From the observed results, it is concluded that produced composites would be suitable for radiator applications.

Keywords Copper · Silicon carbide · Composites · Powder metallurgy · Properties

1 Introduction

Metal matrix composites (MMCs) are extensively used in numerous applications because of its exceptional properties such as strength, hardness and conductivity [23]. Copper and its alloys are popular ductile materials which has greater importance among the all the metals because of its excellent corrosion resistance, thermal conductivity and workability [20]. Cu composites are very useful materials for automobiles, marines, and machinery. Cu matrix composites are used in electrical and electronics fields in the manufacturing of springs for radiators, relay contacts, switchgear and rotor bars [22]. The properties of the copper could be improved by reinforcing various oxides and carbides through various techniques such as casting and PM [2]. SiC is the useful reinforcement since it has better properties and low cost one. Beibei Chen et al. developed copper-based composite by reinforcing with $NbSe_2$ and CNT and reported that the inclusion of aforesaid particles improved the wear behavior of the composites [4]. Hua Bai et al. developed B_4C reinforced copper composites using electroless deposition and they reported that the inclusion of B_4C decreased the conductivity [1]. Jian-Tao Yao et al. developed Mo-Cu composites through infiltration process and studied the mechanical and microstructure of the composites. The improved thermal conductivity was achieved for the copper filled composites [30].

Yunhong Liang et al. studied the behavior of TiC filled Cu composite at Ar and air atmosphere and reported the mechanism of diffusion and precipitation mechanism [13]. Silicon Carbide (SiC) is a mostly used reinforcement materials for developing MMCs because of its excellent strength and hardness [8, 9, 11]. Among the various methods, PM is the efficient method to produce the MMCs as aluminium [25],

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Investigation on Performance and Emission Characteristics of CI Engine Fuelled with Cucurbita Pepo L. and Prosopis Juliflora Seed Oil Biodiesel Blends

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Abstract

Recent researches of different countries have used traditional seed oils such as sunflower oil, soybean oil for the synthesis of biodiesel. In the present investigation, (pumpkin) Cucurbita pepo.L and prosopis juliflora seed oil was used for the synthesis of biodiesel. Since these are produced in large quantities in India, oil cost is low. Diethyl ether as additive was added to the above blend and performance and emission parameters were compared. Performance tests were conducted using biodiesel blend in water cooled, constant speed, CI engine and the emission characteristics were analyzed using a five-gas analyser. It was observed that there was 9.89 % increase in Brake Thermal efficiency and 14.35 % reduction in Brake Specific Fuel consumption at the maximum load for B20 blend with 5mladditive. It was also noted that emission of CO reduced by 0.65 % than that of diesel. CO2 by 10.3 % and NO by 21.1 % for B20 blend and further, emission of CO reduced by 14.3 %; CO2 by 13.8 % and NO by 25.83 % was noticed when additive was added to B20 blend. HC emission and smoke opacity increased by 33.8 % and 16.56 % respectively for B20 blend and increased by 26.47 % and 5.15 % for B20 blend with additive which indicates reduction of HC emission and smoke opacity by adding additive to biodiesel. The combustion characteristics of blended biodiesel (50:50 for Cucurbita pepo L and prosopis juliflora) with additive closely follow that of diesel. Hence this blend is used as fuel in CI engine without any engine modification.

Keywords: Cucurbita pepo L, Prosopis Juliflora, B20 biodieseel blend, Diethyl ether, Emission characteristics, 5-gas analyser.

1. Introduction

Bio-diesels are extracted from the organic vegetables, waste oil and animal fat that have increased the higher potency as compared to fossil fuels in current engineering researches [1]. The biodiesel plays a major role in India for the usage in commercial applications and also decreases the usage of non-renewable sources. Industrial

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Experimental Investigation on Performance, combustion and Emission Characteristics of CI Engine Fuelled with Pumpkin and Maize Biodiesel blends.

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ABSTRACT

The most promising renewable, alternative and environmental friendly liquid fuel is bio-diesel. An experimental investigation has been carried out to investigate the performance and emission characteristics of a CI engine without any engine modification fuelled with pumpkin and maize biodiesel with various percentages of blends. The present work investigates the biodiesel obtained from transesterification process of Pumpkin and Maize is used as an alternative fuel to diesel. The performance, combustion and emission test using Pumpkin-Maize (PM) biodiesel and their blends (10%, 20%, 30%, 40% and 50%) with diesel were carried out at variable loads conditions. The research comprises of the performance, combustion characteristics such as brake thermal efficiency, brake specific fuel consumption and emission characteristics such as Carbon monoxide (CO), Carbon dioxide (CO_2), Hydro carbon (HC), Nitrogen oxide (NO) and smoke opacity were determined. Also the recent research notifies the engine running with biodiesel exhibit NO emission in higher concentrations. The results concluded that for B30 blend, an increase of 13.75% in brake thermal efficiency of the engine was observed at 80% load respectively. A decrement of brake specific fuel consumption has been observed, especially at higher loads for B30 by 11% respectively. The CO emissions increased by 27.3% and HC emissions increased by 27.2% for B30 blend at maximum loads whereas Smoke opacity decreased by 1.88% and NO emission decreased by 26.9% emissions were observed with respect to diesel fuel. Finally the research highlights the production of PM biodiesel fuel with proper proportion in order to achieve better engine performances and emission characteristics.

***Keywords**: Pumpkin-Maize biodiesel, Combustion, performance, emission, five gas analyser.*

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Comprehensive Assessment of Performance and Emission Characteristics of Pumpkin Seed Oil with $(C_2H_5)_2O$ and Jojoba Seed Oil with $C_5H_{12}O$ in C.I Engine

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Abstract

Bio-Diesel is an inexhaustible asset and a good alternative to conventional diesel fuel. The supply and demand holds to develop alternative fuels, which was stimulated by the depletion of the fossil fuel due to the limited resources. The main aim of the current study is to evaluate the performance and emission characteristics of a dual fuel was formulated using diesel with pumpkin seed oil as pilot fuel blended with diethyl ether as additive and jojoba seed oil as primary fuel blended with 1-pentanol as additive in a dual fuel engine. The performance parameters like brake specific fuel consumption, brake thermal efficiency and exhaust emissions of CO, CO_2, HC and NOx were determined. The testing can be done at constant speed at 1500 rpm. The comparative statement from this experiment of bio oils reveals that a significance improvement in the results of engine performance and emission characteristics of C.I engine.

Keywords: *Pumpkin Seed oil, Jojoba seed oil, Diethyl ether, 1- pentanol*

1. Introduction

Vegetable oil can be used as an alternative fuel in diesel engines due to the foreseen scarcity of non-renewable energy, the study of the future fuel is an unavoidable target. A research reported that the cotton seed methyl ester was used as an alternative fuel which yields, the engine torque and power was lower than that of diesel fuel varies in the range of 3-9%, SFC consumption was higher than the diesel in the percentile of 8-10% and the carbon-dioxide, carbon-monoxide and NOx emission is found to be lower than diesel fuel [1]. Pumpkin seed has considerable oil content by nature, the oil from the seed can be converted into methyl ester and various blend ratios were examined and compared with diesel fuel. Tests were performed at different loads condition in a single cylinder, four stroke and air cooled direct injection diesel engine developing power of 4.4 kW at rated speed of 1500 rpm. The result reveals that the combustion analysis, it is found that 40% volume basis considered as an optimum blend. The maximum heat release rate occurs for diesel fuel and followed by pumpkin oil methyl ester diesel blends [2]. Jatropha methyl ester is used as a bio-oil and blends with diesel and butanol through transesterification process with a catalyst sodium meth-oxide. The results of the comparative statements reports using methanol and ethanol, further the reaction rates and impacts were discussed. The performance measures were evaluated such as BSEC and brake thermal efficiency along with emissions of hydro-carbon, carbon-monoxide, NOx for the test fuels. The performance parameters are evaluated and found to be lower for all the blends in case of

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Influence of different reinforcements on properties of Copper Matrix Composites: A Review

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Abstract. In recent years the copper matrix composites (MMC) has become a noteworthy composite amongst metal matrix composites due to its salient features. Copper matrix composites reinforced with various micro and nano reinforcements are very suitable material for many industrial applications. The new kind of copper matrix composites satisfy the industrial needs, exhibit improved mechanical properties and present scope for cutting down production cost. The performance of these materials is for the most part based on selecting the precise grouping of reinforcing materials, as some of the process parameters are linked to the reinforcing materials. The copper matrix composites can be fabricated through various techniques namely compo-casting, compo-casting, rheo casting, ultra-sonic assisted casting, stir casting, in-situ, powder metallurgy technique, etc. From these various production methods powder metallurgy (PM) technique is the most prominent and cheaper alternative to manufacture the copper matrix composites. In this article, review of the research work so far in the related area of copper matrix composites has been carried out.

INTRODUCTION

Copper is being utilized for numerous usages contact breakers, rocket engines, liners of combustion chamber walls & nozzles of gas turbines and so on [1]. Because of its excellent conductivity characteristics of copper is exploited in welding electrode, rocket nozzle liners, magnetic confinement fusion reactors & reusable launch vehicle (RLV) engines [2].Copper matrix composites are wide spread utilized for different usages such as like bearings, bushes and blocks owing to its excellent corrosion, wear and thermal conductivity [3].However, copper possess certain disadvantages less hardness, frail creep resistance, less yield strength which could overwhelm usages of copper [4]. Further to defeat those impediments, reinforcements like SiC [5],TiC [6], Al_2O_3 [7], Fly Ash [8] and TiO_2 [9] could enhance tribological and mechanical performance characteristics of copper MMCs. Centrifugal casting endorses operative metal filling in mixture with fine micro structure that generally results in enhanced inclusive mechanical behavior [10]. Compo-casting method is used for producing intermittently strengthened metal-matrix composites (MMCs). In Compo-casting manufacturing method, strengthening material is poured to a semisolid alloy matrix and finally the mixture is dispersed dynamically [11]. Squeeze casting method adopted for major reasons decreasing the quantity of trapped gases and decreasing the quantity of solidification reduction [12].Stir casting fabrication method composites exhibits superior properties. Composites fabricated through stir casting method will possess good mechanical properties and makes the composites useful for numerous engineering applications [13]. In situ manufacturing methods are protuberant actuality commercial and subsidizing numerous merits than that of other techniques like fine dispersal of good bonding strength amid matrix and reinforcement and fine grain enhancement [14]. Powder metallurgy fabrication route possesses various merits over other production methods. It is the easiest and appropriate technique to fabricate MMCs having desired properties [15]. Praveen Kumar et al [16] reported that PM technique is the most fitting route to make MMCs having homogenous

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ISOMORPHIC SINGLE VALUED NEUTROSOPHIC GRAPHS AND THEIR COMPLEMENTS

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Abstract

In this paper, basic definitions related to Single Valued Neutrosophic Graphs (SVNG) with examples are discussed. Some properties of isomorphism are introduced. Also isomorphism between single valued neutrosophic graphs is proved to be an equivalence relation. Also discussed about isomorphic neutrosophic graphs and their complements.

1. Introduction

The notion graph theory was first introduced by Euler in 1736. In the history of mathematics, the solution given by Euler of the well known Konigsberg bridge problem is considered to be the first theorem of graph

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Keywords: single valued neutrosophic graphs, isomorphism, equivalence relation, complement.
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A DATA SHARING PROTOCOL TO MINIMIZE SECURITY AND PRIVACY RISKS IN CLOUD STORAGE USING STEGANOGRAPHY TECHNIQUES

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Abstract - *Data sharing inside the cloud is a way that lets in users to without difficulty get admission to records over the cloud. The data proprietor outsources their statistics in the cloud because of price reduction and the awesome conveniences provided by way of cloud services. Data owner isn't always able to control over their statistics, because cloud Provider Company is a 3rd party company. The important disaster with facts sharing within the cloud is the privateness and safety issues. Various strategies are to be had to help user privateness and comfy information sharing. This undertaking awareness on numerous schemes to cope with comfortable statistics sharing such as Data sharing with forward protection, relaxed information sharing for dynamic organizations, Attribute based totally statistics sharing, encrypted information sharing and Shared Authority Based Privacy-Preserving Authentication Protocol for access control of outsourced information.*

***KeyWords*: Data, Security, Encryption, Decryption, Steganography**

I. INTRODUCTION

CLOUD computing is hastily emerging because of the provisioning of elastic, bendy, and on-call for storage and computing services for clients. Cloud computing offers an effective manner to lessen capital expenditure and operational expenditure. This monetary gain is a major cause of the cloud recognition. However, SECURITY and privateness represent principal concerns inside the adoption of cloud technology for statistics garage. An method to mitigate those concerns is the usage of cryptography in which records are commonly encrypted earlier than storing to the cloud [1]. Whereas cryptography assures the confidentiality of the information towards the cloud, when the statistics are to be shared among a set, the cryptographic services want to be bendy enough to deal with specific customers, exercising the get entry to manage, and control the keys in an powerful manner to guard statistics confidentiality. The facts handling among a set has positive additional characteristics in place of two-party communication or the data handling belonging to a unmarried person. The current, departing, and newly becoming a member of organization participants can show to be an insider hazard violating facts confidentiality and privacy. While adopting a cloud for garage, the loss of manage over statistics and computation raises many safety concerns for corporations. The lack of manage over information and the garage platform additionally motivates cloud customers to maintain the get admission to manipulate over information (person information and the facts shared among a collection of customers via the general public cloud).The cloud consumer encrypts the statistics earlier than storing to the cloud, this guarantees cloud doesn't study any facts approximately purchaser's records. The get admission to rights are given to one-of-a-kind users by means of dispensing key used for encryption. However, this can bring about immoderate load over clients. By placing a third birthday celebration in between customer and cloud and delegating all operational loads to a third party will help to decrease load from the consumer. But whilst doing so there may be a possibility that 1/3 birthday celebration may additionally show malicious conduct. Hence there should be an technique to triumph over this. In this paper, we advocate a method named Secure Data Sharing in Clouds through limiting agree with in Third birthday party/Server that offers with the aforementioned protection. It helps to limit consider in third birthday celebration/server. While delegating a few operational load to a third party this approach guarantees statistics confidentiality. For this the concept of layer encryption is used where decrease layer encryption is finished through the records proprietor and top layer encryption is achieved by means of 1/3 party. The owner presents the authority of record get right of entry to to user through proving key used for decrease layer encryption, whilst encryption or decryption of the report. Hence, by using keeping manage over operations returned to statistics proprietor this method helps to hold confidentiality [2].The departing member cannot decrypt the statistics on its own as he/she will not able to get a key used for lower layer encryption from records owner. Similarly, no frequent decryption and encryption are wished for new consumer inclusion and person's departure.

II. DATA SECURITY OVERVIEW

Data safety is essential to shielding confidential statistics, respecting the privateness of studies topics, and complying with applicable protocols and requirements. Even reputedly de-diagnosed facts can be re-identified if sufficient specific characteristics are covered.1 Additionally, the facts discovered on this technique will be adverse in surprising ways. For instance, computer scientist Arvind Narayanan successfully re-diagnosed a public-use de-recognized information set from Netflix. Through this, he changed into capable to deduce viewers' political possibilities and other potentially sensitive data. Many research universities offer assist and guidance for records safety via their IT

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A New hybrid Squirrel Search Algorithm and Invasive Weed Optimization Algorithms for Skin Lesion Cancer Classification

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Abstract— *Skin disease is a primary hassle amongst people global. Different learning algorithm getting to know. Strategies can be implemented to perceive lessons of pores and skin sickness. Accurately diagnosing skin lesions to discriminate among benign and malignant skin lesions is critical to make certain suitable affected person treatment. Skin malignant growth is one of most dangerous maladies in people. As per the high closeness among melanoma and nevus sores, doctors set aside substantially more effort to explore these sores. This paper displays another technique dependent on enhancement calculation to order and foresee skin malignant growth maladies tried utilizing certifiable disease datasets. This philosophy going to joins new two sort of calculation. One is squirrel search algorithm(SSA) and another is invasive weed optimization (IWO)algorithm to arrange and anticipate malignant growth prior. The proposed framework is assessed by arranging and expectation malignant growth sicknesses in skin sore disease datasets and assessment measures. The outcomes are thought about with (convolution algorithm)SVM execution benchmark. Framework can defeat to diagnosing the malady rapidly and exactness. Contrasting with other calculation proposed calculation has more precision.*

Key Words: **IWO, SVM, SSA data set, Analysis, Clustering, Accuracy**

1. INTRODUCTION

Information mining is the procedure where esteemed data is separated from the enormous dataset. It has arrived at the high development over recent years. Because of the convenience of information mining approaches in wellbeing world, it has become the great innovation in medicinal services area. Malignant growth is a speculatively last ailment caused fundamentally by conservational issues that change qualities encoding basic cell administrative proteins. Resultant Many highlights of the cutting edge Western eating routine (high fat, low fiber content) will expand malignant growth recurrence.

2. METHODOLOGY SYSTEM IMPLEMENTATION

The following actions are carried out in the proposed system. They are;

1. Dataset Acquisition

2. Preprocessing

3. Feature Selection

4. Disease Diagnosis

5. Evaluation Criteria

2.1 DATASET ACQUISITION

In this module, transfer the datasets. The dataset might be microarray dataset. Accumulate the information from emergency clinics, server farms and disease inquiries about focuses. The gathered information is pre-handled and put away in the information base to fabricate the model.

2.2 PREPROCESSING:

Data pre-handling is a significant advance in the information mining process. The expression "manure in, trash out" is for the most part relevant to information mining and machine ventures. Information gathering strategies are regularly shakily controlled, coming about in out-of-go values, inconceivable information blend, missing qualities, and so forth. Investigating information that has not been deliberately screened for such issues can deliver equivocal outcomes.

2.3 FEATURE SELECTION:

In this module is utilized to choose the highlights of the given dataset. Credit choice was performed to decide the subset of highlights that were exceptionally related with the class while having low inter correlation.

2.3 DISEASE DIAGNOSIS:

Based on the values acquired from training phase, the performance of the NN network is analyzed to obtain appropriate values for testing phase. In order to find the optimum structure, the NN network performance has been analyzed for the optimum number of hidden nodes and epochs. For this situation, the epochs will be set to a definite preset value. Then, the NN network was trained at the appropriate range of hidden nodes. The number of hidden nodes that have given the best performance is then selected as the optimum hidden nodes. After that, by fixing the optimum number of hidden nodes, the epochs will be analyzed in a similar way to obtain the optimal number of periods that container give the highest or best accuracy.

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Sewer Effluent Gas Monitoring System Using Reconfigurable Architecture

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ABSTRACT

Signification decline of the world it's essential that acceptable of securities are to be executed in work. The reconfigurable architecture used for detection of toxic gases. Most of the sewer form toxic gases .it's key idea of this occupation is flow of the architecture use in Field Programmable Gate Array(FPGA),the detecting of toxic gases, indicating system. The harmful gases similar to many gases are available in underground but specific risk gases are the hydrogen sulfide, carbon monoxide, and methane will be sensing the corresponding sensors and it's displayed each and every second in process of personal computer. This work continuously monitoring the value same time values are exceed the normal level to indicating the alarming is send to formal person through the RF modules. So sewer effluent system is used to controlling, monitoring, and indicating risk of problem in the drainage works. The system useful to make a smart function as well as reduce the human death.

Keywords: Toxic gases, Field Programmable Gate Array (FPGA), RF Modules.

I. INTRODUCTION

In recent year fast-growing the technology and also population, they to take care about the environment factors in condition. The infected environment and thereby minimizing the quality of the immediate. Even though there are several types of toxic west such as soil, air and water pollution out of this air toxic west create as the serious impact i.e., odorless, colorless .This is a growing claim for the environmental toxic west monitoring and controlling system. In this view on the regularly expanding contamination sources with poisonous gases, these frameworks ought to have the offices to distinguish and evaluate the sources quickly. Dangerous gases are one that causes genuine wellbeing impacts. So VLSI configuration utilizing FPGA, with the end goal of recognition of unsafe gases spillage. Toxic gas and fumes of major risk factor for chemical manufacturing industrial employees. Sensors that detect level of gases are of deep importance for personnel to carry in an industrial location. In many of this location, it is often mandatory for industrial workers to carry these sensors. These gas sensors capable of wireless_communications significantly increases the safety of industrial workers while providing many more advantages at the same time. Poisonous gases and exhaust have roots in the ignition of specific powers or from direct production. The two poisonous gases most ordinarily answerable for damage by inward breath, carbon monoxide and hydrogen cyanide, assume significant jobs in smoke inward breath damage. In spite of the fact that inward breath of these mixes is normally unintentional, these mixes are likewise connected with intentional damage by endeavored suicide or the death penalty.

II .BACKGROUND AND RELATED WORKS

[1] In 2019 Nitin Asthana, Ridhima Bahl proposed that smart solutions to monitor poisonous sewage gases and works on a system of live sewage level detection and monitoring. The information is then forwarded along with different gas ppm values indicating whether it is safe for the worker to clean or work in that environment. The remotely placed IoT monitoring equipment and IoT platform are integrated to create the system .the receiver collection of information from IoT.[2] In 2018 Raimar J. Scherer ,Sven Spieckermann ,Ngoc Trung Luu ,Ilka Habenicht ,Peter Katranuschkov stated that the system is provided by a dynamic multimodal ensuring interoperability of all system components and Supplying simulation tasks with the necessary building and

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High Rate Structured Error Correcting Code For Realtime Wireless Optical Communication

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***Abstract*– Free Space optical communication is the open medium and free to use full outdoor space through wireless communicationsand it has a higher capacity than that of the RF system. The performances of the FSO communication system are mainly affected due tothe atmospheric turbulence. To solve these problem the two Error Correcting Codes are used,1)low density parity check(LDPC)coding,2)Viterbi coding in these method's the computation complexity is very high.To overcome this problem, we proposed a modified decoding algorithm using LDPC code and Viterbi code.This modified algorithm used her can reduce the computational complexity effectively, and improve the efficiency of the Free Space Optical Communication. Finally, from this simulation results we can easily see thatBER and Throughput is improving by this.**

Keyword – LDPC Code; Viterbi Code;Offset-Base Decoding algorithm; Free Space Optical Communication; Error Correcting Code;SNR;Throughput.

I.INTRODUCTION

The main thing in Free Space Optical communication system is that it utilizes air as a medium which helps to transmit signal from one end (transmitter) to opposite end(receiver).Without use of wire the Light emission travel from one spot to other spot. It's very clear that the capacity of Free space optical communication is high than the Radio frequency. A huge number of clients can make use of it and consequently huge data transfer capacity applications can be supported.

FSO framework is moving in very quick pace in the on-going days mainly because of its wide advantages, they are easy and fast installation of the link cost free activity, has a high security in transmission and also have capacity to transmit more number of bits every second, duplex transmission. The innovation in Free Space Optical (FSO) communicationcan move exceptionally high information bit and furthermore can transmit sound, video and information. Free Space Optical (FSO) innovation is firmly affected by different climate conditions like downpour, cloudiness, haze and snow. Apart from this the principle climate situation to be seemed into is the turbulence and scattering which degrades the transmitted signal level extensively and leads to huge bit errors price or signal degree discount at the receiver cease. But in actual time distortion in optical communication comes in the shape of atmospheric turbulence. Its impact degrades the communication path and rise up the bit error charge.

Various varieties of Error Correcting Code are utilized in Free Space Optical and digital communication community. The codes are Linear block code, Convolution code, Binary cyclic code, The Bose, Chaudhuri, and Hocquenghem(BCH) code, Reed Solomon code, Hamming code, Turbo code and Low Density Parity Check (LDPC) code. All the codes range from every other online

idea of their implementation and complexity. In order to have a dependable and right verbal exchange with aTolerable Bit Error Rate (BER) and Throughput these codes are used. Forward Error Correction codes has come out in order to find and correct a few amount of error in the communication system. Detectionand correction of some limited range of errors withoutretransmitting the information is called Forward Error Correction.

BASIC BUILDING BLOCK OF FSO:

Free space optical communication system has a transmitter, open atmospheric medium and a receiver end. In this paper, Information are communicated via optical wireless system and they are modulated by using algorithm like LDPC and VETERBI code in the proposed system. The two kinds of optical light source are Light Emitting Diode (LED) and Laser Diode (LD). LEDs have a higher yield with wider bandwidths, implying that they can deliver a broad range of less-concentrated light.The FSOC transmitter and receiver are

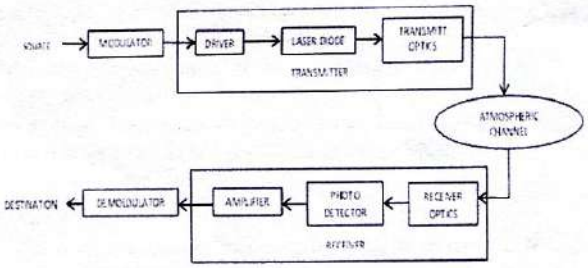

Fig 1. Block Diagram of FSO System

configured to transmit and receive the optical signals that are propagating in free space. Transmitter converts electrical signal from driver circuit into optical form are transmitted over the atmospheric channel.When optical beam propagates via atmospheric channel, it's far heavily stricken by the atmospheric turbulence impact. After attaining the necessary correction, the detector at the receiver converts the obtained optical signal into electrical sign.

Factors Influencing FSOC:

Here the medium of transmission in FSOC is free space, so there are many challenges faced in implementing the Wireless optical communication as shown in Fig.2. They phase challenges in wireless optical communication due to changes in various weather conditions and many others.Atmospheric turbulence and others results in fluctuations, decrease the intensity of beam and degradation of the optical beam.

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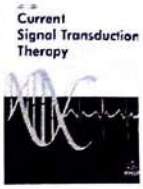
RESEARCH ARTICLE

BENTHAM SCIENCE

Channel Scheduling Based on Orchestrator Live Node-Wavelength Reservation for Optical Burst Switching Networks



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Abstract: ***Background*:** Dedicated wavelength utilization and the isolation of control plane from the data plane are the important features in the design of Optical Burst Switching (OBS). The contention in bursts, link congestion and the reservation cause the burst dropping in optical networks. The slotted time and the burst assembly models incorporate the wavelength assignment and the channel reservation schemes to reduce the dropping probability. The reservation of resources prior to burst arrival and the additional delay due to the burst assembly and the offset time are the major issues in the reduction of probability. Besides, the traditional one-to-one packet transmission consumes more time due to a large number of packets handling.

***Materials and Methods*:** This paper proposes the novel OBS model that incorporates the three processes such as Open-Flow (OF)-based Orchestrator Live Node (OLN) modeling, fuzzy logic based ranking and the offset time-based reservation (without/with void filling) to overcome the issues in the traditional methods. Initially, the OLN modeling based on OF analysis includes the Flow Information Base (FIB) table for the periodical update of the link information. The fuzzy logic-based ranking of channels followed by OF-OLN predicts the status of the wavelength such as free, used and conversion. Based on the status, the channels are reserved without and with void filling to schedule the bursts effectively. The reservation scheme employs the Offset-Time Burst Assembly algorithm to allow the resource reservation prior to burst arrival. Through these processes, the reuse of wavelength and the reallocation of resources are possible in OBS.

***Results & Conclusion*:** The controlling of maximum burst transfer delay by the OTBA efficiently reduces the end-to-end delay for data traffic. The comparative analysis between the proposed OLN-WR with the existing Hybrid Burst Assembly (HBA), Fuzzy-based Adaptive Threshold (FAT) and Fuzzy-based Adaptive Hybrid Burst Assembly (FAHBA) in terms of end-to-end delay and transmitted amount of bursts assures the applicability of OLN-WR in scheduling and communication activities in OBS networks.

Keywords: Burst assembly, channel reservation, Optical Burst Switching (OBS), scheduling, void filling, Hybrid Burst Assembly (HBA).

1. INTRODUCTION

Optical Packet Switching Networks (OPSN) are the most sophisticated architecture for future optical networks in which the packets are transmitted along with the band control information. The lack of optical buffers and the reservation logic initiates the design of Optical Burst Switching (OBS). The status of the wavelength, the channels and the time consumption for burst transfer are the pre-requisite in the design of OBS. With the features such as relaxation in synchronous requirements, absence of buffers at core node and dynamic network traffic handling, the OBS is the most applicable in practical applications compared to OPSN [1]. The mismatches in the speed of bursts and control packet, delayed acknowledgment and the burst losses in OBS affect the throughput adversely. The evolution of various mechanisms such as assembly, channel reservation, burst scheduling and the contention resolution addresses the issues of delay and scheduling effectively.

Due to the heavy traffic size, the reuse of wavelength and the reallocation of resources are the major issues in the traditional mechanisms.

During the burst assembly, the creation of variable packets into bursts under the single label and the decoupling of transmission of the control header are the major issues in the OBS design. Burst assembly algorithms [2] are categorized into time and length based. In a timely fashion, the counter is initiated for the arrival of packets and it reaches the threshold

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An Enhanced Proactive Transmission Protocol for Optical Burst Switching Networks

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Abstract: Due to provision of connectionless and tremendous transmission service, Optical Burst Switching Network (OBSN) becomes the most challenging task for enabling a reliable as well as congestion free communication. So, different communication protocols are developed in the traditional works, but it has the following drawbacks: inefficient, reduced throughput, increased delay, and bandwidth consumption. To solve these problems, this new protocol, namely, Multiple Path Transmission Protocol (MPTP) is developed in this work. It integrates the functionalities of multiple-path routing and Transmission Control Protocol (TCP) Vegas. Here, the wavelength reservation is mainly performed for channel reservation during communication. Moreover, the proposed MPTP efficiently avoids the congestion and data retransmission by selecting multiple paths. The conversion path is identified for detecting the node failures, which increases the throughput of the network. During simulation, three different architectures such as National Science Foundation Network (NSFNET), Capacity Optical Transmission Networks (COST239), and Advanced Research Projects Agency Network (ARPANET) are considered for evaluating the performance of the MPTP technique. Furthermore, the superiority of the proposed protocol is analyzed and compared with the existing protocols based on the measures of delay, burst time, In-band and out-of-band light paths.

Keywords: Optical Burst Switching Network (OBSN), Multiple Path Transmission Protocol (MPTP), Transmission Control Protocol (TCP) Vegas, Throughput Maximization, Congestion Avoidance, Wavelength Reservation, and Multiple Path Routing

1 Introduction

Optical Burst Switching Network (OBSN) is a new technology [1] that is mainly developed to handle both the direct and indirect multimedia traffic in an efficient manner. Due to the multimedia applications, such as internet telephony, digital audio, and video conference, there is an increasing demand for bandwidth in optical networks [2, 3]. The structure of OBSN is depicted in Fig. 1, in which the packets are gathered into burst based on its intrinsic features. It separates the operation of burst switching and data transmission based on the payload. The key factors of using OBSN [4, 5] are as follows:

–It efficiently reduces the network overhead
–It has the ability to handle the bulk traffic with low-priority bursts.
–Also, it integrated the benefits of both optical circuit and optical packet switching.
–It does not require any additional hardware.
–Finer contention resolution.
–Easy to deploy

1.1 Problem Identification

The major problem that occurs in an optical network is wavelength conversion. So, the same wavelength is used for all links in the route [6]. Normally, the OBS network is bufferless, where each data can burst based on the process of one way signaling resource reservation protocol [7]. So, the burst loss occurs by high utilization of network resources, and random contention. It leads to TCP false congestion with increased packet loss events,

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Using Fuzzy Inference System for Interference Mitigation in Cognitive Radio based Heterogeneous Wireless Sensor Network(FIS-CoRHAN)

T. Shanthi, E. Sakthivel, M. Arunraja

Abstract: ***Cognitive Radio based Heterogeneous Wireless Sensor Network (CoRHAN) is an innovative multi-layered infrastructure approach in wireless engineering which incorporates different communication modes over large geographical area. CoRHAN employs cooperative communication among sensor nodes and cognitive radio to ensure an optimized communication experience for users. It shares radio resources fairly and efficiently by integrating multiple networks together. Challenge in such network is the ability to instantly detect interference on the frequencies being used and quickly tune to other better frequencies for communication reliability. In this paper, we have proposed an enhanced CoRHAN using Fuzzy Inference System (FIS). FIS is applied to mitigate the fading frequencies due to co-channel interference. It helps to sort out the best frequency channel among the selected cooperative spectrum sensed channels. Prototype was developed to demonstrate the proof of concept and analyze the feasibility and practicality of using FIS-CoRHAN technique in Cognitive Radio based Heterogeneous Wireless Sensor Network. Simulation results show that our solution achieves better performance when compared to existing CoRHAN approach substantially satisfying the robustness constraints.***

Keywords : Channel Sensing, Channel Switching, Cognitive Radio, Fuzzy Inference System, Heterogeneous Wireless Sensors, Interference Mitigation.

I. INTRODUCTION

Heterogeneous Wireless Sensor Networks (HWSNs) have been widely deployed for extensive range of IOT applications such as smart city etc. Low cost, simplicity and broadcast characteristics of wireless senor nodes have further accelerated the deployments of HWSNs. Heterogeneous wireless systems cooperate with each other to provide ubiquitous "always best connection" to users. Introducing a CR science into a HWSN is one way of analyzing the radio capability in a given geographical area. Cognitive Radio supports multiple protocols and air interfaces facilitating the convergence of HWSNs. Cognitive Radio based Heterogeneous Wireless Sensor Network (CoRHAN) [1] is an innovative multi-layered infrastructure approach which incorporates different communication modes in wireless engineering. It employs cooperative communication by integrating sensor nodes and cognitive radio among multiple networks and sharing radio resources fairly and efficiently to ensure an optimized communication experience for users. In CoRHAN the sensor nodes in a radio access network serve to send data to CR enabled node (acts as gateway - it collects, stores and transmits data from its neighbor sensor node to Data Acquisition System) which performs spectrum sensing and channel switching to improve the communication reliability.

Need for IOT applications have led to unrelenting growth in the usage of smart and personal wireless communications systems. With interference being the primary limiting factor - unprecedented level co-channel interference (signals transmitted from multiple networks which operate in close proximity cause interference to each other) negatively impacts coverage, reliability and performance in such systems. Major obstacles to high capacity transmission (in a power and bandwidth limited wireless communications) are random propagating channels, limited radio spectrum, fading channel and inter-symbol interference. Several recent studies have addressed burstiness and interference in wireless links. Ghasemi investigated the fundamental limits of spectrum sharing with interference constraints in fading environments [2]. Zhang et al [3]., considered an opportunistic channel sensing and access in cognitive radio networks describing the time slot when sensing is imperfect and the number of channels users can access at a time by deriving logarithmic regret performance for different scenarios. Kannan Srinivasan et al., proposed a metric to quantify link burstiness, impact on protocol performance and achievable improvements in transmission cost [4]. However, these solutions cannot react to instantaneous (dynamic) changes in the channel condition. Spectrum occupation can change rapidly resulting in unfavorable channel conditions; challenge is to find better channels to maintain communication.

Aim of this research work is to fully utilize the best of different wireless technologies to provide more reliable radio services effectively through optimal radio selection scheme. Primary focus lies in reducing harmful interference and providing more reliable radio services among various

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HEB

Smart Caretaking System for Uncomplainable Patients and Babe in Arms Using IOT

CASS

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***Abstract*—The current number of working people is greatly increased. To care a baby or a elderly people is really the toughest one. So most of the people send their babies to baby care center and elder people to the old age homes. In order to minimize this effect we propose a new model that is smart caretaking system. IoT plays vital role in smart world thus it also produce the solution for baby care and also the person who is unable to talk or communicate. The smart system used to monitor the baby and patients all over the day. It has some tiny cameras, smart sensors, smart robotic arm for milk feeding and give foods etc. It has some android application to provide a ideas such that what baby is doing, whether the baby is crying or not, Urine state of the baby and elder people. For the babies we will design a smart cradle it has a swing capability. Depending upon the eyeball movement and crying state the cradle will move faster and slower .If a baby is slept it stops to swing. This is called as smart cradle. It is the intelligent system for the working mom in a busy life schedule. Smart bed cares the elder people who cannot communicate.**

***Keywords*—Smart cradle, Smart bed,Arduino cameras, Robotic arm,Sensor set**

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Experimental Study of High Velocity Oxygen Fuel Sprayed Cr_3C_2-Ni-Cr-B-Si Coatings on Inconel 718 Using Design of Experiments

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Keywords: HVOF coating, Inconel 718, DOE, Porosity, Microhardness.

Abstract. In the present study, D-optimal based mixture design of experiments (DoE) is used to find the optimum powder mixture for High Velocity Oxygen Fuel (HVOF) coating. Twenty five experimental trials are performed by varying the powder mixtures based on mixture design. Cr_3C_2, Ni, Cr, B, Si powder mixtures are deposited on Inconel 718 substrate by HVOF process. The responses porosity and hardness are determined by cross-sectioning the specimens. The effect of powder mixtures on coated samples are characterized by X-ray diffraction, optical microscope, Vickers hardness tester and Scanning electron microscope. The optimal powder mixture is determined to obtain minimum porosity and maximum hardness and the confirmatory experiment confirms with the predicted results. From the analysis it is observed that Cr_3C_2, Ni and Cr are the major factor which influences the porosity and hardness followed by B and Si respectively.

Introduction

HVOF coating is being performed on the substrate material that needs protection against wear, corrosion, high temperature oxidation, or combinations of these. In HVOF coating, the coating material is supplied either in powder or wire form is melted, the material formed into small droplets and sprayed onto the surface to be coated at high velocity by a heat source. The high kinetic energy of the particles with sufficient amount of heat melts the coating material to produce low-porous and high dense coatings. At high temperatures and oxidizing gas atmosphere the metals and alloys suffer due to accelerated oxidation. High temperature oxidation is observed as the major reason for the degradation of material when exposed to high temperature. The degree of degradation is more vigorous if the environment to which the material exposed is more aggressive. The weakening of the alloy and lowering of load bearing capacity occurs due to the exposure of metal at high temperature environment [1-2]. High temperature oxidation causes degradation of material which is one of the major failure of components of gas turbine. Superalloys used for high temperature applications are unable to satisfy simultaneously the strength requirements, high temperature oxidation and corrosion resistance, hence protective coatings of super alloys are needed [3]. Ni-based superalloy is frequently used in high temperatures applications due to its high strength, corrosion resistance and good surface stability. Inconel 718, a typical nickel chromium superalloy is employed in high temperature applications upto 650°C [4]. To improve the service life of the components under severe environments the components require excellent resistance to hot corrosion and wear as well. To attain this, suitable coatings have to be applied on the surface which has corrosion and wear resistant property and also economical. The surface coating protects against wear and oxidation and the base materials take care of the strength requirements [5-6]. In recent engineering applications, thermal spraying is used to form nickel based alloy coatings. The advantage of thermal spraying methods is that the coating can be done on any type of geometry without much difficulty with improved mechanical properties in terms of hardness, toughness, wear resistance and corrosion resistance to meet applications requirements.

Thermal spray coatings (TSC) methods are widely used for improving the wear prope[illegible] materials. Many techniques like plasma spraying, detonation spraying, wire arc spraying [illegible] available, among which HVOF is most widely used due to its higher efficiency [7-8].

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Application of Pin-on-Disc Technique For The Study of Wear Behaviour in Aluminium Composites

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ABSTRACT

Light alloys, mainly aluminium and titanium, are commonly used in different manufacturing fields especially because of their high performance weight rate, their excellent physical-chemical properties and their advantageous economic cost. Wear can be defined as the progressive loss of substance resulting from mechanical interaction between two contacting surfaces. Wear is usually caused by different mechanisms, they are adhesive, abrasive and fatigue wear were considered to be predominant parameters or the controller of the process. The project work aims to determine the wear behaviour, especially the abrasive wear involved in a machining process. Abrasive wear occurs when hard particles penetrate a softer surface and displace material in the form of elongated chips. In a pin-on-disc wear tester, a pin is loaded against a flat rotating disc specimen such that a circular wear path is described by the machine. The machine can be used to evaluate wear and friction properties of materials under pure sliding conditions. The wear study was analysed using Pin-on-Disc test. The results compared with the traditional methods, the Pin-on-Disc test based on the wear area can explain the tool wear process more reasonable.

Keywords: Pin-on-Disc, Aluminium Composites, Wear, Friction, Tribology

INTRODUCTION

The word tribology means "the science of rubbing" is derived from a Greek word "Tribos." Surface interactions in a tribological interface are highly intricate, and their understanding requires knowledge of various disciplines including solid mechanics, fluid mechanics, thermodynamics, heat transfer, materials science, rheology, lubrication, machine design, performance and reliability [1]. The machinability is improved with increase in graphite content. The addition of alumina in aluminium composites increases the wear rate and hardness of the composites [2]. The sliding wear behaviour of Al2024-Beryl particulate composites for different weight percentages of beryl particles. This microstructure study clearly reveals nearly uniform distribution of beryl particulates in the Al2024 matrix alloy [3]. The micro hardness of composites increases as reinforcement content increases in the matrix alloy. The incorporation of beryl particles into the matrix alloy improves the sliding wear of

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Influence on Machining Characteristics of Duplex Stainless Steel 2205 Grade

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ABSTRACT

Today's manufacturing industries is to produce low cost, high quality products in short time. Quality plays a major role in today's manufacturing market. From customer's viewpoint quality is very important because the quality of product affects the degree of satisfaction of the consumer during usage of the product. Duplex stainless steel offers excellent resistant to corrosion and very high mechanical strength. In the present work, the machining cutting parameters (cutting speed, feed rate and depth of cut) optimized to evaluate high material removal rate and minimum surface roughness. Taguchi optimization methodology, which is applied to optimize cutting parameters in turning operation when machining duplex stainless steel 2205 grade with carbide insert. Analysis of variance (ANOVA) shows the different parameters which provide the significant impact on the values of surface roughness and material removal rate. The analysis also shows that the predicted values and calculated values are very close, that clearly indicates that the developed model can be used to predict the surface roughness and material removal rate in the turning operation.

Keywords: Machining, DSS, Surface roughness, MRR, Taguchi's DoE

INTRODUCTION

Duplex stainless steels can be defined as a family of stainless steels whose structures are approximately 50% austenite and 50% ferrite, and its physical properties are a combination of the ferritic and the austenitic grades. In addition to their relatively low cost, they combine the best attributes of both austenitic and ferritic stainless steels which provide high strength and ductility with good resistance to corrosion [1]. Therefore, they are most commonly used when a combination of high mechanical strength and high corrosion

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Machining of EN31 Steel Using Carbide Insert – A Statistical Approach

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Abstract

EN31 steel is alloy martensitic chrome steel (equivalent to AISI 52100 steel). The material is frequently applied where the wear resistance or high surface loading is needed. In this experimental analysis, an attempt has been made to inspect the impact of process parameter in turning of EN31steel. The quality measures namely, surface roughness (SR) was a key property in the functional performance and accuracy evaluation of machined parts; tool wear (TW) is generally a gradual process due to regular operation, the wear depends on material used, tool shape, machining parameters, lubricants, machining tool characteristics etc., were investigated using Taguchi's method. The outcome reveals that Taguchi's technique used for minimizing the SR and TW. Finally, ANOVA concept is employed for finding relative significance in percentage contribution. Comparison of the results found from Taguchi method and experimental analysis does not show significant difference.

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Keywords: EN31; Surface Roughness; Turning; Optimization; ANOVA

1. Introduction

In the recent trends of industrial research focuses on the optimization of process using the taguchi's based methods. The turning operation validates on quality targets namely, surface roughness and roundness [1]. L.B.Abhang et al [2] presented a method of Taguchi to investigate the effect of lubricant temperature in turning the steel. Fabricio Jose et al [3] suggested that the prediction of roughness using the taguchi orthogonal array based

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PERFORMANCE AND EMISSION CHARACTERISTIC ANALYSIS OF CUCURBITA PEPO L. AND TECTONA GRANDIS SEED OIL BIODIESEL BLENDS IN CI ENGINE WITH ADDITIVE

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ABSTRACT

Biodiesel is produced from the refined/edible type oils using methanol and an alkaline catalyst which is one of the environmentally friendly alternative liquid biofuels that has proven itself commercially, with international standards all around the world. In present investigation, mixture of two biodiesels in equal weight ratio namely *Cucurbita pepo.L (pumpkin)* and *Tectona grandis (teak)* seed oil was used for the synthesis of biodiesel with 5-ml Diethyl ether as additive. Performance test was made with the biodiesel blend using water-cooled, constant speed, CI engine, and emission characteristics were analyzed using a five-gas analyzer. It was observed that there was 35.5% increment in Brake Thermal efficiency and 25.8% reduction in Brake Specific Fuel consumption at maximum load for 200-ml pumpkin and teak biodiesel blend mixed to the diesel with additive. For this blend, it was observed at maximum load, the emission of Carbon monoxide reduced by 26.67% of diesel; Carbon di-oxide reduced by 12.96% and Nitrous oxide reduced by 26.57%. The emission gets increased in over load condition. Unburned Hydro Carbon emission and smoke opacity increased by 67.16 and 9.84%. The combustion characteristics of blended biodiesel with additive closely followed the diesel fuel operation. Hence, this blend was used as fuel in CI engine without engine modification.

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Cucurbita pepo L; Tectona Grandis; diethyl ether; transesterification; five-gas analyzer; brake thermal efficiency; brake specific fuel consumption; biodiesel blends

Introduction

The modern applications have planned to diminishes the nonrenewable energy source utilizes in power creation, transportation, and other distinctive force usage enterprises in view of the extension of development and to lessen ecological deformities (Masum et al. 2013). Bio-diesels are removed from the natural vegetables, waste oil, and animal fat that have expanded the higher intensity as contrasted to the nonrenewable energy sources (Berrios et al. 2007). The biodiesel is extracted from the oils by using transestrification production method. The transestrification response of mono-alkyl alcohols removed from either vegetable oil or animal fats are utilized in a large portion of the biodiesel creation strategy. The blended biodiesels indicate the reduction of NO, CO and CO_2 whereas polycyclic aromatic hydrocarbons (PAHs) emission was increased. Pumpkin oil and teak oil are few of the good nonedible oil crops for biodiesel productions. In any type of biodiesel preparations FFA oil content of less than 3% has been easily converted by using a catalyst (Shailendra, Agarwal, and Sanjeev 2008). TG Fruit is a drupe, globose, 5 to 20 mm in size, enclosed by an accrescent calyx with thick shaggy exocarp of matted hairs, epicarp inflated, spongy, and stellate pubescent, endocarp stony, 4-celled, seeds 1–4, oblong, and exalbuminous. The fruits ripen from November to January and fall

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Full Length Article

Performance and emission characteristics analysis of Elaeocarpus Ganitrus biodiesel blend using CI engine

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ABSTRACT

Researches in different countries have used predominantly seed oils for the production of biodiesel. In this research work, Elaeocarpus Ganitrus (EG) seed oil was used for the synthesis of biodiesel. Performance tests were carried out using biodiesel blends in single cylinder diesel engine and exhaust emissions were recorded using a five-gas analyser. EG biodiesel was blended with diesel in the ratios of 0.5%, 1%, 2%, 4%, 6%, 8% and 10% by volume. At full load, for B0.5 EG biodiesel blend (0.5% by volume), it was noted that 32.23% raise in Brake Thermal efficiency, 24.1% drop off in Brake Specific Fuel consumption, 50% decrease in CO emission, 15.25% decrease in CO_2 emission, 49.15% decrease in HC emission, 19.14% decrease in NO emission and 11.6% decrease in smoke density. It was noted for all blended biodiesels, the emission was lower than that of diesel. The combustion characteristics of blended biodiesel closely follow that of diesel.

1. Introduction

Biodiesels can be used as blended fuel with the diesel in diesel engines without any engine modifications. In addition, it can be used to reduce the emissions from the engine because the oxygen in biodiesel promotes clean combustion [1]. The world petroleum reserves are so unevenly distributed that many regions have to depend on others for their fuel requirements. The degrading air quality due to emissions is the main adverse effect of petroleum based fuels. All these factors necessitate continued search and sustainable development of renewable energy sources that are environmentally friendly [2]. In fact, at the 1900 world exhibition in Paris, Rudolph Diesel-the inventor of the Diesel engine, used peanut oil as the fuel for its demonstration and said, use of vegetable oils in engine fuels can become just as essential as diesel and coal tar products in the course of time [3]. The recent research has focused on development of the biodiesel which consists of biodegradable, nontoxic, and lower carbon level compared with the diesel. Instead of clean fossil fuel, blended biodiesels can be used for reducing the environmental emissions and increasing the possibilities of fossil fuels availability in future [4].

The biodiesel is extracted from digestible or non-digestible vegetables by using transesterification route. The blended biodiesel facilitate substantial reduction of NO, CO, CO_2 and HC emissions [5]. Transesterification was carried out on all oil samples using methanol and potassium hydroxide. Water washing was done followed by heating for removal of water [6]. Cold compressed 100% pure oil extracted from Elaeocarpus Ganitrus (rudraksha) seeds is used as a dietary supplement. Apart from its usage for internal healing, it is also applied externally as hair oil daily, removes dandruff and acts as hair conditioner, reduces acne and pimples. It also pacifies skin condition such as eczema, ringworm, removes itching and helps to heal faster. It is also used as bodies massage oil [7]. This research work shows presence of oil in rudraksha seed which was used for medicine. It was evident from the literature review that no research work has been undertaken using EG in biodiesel blends. This research work focuses performance and emission characteristics of the EG biodiesel blends.

2. Biodiesel materials and blends

2.1. Origin and distribution

Elaeocarpus ganitrus raise in tropical and subtropical regions at the prominence ranging from seacoast to 2000 m above the sea level. Rudraksha cultivation ranges in the area from the Indo-Gangetic Plain in foothills of the Himalayas to South-East Asia, Indonesia, New Guinea to Australia, Guam, and Hawaii. Rudraksha tree grow on mountains and hilly region of Nepal, Indonesia, Java, Sumatra and Burma all over the

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Investigation on Performance and Emission Characteristics of CI Engine Fuelled with Cucurbita Pepo L. and Prosopis Juliflora Seed Oil Biodiesel Blends

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Abstract

Recent researches of different countries have used traditional seed oils such as sunflower oil, soybean oil for the synthesis of biodiesel. In the present investigation, (pumpkin) Cucurbita pepo.L and prosopis juliflora seed oil was used for the synthesis of biodiesel. Since these are produced in large quantities in India, oil cost is low. Diethyl ether as additive was added to the above blend and performance and emission parameters were compared. Performance tests were conducted using biodiesel blend in water cooled, constant speed, CI engine and the emission characteristics were analyzed using a five-gas analyser. It was observed that there was 9.89 % increase in Brake Thermal efficiency and 14.35 % reduction in Brake Specific Fuel consumption at the maximum load for B20 blend with 5mladditive. It was also noted that emission of CO reduced by 0.65 % than that of diesel. CO2 by 10.3 % and NO by 21.1 % for B20 blend and further, emission of CO reduced by 14.3 %; CO2 by 13.8 % and NO by 25.83 % was noticed when additive was added to B20 blend. HC emission and smoke opacity increased by 33.8 % and 16.56 % respectively for B20 blend and increased by 26.47 % and 5.15 % for B20 blend with additive which indicates reduction of HC emission and smoke opacity by adding additive to biodiesel. The combustion characteristics of blended biodiesel (50:50 for Cucurbita pepo L and prosopis juliflora) with additive closely follow that of diesel. Hence this blend is used as fuel in CI engine without any engine modification.

Keywords: Cucurbita pepo L, Prosopis Juliflora, B20 biodieseel blend, Diethyl ether, Emission characteristics, 5-gas analyser.

1. Introduction

Bio-diesels are extracted from the organic vegetables, waste oil and animal fat that have increased the higher potency as compared to fossil fuels in current engineering researches [1]. The biodiesel plays a major role in India for the usage in commercial applications and also decreases the usage of non-renewable sources. Industrial

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Thermal performance analysis of a low volume fraction Al_2O_3 and deionized water nanofluid on solar parabolic trough collector

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Abstract
The present work analyzes the performance of unshielded receiver tube integrated solar parabolic trough collector where Al_2O_3/deionized (DI) water nanofluid of low concentrations was used as heat transfer fluid (HTF) element. Nanofluid is synthesized at various volume fractions starting from 0.2 to 1.0% with surfactant-free condition, by ultrasonic technique. Several researchers investigated the performance of higher nanofluid concentrations (1.0–5.0%) with and without surfactants on parabolic trough solar collector. The outdoor experiments are conducted for two HTF flow rates of 0.010 kg s^{-1} and 0.015 kg s^{-1}. When the nanofluid is subjected as HTF, the DI water acted as a base fluid. While DI water is allowed to flow through the absorber, it performs both as HTF and heat storage fluid. The synthesized nanofluid at various volume fractions is allowed to flow through the receiver for the purpose of analyzing the thermal performance and compare the results with DI water. The collector efficiency increases with the mass flow rate as well as the concentration of nanofluid. For 0.015 kg s^{-1}, the maximum efficiency was calculated as 59.13% (hourly) and 58.68% (average).

Keywords Alumina nanofluid · Deionized water · Concentration · Solar parabolic trough collector · Unshielded receiver

List of symbols

A	Area (m^2)
CR	Concentration ratio (−)
DI	Deionized (−)
D	Diameter (−)
F, R	Factor (−)
HTF	Heat transfer fluid (−)
I	Radiation (W m^{-2})
K	Thermal conductivity (W m^{-1} K^{-1})
$K(\theta)$	Incident angle modifier
L	Aperture length (m)
m	Mass (g)
Nu	Nusselt number (−)
Pr	Prandtl number (−)
Q	Heat gain (W)
Re	Reynolds number (−)
S	Solar flux (W m^{-2})
SPTC	Solar parabolic trough collector (−)
T	Temperature (°C)
U, h	Coefficient (W m^{-2} K^{-1})
USR	Unshielded receiver (−)
V	Volume (m^3)
W	Aperture width (m)

Subscripts

a	Aperture, ambient
b	Beam, tilt
bf	Base fluid
fi	Nanofluid inlet, inside heat transfer
fo	Nanofluid outlet
i	Inner
ins	Instantaneous
l	Heat loss
np	Nanoparticle
opt	Optical
r	Radiation loss
R	Heat removal

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Hot corrosion behavior of nanostructured and conventional HVOF Cr_3C_2NiCrBSi coatings on superalloy

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ABSTRACT

In the present work, optimized Cr_3C_2NiCrBSi nanostructured and conventional powder coatings are sprayed on to Inconel 718 material by high-velocity oxygen fuel coating process for enhancing the high temperature corrosion resistance. The cyclic hot-corrosion study is carried out on uncoated, conventional coated and nanostructured coated superalloy in the salt environment of Na_2SO_4 and 60% V_2O_5 at 900 °C. The weight change measurements are carried out after each cycle to investigate the hot corrosion kinetics of uncoated and coated superalloy using thermo gravimetric technique. The corrosion products of coated specimens are analysed using Scanning electron microscopy and Elemental mapping. Cr_3C_2NiCrBSi nanostructured coating provides dense coating compared to conventional coating. Compared to uncoated sample, Cr_3C_2NiCrBSi coating is found to be highly effective in corrosive resistance. The hot corrosion resistance provided by Cr_3C_2NiCrBSi coatings may be associated with the development of oxides of chromium, nickel, silicon and spinels of chromium and nickel.

Selection and Peer-review under responsibility of the scientific committee of the International Mechanical Engineering Congress 2019: Materials Science.

1. Introduction

Nickel-based superalloys are increasingly used in aerospace, nuclear power reactors, naval and turbine engine components due to its excellent oxidation and corrosion resistance, outstanding creep-rupture strength, superior mechanical and chemical properties [1,2]. In particular, Inconel-718 superalloy is being widely used in jet engines as blade materials and in high-speed airframe parts [3]. Deterioration of materials due to the reaction with surroundings is termed as corrosion and the corrosion rate that increases due to elevated temperature are called as hot corrosion. It is a form of enhanced oxidation which occurs at higher temperatures that affects the alloys exposed to hot combustion gases containing impurities. The contaminants such as Na, V, K, S and Cl in low quality fuels react with each other and deposits Na_2SO_4, K_2SO_4, KCl, NaCl, $NaVO_3$ and V_2O_5 at elevated temperature thereby causing more severe corrosion attack along with oxidation. As the common impurities in low-quality fuels, V, S and Na can interact at elevated temperature to form V_2O_5 and Na_2SO_4 deposits which are extremely corrosive to high temperature components of gas turbine engines [4,5]. The molten compounds begin to dissolve the oxide layer which is formed naturally that acts as a protective layer for the material, resulting in material deterioration [6]. To overcome this problem, the surface of the components has to be modified by introducing the metallic coatings. Usually, metallic coatings improve the life of the material by increasing its corrosion resistance [7]. Thermal spray coatings like flame spray, high velocity oxygen fuel (HVOF), high velocity air fuel (HVAF), plasma spray, Vacuum Plasma Spraying (VPS), detonation gun, etc. are being used for various applications. Among these thermal-spraying processes, HVOF coating enables deposition of relatively thick coatings offering good adhesion, good mechanical strength, improved hardness and toughness. The fast-moving particles and lower temperature in the HVOF process provides low porosity, lower degree of decarburization and good bond strength compared to other spraying techniques [8]. Likewise, it has been shown that HVOF technique is the best method for coating nanostructured materials that gets well merged to the substrate with minimum porosity [9].

The selection of material, powder composition, type of spray and coating parameters are vital to achieve the desired coating. Many researchers attempted HVOF coating with conventional and nanostructured on various materials. The nanostructured based powder coating provides enhanced properties like hardness,

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Oxidation resistance of Ni-Cr-TiO_2 powder HVOF coating on carbon steel at elevated temperature

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ABSTRACT

In this research a Chromium Carbide (Cr_3C_2)-based powder consisting of 80% Cr_3C_2 and 20% Titanium dioxide (TiO_2) is sprayed to SA 210 Grade C boiler tube material for better performance of power plant boilers. Cr_3C_2-TiO_2 coating is deposited by high velocity oxygen fuel (HVOF) process with powder particle of size 45 ± 15 μm. High temperature oxidation test under cyclic condition is performed in air environment up to 900 °C. The properties of specimen are characterized by optical microscopy, X-ray diffraction (XRD), scanning electron microscopy with energy dispersive spectroscopy (SEM/EDS). The results shown that the Cr_3C_2-TiO_2 coating exhibit excellent corrosion resistance at 900 °C compared to bare SA 210 Grade C boiler tubes and the coating also reduces the weight gain of the steel by about 50%. High temperature oxidation resistance imparted by Cr_3C_2-TiO_2 coating may be attributed to the formation of alloy phases during the powder processing and coating processes.

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1. Introduction

The boiler components in the power plant operate in aggressive environments and it gets affected due to degradation process. The degradation processes include molten salt attack, oxidation, deposit induced degradation and mixed oxidation. In coal fired boilers the tubes in the heat exchanger and other structural materials are damaged due to high temperature oxidation and it was identified as the major cause of the downtime (about 50–75%) [1].The maintenance cost for changing the damaged tubes was high and it was calculated up to 54% of the total cost of the production [2].Thermal sprayed coatings are currently used to reduce erosion and corrosion on a large number of components in various industries, including the energy conversion and utilization system such as coal gasifiers, combustion boilers, steam turbines and gas turbines [3–5]. Among the available thermal spray processes, the high velocity oxy fuel (HVOF) spraying technique is one of the most promising method capable of producing carbide cermet coatings with high density, strong adhesion to substrates, high cohesive strength and strongly limited reactions due to its moderate process temperatures and high gas velocities [6–9]. HVOF coatings are widely used in petroleum, boiler, aircraft and chemical industries besides others.

To combat the wear and to improve the life of the material, the coatings should possess certain properties like low porosity, high hardness, lower defects, high toughness and better adhesion to the substrate [1,10]. The high temperature corrosion remains as a major issue in the protection boiler steels and therefore several investigations are undertaken to resolve these issues [11]. Thermal spray of Cr_xC_y–NiCr provides excellent wear resistance against high temperature. Ni-Cr alloy provide a specific advantage of excellent corrosion and oxidation resistance and chromium carbide wear resistance [12]. Similarly, Titanium dioxide (TiO_2) powder is best suited for developing hard and dense coating to resist wear by abrasion. TiO_2 powder coating is also used for advanced applications like fuel cells, catalysts and solar cell [13]. Further the ceramic nature of TiO_2 and the low melting point (1855 °C) [14] are the specific advantages to be used in high velocity oxy-fuel (HVOF) process [15,16]. HVOF technique has jet temperature less than 3000 °C, and high velocities [17]. Hence, HVOF spraying is considered as more suitable method for thermal spray of TiO_2 ensuring reasonable wear resistance.

Many research articles addressed the oxidation behaviour for different coating powders using the HVOF method, for various materials [18–28]. Based on the literature review it is observed

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ANN and RSM models approach for optimization of HVOF coating

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ABSTRACT

High-Velocity Oxygen Fuel (HVOF) coating process is employed in many industries, not only for extending the life of the material, but also to improve or restore the dimensions/surface properties of the component, by spraying molten or semi-molten powder materials over the surface of the component. Porosity and Hardness are the significant properties required to assess the quality of coatings. In this research, response surface methodology (RSM) and artificial neural network (ANN) are used for optimizing the powder composition to obtain the desired response. Based on the mixture design, twenty-five HVOF coatings were performed and the data were used for training and testing the ANN. The composition of five powders, Chromium Carbide (Cr_3C_2), Nickel (Ni), Chromium (Cr), Boron (B) and Silicon (Si) were varied and performed HVOF coating to obtain minimum porosity and maximum hardness to serve in high temperature oxidation environment. Optical Microscope, X-ray diffraction, Scanning electron microscope, and Vickers hardness tester were used to carry out the cross-section analysis on the coated samples. Optimized powder composition was identified to achieve a dense coating. Response value obtained by RSM and ANN models indicate that the values obtained by "ANN Model" exhibit a better prediction over "RSM Model".

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1. Introduction

Super-alloys/heat-resisting alloys/high-temperature alloys are based on nickel, nickel-iron, cobalt – having a composite property of excellent strength and resistance to surface degradation. Super-alloys are widely used in space vehicles, heat exchangers, submarines and many other industries meant for nuclear, oil & gas and military sectors, where adverse operating conditions exist [1]. In a gas turbine, its blades are subjected to high thermal load, coupled with frequent oxidation and high-temperature corrosion attacks [2,3]. During service, the materials undergo various types of time dependent degradation due to long-time exposure to adverse operating environments, wherein it is advisable to resort to protective coating on the surface of materials [4]. Furthermore, surface coatings, including the thermal spray coatings (TSC) on components, with super-alloys, greatly improve surface-property, life and performance of the material. Amidst various TSC methods, 'HVOF coating technique' offers a superior quality coating, coupled with lower porosity, higher hardness and bond strength. Super-718 alloys are designed to provide required mechanical properties and withstand high temperature up to 800 °C. In light of the above, for this research, Inconel 718 is selected as base material [5–8]. Nickel-based powder coatings were employed along with other alloying elements, such as chromium, boron, and silicon. Chromium increases resistance to corrosion and oxidation at high temperatures and boron powder lowers the high-melting temperature. Coated substrate hardness can be increased by addition of boron and chromium, which combination leads to the formation of hard phases. Likewise, silicon is used to increase the self-fluxing properties. Also, Cr_3C_2 reduces the thermal stresses generated at a high temperature. Cr_3C_2, Ni, Cr, B, and Si powders are selected for 'HVOF coating', in order to achieve protection against abrasion, wear, erosion, and corrosion [9–11].

Design of Experiments (DOE) is a statistical method, used to design experiments within the controlled intervals to attain the desired response and help in investigating the complex relationship among the sprayed coatings, using a mathematical model [12–14]. The primary advantage of employing DOE is to identify the effect of input factors on response with less number of experiments [15]. Therefore, in this research, 'mixture design-based DOE' is used to develop experimental-matrix, by varying the composition of powders to conduct the experiments. Data

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Investigation on effect of machining parameters using TGRA approach for AISI 316 steel

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Abstract

Product quality is the index of quality characteristics mainly focused on surface roughness, in terms of superior properties like fatigue life improvement, corrosion resistance, aesthetic, etc. In mass manufacturing, the MRR is one of the concern in production area using the computer operated NC machines. The current research investigate the minimum surface roughness and maximum material removal rate using L9 orthogonal array with the process parameters involved in the machining operations. The material selection for this research is AISI 316 SS, turning experiments were conducted at different levels of speed in rpm, feed in mm/rev and depth of cut in mm. The selection of best optimal cutting condition is investigated in order to maximize the material removal rate and minimize the surface roughness. The grey relational analysis is employed, through that grey relational grade was obtained and used as a performance index to determine the optimal machining parameters. ANOVA concept is employed to find out the relative significance of machining parameters on performance measures.

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Keywords: Surface roughness; MRR; Taguchi DOE; ANOVA; AISI 316; GRA.

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Composites – microstructural and tribological characterisation

MICROSTRUCTURAL AND TRIBOLOGICAL CHARACTERIZATION OF Al/EGG SHELL ASH COMPOSITES PREPARED BY LIQUID METALLURGY PROCESS

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ABSTRACT

The objective of this present research study is to evaluate the mechanical characterization of composite materials, which were synthesized by a stir casting technique. AA6082 is chosen as matrix material and egg shell ash (ESA) particles as reinforcement. The base alloy and proposed composite specimens were subjected to hardness, tensile and wear test. Metallurgical characterization and worn surface of parent material and synthesized material were investigated by a scanning electron microscope (SEM). Mechanical properties like micro-hardness (HV) and ultimate tensile strength (UTS) of the developed composite materials were improved after the addition of reinforcement content. The microstructural changes in composites before and after inclusion of reinforcement is detailed in this article. Tribological behaviour of the composites was investigated by pin-on-

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Analysis of high temperature oxidation behaviour of SS316 by Al_2O_3 and Cr_2O_3 coating

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ABSTRACT

The main objective of this work is to evaluate the oxidation behavior of super heater material which is used in the High temperature application such as super critical boiler. High temperature application operates at elevated temperature range above 700 °C and 750 °C. At elevated temperature, oxidation occurs surface of metal which leads to failure of material. This turns the metal to corrode which interrupts and decrease its functionality of plant. Hence, the selective super heater material (SS316) is selected for this work. High temperature oxidation behavior is analysed by testing the material in tubular furnace in air environment at 700 °C and 750 °C. The material is tested in the tubular furnace by arranging the specimen in an order like without coating of metal surface, second one is with Aluminium oxide coating of metal surface and third one is Chromium oxide coating of metal surface. After that the tested specimens are characterized by SEM, EDAX. From that results suitability of the metal for high temperature application in power plant is recommended.

Selection and peer-review under responsibility of the scientific committee of the International Conference on Nanotechnology: Ideas, Innovation and Industries.

1. Introduction

Increasing the efficiency of energy production from coal fired power plants is one method to reduce the carbon dioxide emissions generated, and thus contain the global climate change. Increased level of CO2 in atmosphere derives mostly from combustion of fossil fuels (coal). Another method to reduce greenhouse gas emissions generated in combustion of fossil fuels is carbon capture and storage (CCS), which involves capturing the carbon dioxide from the fuel and pumping it to storage where it is not released to the atmosphere. Steam power plants equipped with CCS require considerably more auxiliary power than conventional boilers, so increasing the efficiency is an important step in making CCS economically feasible technology [1].

There are number of process adopted for coating technology, one among them and have a unique series is laser cladding; the technology is well recognized technique to obtain wear and corrosion resistance coatings for damaged parts. The process for obtaining two boride-containing nickel-based hard facing alloy coatings primarily composed of Ni–Cr–B–Si on carbon steel using a HPDL. After laser treatment the microstructure is composed of a matrix of –Ni with different inter-metallic depending on the initial composition of the powder [2].

To analyse the influence on the wear behavior of several factors such as load, temperature, presence of tungsten carbide in the powders and the type of thermal spray technique used were considered. Special attention has been paid in NiCrBSi alloys since they provide a high wear and corrosion resistance at high temperatures [3].

Ti–6Al–4V alloys are found to be increasingly used in load bearing bio implants due to their advantageous properties such as low density, high strength to weight ratio, greater corrosion resistance and excellent biocompatibility. The properties of Al_2O_3 – 40 wt% ZrO_2 ceramics and develop a composite coating on TAV alloy using atmospheric plasma spraying process for investigating their tribological properties. The result reveals that the Al_2O_3 – 40 wt% ZrO_2 ceramics composite coating can be a suitable choice for enhancing the wear behavior of TAV alloy [4].

The influence of hydrogen gas flow rate and Cr_2O_3 addition on the formation of α-Al2O3 in Al2O3–Cr2O3-based coating was discussed, the possible results from the research was stated to be, a little change in flow rate can influence the phase composition of

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Review of some Applications of Chitin/Chitosan with Metal/Metal Oxide Composite

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Abstract: ***Chitin and chitosan are biological polymers with promising commercial and biomedical applications. Researchers have long explored the properties and derivative functions of these two polymers. Because of their expansive use, chitin and chitosan are poised to become one of the most important natural resources in the future. Apart from the non-toxic and biodegradable properties of chitosan, using this polymer in manufacturing will promote sustainable industrial practices. Accordingly, the marine environment remains the main source of chitin and chitosan. Thus, these natural resources do not compete against other land resources.This review discusses the various applications of chitosan and compared with pristine Chitosan, Chitosan with metal/metal oxide composites are very efficient in Dye degradation, Antibacterial activity and Biosensor applications.***

Keywords: Chitosan, composite, nanoparticles, Biosensor, Antibacterial activity

I. INTRODUCTION

Chitosan is a linear polymer of α(1→4)-linked 2-amino-2-deoxy-β-D-glucopyranose and is easily derived by N-deacetylation, to a varying extent that is characterized by the degree of deacetylation, and is consequently a copolymer of N-acetylglucosamine and glucosamine.

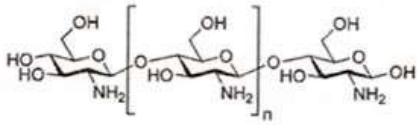

Figure.1 Structure of chitosan

Chitin is estimated to be produced annually almost as much as cellulose. Chitin and chitosan are the naturally derived abundant and renewable polymers and have excellent properties such as bio-degradability, bio-compatibility, non-toxicity and adsorption[1]. Commercial chitosan is derived from the shells of shrimp and other sea crustaceans[2]. Chitosan is produced commercially by deacetylation of chitin, which is the structural element in the exoskeleton of crustaceans (such as crabs and shrimp) and cell walls of fungi. The degree of deacetylation (%DD) can be determined by NMR spectroscopy, and the %DD in commercial chitosan ranges from 60 to 100%. On average, the molecular weight of commercially produced chitosan is between 3800 and 20,000 Daltons. A common method for the synthesis of chitosan is the deacetylation of chitin using sodium hydroxide in excess as a reagent and water as a solvent. This reaction pathway, when allowed to go to completion (complete deacetylation) yields up to 98% product[3].

The amino group in chitosan has a pKa value of ~6.5, which leads to a protonation in acidic to neutral solution with a charge density dependent on pH and the %DA-value. This makes chitosan water soluble and a bioadhesive which readily binds to negatively charged surfaces such as mucosal membranes. Chitosan enhances the transport of polar drugs across epithelial surfaces, and is biocompatible and biodegradable. Purified quantities of chitosan are available for biomedical applications.

Chitosan and its derivatives, such as trimethylchitosan (where the amino group has been trimethylated), have been used in nonviral gene delivery. Trimethylchitosan or quaternized chitosan has been shown to transfect breast cancer cells, with increased degree of trimethylation increasing the cytotoxicity; at approximately 50% trimethylation, the derivative is the most efficient at gene delivery. Oligomeric derivatives (3-6 kDa) are relatively nontoxic and have good gene delivery properties[4].Chitosan with iron oxide composites have recently attracted much attention since surface functionalization of the nanoparticles allows their covalent attachment, self assembly and organization on surface making them promising for the loading of biomolecules in a favorable microenvironment for the development of a biosensor[5]. In this review, discussed the synthesis of chitosan and chitin/ chitosan composite used for various applications.

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Split and non-split eccentric domination in fuzzy graphs

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Abstract:

In this paper split tand non-split eccentric dominating sets of a fuzzy graph are defined.We have also discussed spli tand non-split eccentric dominatinon numbers of a fuzzy graph. Bounds are given for some classes of fuzzy graph.

Key words:

Dominating set,eccentric node,split and non split eccentric dominating set.

1.Introduction

The concept of fuzzy graph was proposed by Kaufmann, from the fuzzy relations introduced by Zadeh[4]. Rosenfeld (1975)[8] introduced the notion of fuzzy graphs and several fuzzy analogs of graph theoretic concepts such as paths, cycles, and connectedness. In the year 1998, the concept of domination in fuzzy graphs was investigated by A. Somasundaram,and S.Somasundaram[3]. In the year, 2004 A.Somasundaram investigated the concepts of domination in fuzzy graph – II. In the year 2003, A.NagoorGani and M. BasheerAhamed investigated order and size in fuzzy graph. N.Janakiraman,M.Bhanumathi and S.Muthammai introduced Eccentric domination in fuzzy graphs[1].M.Bhanumathi and sudha Senthi also discussed split and non-split eccentric domination of graph[10].

2.Basic Definitions:

Definition:

A fuzzy graph $G=(\sigma,\mu)$ is a set with two functions $\sigma:V\to[0,1]$ such that $\mu[x,y]\leq\sigma(x)\wedge\sigma(y)$ for all $x,y\in V$. We assume that V is finite and nonempty, μ is reflexive and symmetric. Also we

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The Equitable Bondage and Non Bondage Number of a Fuzzy Graph

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ABSTRACT:

A subset D of V is called an equitable dominating set if for every v∈V-D there exists a vertex u∈S such that uv∈E(G) and $|\deg(u)-\deg(v)|\leq 1$.The minimum fuzzy cardinality of such a dominating set is called the equitable domination number and is denoted by $\gamma_{fe}(G)$.In this paper ,we define the equitable bondage number $b_e(G)$ of a fuzzy graph G to be the fuzzy cardinality of a smallest set $X\subseteq S$ such that $\gamma_{fe}(G-X) > \gamma_{fe}(G)$.Sharp bounds are obtained for $b_e(G)$ and the exact values are determined for some standard fuzzy graphs.

KEYWORDS:

Equitable domination number, bondage set, bondage number, equitable bondage set and equitable bondage number.

1 INTRODUCTION:

Euler first introduced the concept of graph theory in the year 1736.Cockayne and Hedetniemi[1] introduced the domination number and the independent domination number of graphs was introduced by ore and Berge[2]The notation of domination in fuzzy graphs was introduced by A.Somasundaram and s.Somasundaram[3] .In 1990, the concept of the bondage number in graphs was introduced by Fink,Jacobson,Kinch and Roberts[4].Later in 1994 ,Hartnell and Douglas.F.Rall [5] discussed about the bounds on the bondage number.Kulli and Janakiraman [6] introduced the non –bondage number in graphs. The concept of fuzzy relation was introduced by Zadeh [7] in his classical paper in 1965 and the concept of bondage and non-bondage number of a fuzzy graph was developed by NagoorGani, Prasannadevi and M.Akram [8] in the year 2015.The concept of the the equitable bondage number of a graph introduced by G.Deepak, N.D.Soner and Anwar Alwardi [9]. Research Journal of pure Algebra-1(9), 2011, page 209-212.

2 PRELIMINARIES:

Definition 2.1

Let V be a finite non empty set and E be the collection of all two element subsets of V.A fuzzy graph $G=(\sigma,\mu)$ is a set with a pair of relations $\sigma:V\to[0,1]$ and $\mu:V\times V\to[0,1]$ such that $\mu(x,y)\leq\sigma(x)\wedge\sigma(y)$ for all x,y in V.

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Ecofriendly ultrasonic natural dyeing of wool fabric with natural dyes obtained from *wrightia tinctoria*

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ABSTRACT

Natural dyes are extracted from plants, insects and minerals. Certain limitations of the natural dyes, they were withdrawn with the invention of synthetic dyes. In the long run, synthetic dyes were found to be harmful to the chemicals. As a result natural dyes have come to be used for their many intrinsic values. The main reason being, then availability of local plants as the main source of natural colorants. Almost all the parts of the plants, namely stem, leaves, fruits, seeds, barks etc are used for extracting natural colour. In addition, they are antimicrobial antifungal, insect repellant deodorant, disinfectant and they also have medicinal values. The present study was conducted to evaluate the colouring component and extraction method of plant dyes. Leaves of the plant are the source of dye. This dye was used to dye wool by applying different mordanting methods with different mordant. Their easy availability in the country being zero cost effective and planted for other purposes are the main reasons for utilizing them as natural dyes.

KEYWORDS: Ultrasonic dyeing; Natural dye; *Wrightia tinctoria*; wool

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LATTICE POINTS ON THE HOMOGENEOUS EQUATION $7(X^2+Y^2) - 13XY = 31Z^2$

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ABSTRACT

The triplex quadratic homogeneous equation given by $7(X^2 + Y^2) - 13XY = 31Z^2$ is inspect for its positive dissmilar integer points. Three dissimilar specimans of integer points fulfilling, speculate are acquired. A few alluring relative linking the blend and particular number specimans namely Polygonal number, Pyramidal number and Nasty number are presented. Also significant an integer solution fulfilling the given triplex quadratic homogeneous equation.

Keywords: *Triplex homogeneous quadratic, integral solutions*

1. INTRODUCTION

The triplex quadratic Diophantine equations offer an inexhaustible field of research due to their variety[1, 2]. For and large-scale review of miscellaneous problems, one may mention [3-7]. This dessemination scrutinize with yet spare fascinating triplex quadratic equation $7(X^2 + Y^2) - 13XY = 31Z^2$ determining its infinitely numerous positive integral points. Also, a few fascinating bonds among the solutions are presented.

CIPHERS USED

- $T_{m,n}$ - Polygonal number of rank n with dimensions m
- P_n^m - Pyramidal number of rank n with dimensions m

2. STRATEGY OF ANALYSIS

The triplex quadratic equation to be solved for its positive integer solutions is

$$7(X^2 + Y^2) - 13XY = 31Z^2 \quad \text{---(1)}$$

The Substitution of the linear transformations

$$X = u + v,\ Y = u - v,\ (u \neq 0\ v \neq 0) \quad \text{---(2)}$$

In leads to

$$u^2 + 27v^2 = 31Z^2 \quad \text{---(3)}$$

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Octagonal Numbers, Square Numbers and Pythagorean Triangles

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Abstract— **Oblong numbers as figuret numbers, which were first studied by the Pythagoreans are studied in terms of special Pythagorean Triangles. The two consecutive sides and their perimeters of Pythagorean triangles are investigated. In this study, the perimeter of Pythagorean triangles are obtained as addition ofoctagonal and square numbers.**

Keywords— **Octagonal numbers, Square numbers, Pythagorean Triangles, Diophantine equation.**
Subject Classification: 11D09

I. Introduction

In 2005, Gopalan M.A., Devibala S.; ([4]) studied Special Pythagorean triangle. In 2008, Gopalan M.A., Janaki G.; ([5]) studied Pythagorean triangles with perimeter as a pentagonal number. In 2010 Gopalan M.A., Vijayalakshmi P.; ([3]) studies Special Pythagorean triangles generated through the integral solutions of the equation $y^2=(k^2+1)x^2+1$: After that Mita D (2012) [7]) investigated about oblong numbers and Pythagorean triangle. He found that perimeter of the Pythagorean triangle as oblong number. Inspired by all the above mentioned results, this paper aims to study the perimeter of the Pythagorean is addition of octagonal and square numbers.

II. Method of Analysis

The primitive solutions of the Pythagorean Equation,
$X^2+Y^2=Z^2$, is given by [5] (1)
$X=m^2-n^2$, $Y=2mn$, $Z=m^2+n^2$ (2)
for some integers m, n of opposite parity such that $m>n>0$ and $(m, n)=1$

2.1 Perimeter is an addition of pentagonal and heptagonal numbers

Definition: A natural number S is called addition of Octagonal and Square numbersif it can be written in the form $u(3u-2)+u^2=2(2u^2-1),\quad u\in N$

If the perimeter of the Pythagorean triangle(X,Y,Z) is addition of Octagonal and Square numbersu, then
$X + Y + Z = 2(2u^2-u) = S$ (3)
From the equations (2) & (3)
$2m^2 + 2mn = 2(2u^2-u)$, $u \varepsilon N$.
$m(m + n) = u(2u-1)$ (4)

2.2 Hypotenuse and one leg are consecutive

In such cases, $m = n + 1$ (5)
This gives equation (4) as
$(n + 1)(2n + 1) = u(2u-1)$
Take $u = n + 1$ (6)
Equations (2), (5) & (6) give solution of equations (1) in correspondence with equations(3) & (4)
i.e., $X = 2n + 1$;
$Y = 2n(n + 1)$;
$Z = 2n(n + 1) + 1$;
First ten such special Pythagorean triangles (X, Y, Z) are given in the Table 1 below:

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Experimental study on recycled coarse aggregate in concrete by using m-sand and silica fume

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ABSTARCT: The recycled aggregate prepared from the crushing of concrete was studied. It was found that the recycled aggregate is covered with loose particles that may prevent good bonding between the new cement matrix and the recycled aggregate. Every year concrete industry using 12 6 million tons of natural resource. Recycling is most effective methods for dealing with the increasing volume of waste for preservation of the environment. Demolition waste in order to conserve the non-renewable natural resources, recycling of concrete demolition waste as coarse aggregate for new concrete would facilitate its large-scale utilization. There is a whole range application recycled material in both architecture and civil engineering. The experiments will be conducted on M20 concrete grade. Slump cone, compaction factor and vie bee test will be conducted to determine workability of concrete. Compressive strength and flexural test will be conducted to determine the strength of concrete for 28 days.

1.1 INTRODUCTION: Concrete is the premier civil engineering construction material. Concrete is considered as brittle material, primarily because of its low tensile capacity and poor fracture toughness. Concrete manufacturing involves consumption of ingredients like cement, aggregates, water and admixtures(s). Among all the ingredients, aggregates form the major part. Inert granular materials such as sand, crushed stone or gravel form the major part of the aggregates. Traditionally aggregates have been readily available at economic prices and of qualities to suit all purposes. But, the continued extraction of aggregates from nature has caused its depletion at an alarming rate. Many of the non-decaying waste materials will remaining the environment for hundreds, perhaps thousands of years. The non-decaying waste materials cause a waste disposal crisis, thereby contributing to the environmental problems. Use of this material in such a rate leads to preservation of natural aggregates sources. In light of this in the contemporary civil engineering construction, using alternative materials in place of natural aggregate in concrete production makes concrete a sustainable and environmentally friendly construction material. Aggregate made by crushing demolished waste and acquiring the coarse aggregate from it for replacing the new set of new bought aggregate i.e., cost efficient.

1.2 OBJECTIVES

- For sustainable development of structures
- To reduced or utilize the waste generated from structures

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Experimental Investigation on Concrete by Replacement of Fine Aggregates with Stabilised Soil

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Abstract

River sand in the construction field, especially in the production of concrete is of high demand. Even M-sand and other material are used as its replacement; there is always a need for better alternatives. An experimental Investigation has been carried out to study the behaviour of concrete by replacing the fine aggregates with stabilised red soil. Here in this study M-Sand and lime is used to stabilise the red soil as to improve the engineering properties of the soil. The plain cement concrete of M15 grade has been casted and its Mechanical properties such as Compressive strength, Split tensile strength are tested and the durability properties like porosity, thermal resistance and soundness are also tested in this study. It is observed that a good progress in both mechanical and durability properties of this special concrete when compared to the conventional concrete.

Keywords - *soil concrete, red soil, stabilised soil.*

I. INTRODUCTION

The developing countries like India are facing shortage of good quality natural sand and particularly in India, natural sand deposits are being used up and causing serious threat to environment as well as the society. Rapid extraction of sand from river bed causing so many problems like losing water retaining soil strata, deepening of the river beds and causing bank slides, loss of vegetation on the bank of rivers, disturbs the aquatic life as well as disturbs agriculture due to lowering the water table in the well etc. are some of the examples. Thus this paper showcases the ideology of using stabilised red soil as replacement of natural fine aggregates in the concrete production.

Red soil is the third largest soil group in India. Red soil is the best part of the Indian earth's land on which we can see by the physically in our surround of the state like in the Tamil Nadu, southern Karnataka, north-eastern Andhra Pradesh and some parts of Madhya Pradesh, Chhattisgarh, and Odisha. It is the combination of the rock material and the ignitions part of the rocks and the mountain. They are sandier and less clayey soils.

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II. STABILISATION OF SOIL

The term stabilisation is defined as the method of changing the natural soil to meet engineering properties. It may be done to improve the grain size, strength, shrinking ability etc., Soil can be stabilized by material like lime, cement, gypsum, etc. Recent trend are practising the stabilisation of soil by M-Sand. In this study, we have used M-Sand and lime as a stabilizer to stabilize the red soil. In this study, mixture of 10% of lime; 30% of M-Sand and 60% of Red soil comprises the fine aggregate portion of the concrete mix.

A. Need of Lime stabilisation

Red soil have some clay particle in it, when it is used with concrete, it will leads to shrinkage of soil while drying that induce the damages in the concrete structures. When lime stabilisation is done, the chemical reaction between the lime, water and red soil breaks down the clay particles by increasing the pH of the soil. From this reaction, Silica and alumina are released and react with calcium from to form cementitious product namely Calcium Silicate Hydrates (CSH) and Calcium Aluminates Hydrates (CAH).

B. Need of M-Sand stabilisation

Since red soil is highly permeable in nature, it will reduce the durability of the concrete. Thus stabilising the soil by m-sand reduced the permeability with increase in proportion of M-Sand and also reduce the voids between the soil particles. It also result in the increase of soil strength.

III. OBJECTIVES

- To study the strength of the concrete by replacing the natural fines aggregates with stabilised red soil.
- To investigate the durability of this special concrete.
- To produce better and low cost replacement product without compromising the strength of the concrete.

To minimize or to avoid the usage of river sand in the concrete and there by safeguarding the environment.

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Experimental Report on Flexible Pavement by Using Hydrophobic Silica Sand, Zeolite and Steel Mesh

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Abstract

The vision of our project is to reduce global warming, and the mission of the project is to construct flexible pavement without affecting the environment. The agent zeolite was mixed with asphalt mix to reduce carbon dioxide level and increase the strength of the pavement. Hydrophobic silica sand was used in the asphalt mix for the replacement of filler content to reduce porosity. The secondary aim of our project is to reduce the crack in pavement by using steel mesh. The reason behind the steel mesh is to increase the life span of the flexible pavement. Cost expenses of pavement construction and maintenance were compared with our innovative pavement construction as per the CPWD (Central Public Work Department). The aggregate tests such as impact test, abrasion test, crushing test were conducted as per IS- specifications. California bearing ratio and dry density test by core cutter method were identified the soil stability, type of soil which was under the pavement to increase strength. Pavement thickness was calculated for WMM (Wet Mix Macadam) and BC (Bituminous Concrete) by CBR test as per IRC 37-2001. Marshall Stability test, which deals with the stability and flows property of asphalt mix to obtained highly stabilized pavement layers. The IRC (Indian Road Congress) codes of practices were used for the pavement design standards and codes of Indian standards for the test procedures of bitumen.

Keywords: *Global warming, flexible pavement zeolite, hydrophobic silica sand, steel mesh – cracks, life span, cost expenses, CPWD, WMM (Wet Mix Macadam), BC (Bituminous Concrete), Marshall test, IS and IRC Code of practices.*

I. INTRODUCTION

A. Granular sub-base

Laying and compacting well-graded material on prepared sub-grade. Material shall be laid in one or more layers. The material to be used for the work shall be natural sand, gravel, and crushed stone.

B. Wet Mix Macadam

Laying and compacting clean, crushed, graded aggregate and granular material, premixed with water, to a dense mass on prepared sub-grade or existing pavement. The thickness of a single compacted Wet Mix Macadam layer shall not be less than 75 mm. Coarse aggregate shall be crushed stone. If crushed gravel is used, not less than 90% by Wt of gravel pieces retained on 4.75 mm sieve shall have at least two fractured faces. If the water absorption value of a coarse aggregate is greater than 2%, the soundness test shall be carried out as per IS- 2386(Part-5).

C. Bituminous concrete (BC)

BC is a Dense Graded Bituminous mix used as a wearing course for heavily trafficked roads. BC mix consists of coarse aggregates, fine aggregates, filler, and binder blended as per Marshall Mix design.

II. PROBLEMS AND SOLUTIONS IN PAVEMENT

A. Problems identified in flexible pavement

- Little less in the strength of the pavement
- Emission of Co_2 during the process of melting bitumen leads to global warming
- Life span is less
- Cracks developed quickly
- Soil erosion under the pavement
- The cost of bitumen is high
- Less soil strength

B. Material used for the solution of problems

Hydrophobic silica sand - The hydrophobic silica sand used 5% filler content in asphalt mix to decrease the porosity of the pavement and as a water repellent.

Aggregate -6mm, 12mm, 20mm, 2.36mm for BC (Bituminous course) grade II, 40mm, and M-sand for WMM (wet mix macadam) were used.

Zeolite - When 30% of zeolite instead of cement used in concrete, it fully absorbs carbon dioxide and achieve better strength. We used only 5% zeolite to increase the strength of flexible pavement and also absorb carbon dioxide.

Steel mesh – 2mm steel mesh is laid under a bituminous course used to reduce the cracks in the flexible pavement and increase the life span.

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Experimental Investigation of Carbon Nanotube Concrete

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Abstract

Concrete is one of the most used materials in various fields for arriving a structure, but still it has weakness and drawbacks. To mitigate this problem, the nanotechnology has been implementing. This paper assigns Carbon Nanotube (CNTs) in the concrete to enhance its properties. It also goes over the sources, properties of CNTs. By revising various papers, for ensure that adding 0.25% and 0.5% of Multi Walled Carbon Nanotubes (MWCNTs) by the weight of cement in the concrete mix. CNT concrete exhibit the multifunctional properties such as self – strain sensing, damage sensing, improves interfacial interaction and also it act as a concrete repair material when it is cement composite. Multifunctionality is attractive for cost reduction, durability enhancement, large functional volume, design simplification and absence of mechanical property loss. Sonication process is carried out to achieve well dispersion of CNTs before adding it into the concrete for improving the strength and durability of CNT used concrete. CNT concrete will upgrade the compressive and tensile strength of concrete compare to conventional concrete. This paper explores more details about the implementation of CNTs as reinforcement for concrete to enhance its tensile properties.

Keywords: *Concrete - Carbon Nanotube (CNT) - Sonication process - Compressive strength - Tensile strength*

I. INTRODUCTION

Concrete is a brittle material, composite of cement, fine aggregate, coarse aggregate and water. The development of crack is a major complication. Today, use of reinforcing steel to reduce the development of crack and it also arrest crack at micro level as possible. The behaviours of cementitious materials are significantly dependent on their configurations at the Nano-level. Nanotechnology was first started with a talk entitled by physicist **RICHARD P. FEYNMAN** at an American Physical Society meeting at the California Institute of Technology (CalTech) on December 29, 1959, long before the term nanotechnology was used. The cementitious materials at the nanolevel have a great impact on the characteristics of concrete such as: strength, ductility, creep and shrinkage, fracture behavior and durability.

A. Nanotechnology

Nanotechnology is the creation of useful or functional materials, devices and systems through control of matter on the nanometre length scale and exploitation of novel phenomena and properties which arise because of the nanometre length scale. Nanotechnology includes the synthesis, characterization, exploration and utilization of nanostructured materials. The term 'nanotechnology' was used first by the Japanese scientists Norio Taniguchi. The "Nano" in Nanotechnology comes from the Greek word "Nanos" that means dwarf. Scientists use this prefix to indicate 10^{-9} or one billionth. Nanotechnology is called a "bottom up" technology by which bulk materials can be built precisely in tiny building blocks. Therefore, resultant materials have fewer defects and higher quality. The branch of technology that deals with dimensions and tolerances of less than 100 nanometers, especially the manipulation of individual atoms and molecules. This technology used to increase the life of concrete, create fire resistant materials and give building materials qualities such as "self -- healing" and "self - cleaning". Various nanoparticles were available and used in the construction field; some of them are Nano Silica, Carbon Nanotube, Titanium dioxide, Carbon fiber. Currently, the use of nanomaterials in construction is reduced, mainly for the following reasons: the lack of knowledge concerning the suitable nanomaterials for construction; the lack of specific standards for design of construction elements; high costs; the unknown of health risks associated with nanomaterials. The field of nanotechnology, in general, is loosely divided into four subareas:

- micro and Nano instruments
- Nano electronics
- Nano bio systems and
- Nano engineered materials.

B. Nanoparticles

The fundamentals of nanotechnology lie in the fact that properties of substances dramatically change when their size is reduced to the nanometer range. When a bulk material is divided into small size particles with one or more dimension (length, width or thickness) in the nanometer range or even smaller.

Experimental investigation on partial replacement of clay using boiler ash to make eco black brick.

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Abstract

This research incorporates waste boiler ash into masonry construction materials using alkali-activation. The boiler ash, derived from three different Indian pulp and paper mills, has many undesirable characteristics for alkali-activation, when combined with supplementary materials in the form of clay and lime, high compressive strengths are observed in the bricks. A brick formulation with a solids phase weight ratio of ash (70): clay (20): lime (10), liquid to solid ratio of 0.45, and 2 M NaOH produces bricks with compressive strengths between 11 and 15 MPa after 28 days curing at 30°C. An economic and environmental analysis indicates that these bricks can be produced for similar costs as the clay fired brick with reduced environmental impact, making them a viable alternative in the market.

1. Introduction

Boiler ash is a generic term applied to many types of ash produced by the burning of various materials. They are 4 general types of boiler ash commonly available, each with its own chemical and environmental characteristics.

Wood Ash -From boilers where wood (or bark) is used as a heating source.

Coal Ash -From coal powered electrical generating power plants, actually two forms, bottom ash and fly ash.

Tire Ash – Produced from burning shredded tires for fuel in generating plants.

Incinerator Ash--Produced from burning MSW (Municipal Solid Waste, i.e. Garbage) as a waste disposal method.

2. Highlights

- Waste boiler ash from Indian paper industry incorporated into bricks using alkali-activation.
- Compressive strengths up to 15 MPa using 70% ash after 28 days curing at 30 °C
- Economic performance comparable to clay-fired brick, with reduced environmental impact
- An economic and environmental analysis indicates that these bricks can be produced for similar costs as the clay fired brick with reduced environmental impact, making them a viable alternative in the market.

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Experimental Study on Partially Replacement of Cement by using Sugar Cane Bagasse Ash in Concrete

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Abstract

The recent technology is towards waste utilization and cost reduction in construction industries. In today's construction industry concrete is major and versatile building materials and in concrete, cement is the most expensive material and our project deals with, to reduce cement cost by introducing agricultural waste in concrete and may also environmental pollution control. Sugar cane bagasse ash is used as a partial replacement of concrete. India produces around 24MT of sugar these days and also same is approximately the estimated sugar cane bagasse ash (SCBA) produce of India. Sugar cane bagasse ash (SCBA) is replaced by cement up 0% to 20% in concrete and their comparative is study is done on basis of their compressive strength and workability. The slump cone test was under taken as well as hardened concrete test is compressive strength and tensile strength at the age of 7,14 and 28 days was obtained.

Keywords — *sugar cane bagasse ash, cement, concrete*

I. INTRODUCTION

Portland pozzolana cement is recognized as a major construction material throughout the world. Researchers all over the world today are focusing on ways of utilizing either industrial or agriculture waste, as a source of raw materials for industry. This waste, utilization wouldn't only be a economical, but may also environmental pollution control. Industrial wastes, such as blast furnace slag, fly ash and silica fume are being used as supplementary cement replacement materials. Currently, there has been an attempt to utilize the large amount of bagasse ash, the residue from an in-line sugar industry and the bagasse-biomass fuel in electric generation industry. When this waste is burned under controlled conditions, it also gives ash having amorphous silica, which has pozzolanic properties. A few studies have been carried out on the ashes obtained directly from the industries to study pozzolanic activity and their suitability as binders, partially replacing cement. It is also used in concrete without adverse effect in concrete durability. Therefore, it is possible to use Sugarcane Bagasse Ash (SCBA), as cement replacement material to improve quality and reduce the cost of construction material such as mortar, concrete pavers, and concrete roof tiles and soil cement interlocking block. The present study was carried out by Partial Replacement of Cement by Sugarcane Bagasse Ash (SCBA). Our project analyses the effect of SCBA in concrete at ratio of 0%, 5%, 7.5%, 10%, 15%, 20%. The experimental study examines the compressive strength of hardened concrete. The main ingredients consist of Portland Pozzolana Cement, SCBA, river sand, coarse aggregate and water. After mixing, concrete specimens were casted and subsequently all test specimens were cured in water at 7,14, and 28 Days.

II. MATERIALS USED

A. Cement

The most common cement is used is Ordinary Portland Cement. Out of the total production, Ordinary Portland Cement accounts for about 80-90%. Many tests were conducted to cement some of them are Consistency test, Setting Time tests, etc.

B. Fine Aggregate

Fine aggregate is locally available, free from debris and soil and nearly river bed sand is used. The sand particles should also pack to give minimum void ratio, higher voids content leads to requirement of more mixing water. In the present study the sand conforms to zone II as per the Indian standards (IS). The specific gravity of sand is 2.60. Those passing from 4.75mm to 150 microns are known as F.A.

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COMPARITIVE STUDY OF POLYMER FIBRE REINFORCED CONCRETE WITH CONVENTIONAL CONCRETE

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ABSTRACT

The aim of our project is to experimentally investigate the properties of the polymer fibre reinforced concrete and compare it with the conventional concrete. Here we have used two types of polymers such as nylon and polypropylene fibres of different dosages to modify the cement concrete. This project explains on polymer fibre reinforced concrete, which is a recent advancement in the field of reinforced concrete design. The usefulness of fibre reinforced concrete in various civil engineering applications is indisputable. Fibre reinforced concrete has so far been successfully used in slabs on grade, architectural panels, precast products, offshore structures, structures in seismic regions, thin and thick repairs, crash barriers, footings, hydraulic structures and many other applications.

KEYWORDS: Polymer fibre reinforced concrete – Polypropylene fibre – Nylon fibre – Compressive strength – Split tensile strength.

I.INTRODUCTION

GENERAL

Concrete has better resistance in compression while steel has more resistance in tension. Conventional concrete has limited ductility, low impact and abrasion resistance and little resistance to cracking. Fibre Reinforced Concrete is gaining attention as an effective way to improve the performance of concrete. Fibres are currently being specified in tunnelling, bridge decks, pavements, loading docks, thin unbonded overlays, concrete pads, and concrete slabs. These applications of fibre reinforced concrete are becoming increasingly popular and are exhibiting excellent performance.

In this project polypropylene fibers (6mm) and nylon fibres (6mm) is used. The project deals with the effects of addition of various proportions of polypropylene and nylon fibre (2%, 4%, and 6%) on the properties of concrete in fresh and hardened state. An experimental program was carried out to explore its effects on workability, compressive, flexural, split tensile strength and modulus of elasticity of concrete. Polypropylene and nylon fibre Reinforced Concrete is an embryonic construction material which can be described as a concrete having high mechanical strength, and durability. By utilizations of polypropylene fibre in concrete not only optimum utilization of materials is achieved but also the cost reduction is achieved. Nylon absorbs moisture depends on temperature, crystalline and humidity. It inhibits plastic shrinkage.

II. LITERATURE REVIEW

Kolli, Ramujee (2013) conducted the experimental studies on the strength properties of polypropylene fibre reinforced concrete. A combination of high strength, stiffness and thermal resistance polypropylene fibers are preferred for the fibre reinforced concrete. In this study, the results of the Strength properties of Polypropylene fiber reinforced concrete have been studied. The compressive strength, splitting tensile strength of concrete samples made with different fibers amounts of percentage varies from 0%, 0.5%, 1% 1.5% and 2.0% were studied. The samples with added Polypropylene fibers of 1.5 % showed better results in comparison with the other fibre percentage

Amit Rai, Dr. Y.P.Joshi (2014) conducted the experimental studies and application of fibers reinforced concrete. They studied different types of fibers and their application. The improvement in concrete properties by polypropylene fibers, they analysed that compressive strength which is increased about 16%. The flexural strength of polypropylene fibers is improved about 30%.They studies the different types of fibres and the concrete properties. Fiber addition improves ductility of concrete Slump test were examined to find out the workability and consistency of fresh concrete. The

Experimental Study on Partial Replacement of Coarse Aggregate by Ceramic Tiles and Fine Aggregate by Quarry Dust&Copper Slag in Concrete

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Abstract- ***The cost of concrete can be reduced by the usage of this waste products Partial replacement for coarse and fine aggregate. The main objective of this investigation is to study experimentally the effect of partial replacement for course by ceramic tile and fine aggregate by copper slag and quarry dust on the various strength properties of concrete by using the mix design of grade. Test specimen with 0%, 15% ,30% ,45% of partial replacement for coarse by ceramic tile and fine aggregate by copper slag and quarry dust were cast and tested for various strength after curing period of 28 days. Based on these experimental investigation, it is concluded that the effective utilization of waste materials obtained from the starlight industries, as aggregate gave good results for concrete when compared to the natural aggregate concrete Some of the industrial by-products have been used in the construction industry for the production of concrete. Copper slag is one of the materials that is considered as a waste material which could have been used in construction industry as partial replacement of fine aggregates. For this research work, grade concrete was used and the tests were conducted for various proportions of copper slag replacement with sand of 0%, to 45% in concrete. The obtained results were compared with those of control concrete made with sand.***

Keywords: ***natural sand, alternative materials, quarry dust, copper slag, ceramic tiles.***

I. INTRODUCTION

The possible effects of recycled aggregate upon concrete properties such as workability, strength and durability have been discussed in several paper. In ceramic industry, about 30% production goes as waste.The development of concrete properties was observed by substitution of crushed stone coarse aggregate with crushed wasted ceramic aggregate and sand fine aggregate with quarry dust aggregate. The main objective of this research is to study the performance of concrete with ceramic waste aggregate and quarry dust fine aggregate.Concrete is a composite material composed of water, coarse granular material (the fine and coarse aggregate or filler) embedded in a hard matrix of material (the cement or binder) that fills the space among the aggregate particles and glues them together. Concrete is widely used for making architectural structures, foundations,brick or block walls, pavements, bridges or overpasses, highways, runways, parking structures, dams, pools reservoirs, pipes, footings for gates, fences and poles and even boats. Concrete is used in large quantities almost everywhere mankind has a need for infrastructure.Copper slag is used in the concrete as one of the alternative materials. It is the waste product of copper from Sterlite Industries India Ltd, Tuticorin. The safe disposal of this waste is a lack, costly and causes environmental pollution. The construction industry is the only area where the safe use of waste material (copper slag) is possible. When it is introduced in concrete as a replacement material, it reduces the environmental pollution, space problem and also reduces the cost of concrete.

II. MATERIALS USED

A. Cement

Cement, commonly Portland cement, and other cementitious materials such as fly ash and slag cement, serve as a binder for the aggregate. The cement used in this study is of OPC 53 grade conforming to IS 12269.

B. Fine Aggregate

The Fine aggregate used in this research for preparation of normal concrete is natural river sand conforming to grading zone-II as per IS: 383-1970 with specific gravity 2.6 and having fineness modulus as 3.42. The amount of fines less than 0.125 mm is to be considered as powder and is very important for the theology of the SCC. This material is dried at room temperature for 24 hours to control the water content in the concrete. The maximum size of FA is taken to be 4.75 mm. The testing of sand is done as per IS: 2386 – 1963. The sieve analysis

C. Coarse Aggregate

Coarse aggregate are the crushed stone is used for making concrete . The commercial is quarried, crushed and graded. Much of the crushed stone used is granite, limestone and trap rock. Graded crushed stone usually consist of only one kind of rock and is broken with sharp edged. The sizes are from 0.25 to 2.5 inch (0.64 to 6.35cm) although larger sizes may be used for massive concrete aggregate Machine crushed granite broken stone angular in shape was used as coarse aggregate. The maximum size of coarse aggregate was 20mm and specific gravity of 2.78.

D. Water

Water is then mixed with this dry composite, which produces a semi-liquid that workers can shape (typically by pouring it into a form). The concrete solidifies and hardens to rock-hard strength through a

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EXPERIMENTAL INVESTIGATION ON ROOFING TILES BY PARTIAL REPLACEMENT OF SEASHELL AND USING COCONUT FIBRE AS AN ADMIXTURE

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Abstract: In order to reduce the cost of roofing tiles construction we use the sea shell as a replacement for fine aggregate and use the coconut fibre as an admixture to the total volume of concrete in the percentage of 0.5% , 0.6%. We preferred to use 1:4 mix proportion of mortar. These tiles were casted by using 20% & 30% replacement of sea shell over sand. By replacing the river sand in making roofing tiles would reduce its manufacturing cost as well as selling price and makes it more affordable. Thus preparation of such sand replaced roof tiles will significantly reflect healthy environmental and economic benefits. In this we are planned to test compressive strength test water absorption, soundness and durability test at an age of 7 days and 28 days.

1. **General:** Roof tiles are designed mainly to keep out rain, and are traditionally made from locally available materials such as terracotta or slate. Modern materials such as concrete and plastic are also used and some clay tiles have a water proof glaze. Roof tiles are "hung" from the framework of a roof by fixing them with nails. The tiles are usually hung in parallel rows, with each row overlapping the row below it to exclude rain water and to cover the nails that hold the row below. There are also roof tiles for special positions, particularly where the planes of the several pitches meet. They include ridge, hip and valley tiles. Slate roof tiles were traditional in some areas near sources of supply, and give thin and light tiles when the slate was split in to its natural layers. It is no longer a cheap material, however and is now less common.

2. INTRODUCTION

Materials used

2.1 **Coconut fibre:** Large amount of environmental waste generated every year all over the world, coconut fibre is one among such environmental wastes. Also coconut fiber is locally and economically available. The intention of this parametric study is to spread awareness of use of coconut fiber as construction material.

Experimental Investigation on Composite Bricks with Partial Replacement of Weeds Ash

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ABSTRACT

In India, are usually made up of clay, and are generally produced in traditional, unorganized small-scale industries. Brick making consumes larger amount of clay which leads to top soil removal and land degradation. To avoid all these environmental threats an attempt was made to study the behavior of bricks manufactured using, composite brick. An experimental investigation has been carried out to study the feasibility of producing bricks from weeds ash and materials such as cement and fine aggregate. In order to study the various engineering properties of bricks, a total of 15 numbers of brick specimens of 230x 100 x 90 mm size were prepared in different proportions.Test results obtained in the present investigation indicate that it is possible to manufacture good quality bricks using locally available by suitably adding either weeds Ash. bricks can be used in pressed type water cured cement bricks presently in use for various construction activities across the country. The weed ash limited to the grain size of less than 75 micrometer is added to cement by weight percentage of 10%, 20%, 30%, and 40% by the method of replacement by weight.

Keywords -- *prosopis juliflora ash, cement, sand*

I. INTRODUCTION

1.1 GENERAL

Degradability, light weight, high specific strength. One such fiber is prosopis juliflora ash. This fiber which is abundantly available in nature and having high strength has paved way to its usage as natural fiber of the fabrication of a composite. This paper involves in the fabrication of a natural composite and this fabricated natural composite's compressive strengths are found using a UTM (universal testing machine). Environment in nowadays get polluted due to various reasons. Among these reasons a great impact that have been made by construction and usage of construction materials. Even the demolition of construction waste can also pollute environment. Natural fibers are attractive over manmade fiber due to their advantages.

1.2 SCOPE

To promote the use of waste from weeds ash useful products. To encourage the weeds products as eco-friendly materials. To make the bricks which are energy efficient which is the only viable solution to the environmental concerns and natural resources conservation for future generations.

1.3 OBJECTIVE

To avoid the large amount of ground water,consume. To save the bio diversity in many parts of the world. To give the more strength to brick than normal brick. To reduce the cost than normal brick. This composite brick can be used instead of concrete wall panels without compromising the strength.

II. LITERATURE REVIEW

1) **George amal anik.s and parthiban kathirvel, Effect of utilizing prosopis juliflora ash as cementitious material**

Wood ash limited to the grain size of less than 75 micrometer is added to cement by weight percentage of 10%, 20% and 30% by the method of replacement by weight.

2) **Praveena.S Sowmiya.S, Effect on strength properties of concrete by using prosopis juliflora wood powder as partial replacement of sand**

The research was conducted to investigate the potential of Prosopis juliflora charcoal as energy fuel in cement industries. Proximate analysis and calorific value of Prosopis juliflora wood and laboratory scale carbonized Prosopis juliflora were done by standard procedure and compared with traditionally produced Prosopis juliflora charcoal .

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MANUFACTURING OF BRICKS BY USING PHOSPOGYPSUM

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ABSTRACT

Nowadays there is an increase in the innovations in concerning methods by replacing the materials used in manufacturing of bricks. In the manufacturing of bricks soil plays a vital role in increasing the strength of the brick. As far we are replacing gypsum and m-sand for manufacturing of bricks. Here we are analyzing the strength of bricks manufactured using replaced materials. Gypsum, the wastage from fertilizer industry is utilized as a construction material. The process involves fully replacing of clay soil from manufacturing of bricks. The materials m-sand, phospogypsum, cement are used in manufacturing of bricks. There are four samples with various ratios of m-sand and gypsum, cement are used in the manufacturing process. They compressive strength of manufactured bricks were tested using compressive strength machine. The compressive strength of gypsum, m-sand brick is compared with burnt clay brick.

Keywords:- phospogypsum, M-sand, brick.

1. INTRODUCTION

Environment in nowadays get polluted due to various reasons. Among these reasons a great impact that have been made by construction and usage of construction materials. Even the demolition of construction waste can also pollute environment.

Various environmentally polluting waste materials can be converted into composite materials for c

1.2 PHOSPO GYPSUM

Phosphogypsum refers to the calcium sulfate hydrate formed as a by-product of the production of fertilizer from phosphate rock. It is mainly composed of gypsum ($CaSO_4 \cdot 2H_2O$). The long-range storage is controversial. Phosphogypsum is a side-product from the production of phosphoric acid by treating phosphate ore (apatite) with sulfuric acid

fig 1.2 phospogypsum

1.3 M-SAND

Manufactured sand (M sand) is sand made from rock by artificial processes, usually for construction purposes in cement or concrete. It differs from river sand by being more angular, and has somewhat different properties. It is well graded in the required proportion.It should not contain organic and soluble compound that affects the setting time and properties of cement, thus the required strength of concrete can be

Experimental Investigation on Strength of Fly Ash Brick with the Addition of Lime, M-sand and Gypsum

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Abstract

Bricks are a commonly used building material all over the world for constructing walls, pavement and other elements in masonry construction. Burnt clay bricks are commonly used in construction of masonry structures. Conventional bricks are manufactured by firing of clay in high temperature kilns. Extensive research is going on production of bricks from industrial wastes as there is a shortage of natural resources that are used as raw materials for the manufacturing of bricks. An experimental investigation has been carried out to study the behaviour of fly ash bricks by taking different proportions of fly ash, lime, gypsum and Manufactured Sand (M-sand). This investigation also aims to use waste materials effectively since fly ash is a waste obtained from thermal power plants and lime powder is crushed from lime stone. Fly ash brick are an alternative for the conventional bricks which can be used effectively to replace the conventional brick. The properties of the fly ash bricks are investigated by conducting various tests like Compressive strength test, water absorption test.

Keywords —*Fly Ash, Lime, gypsum, compressive strength and water absorption*

I. INTRODUCTION

Pulverized fuel ash commonly known as fly ash is a useful by-product from thermal power stations using pulverized coal as fuel. The high temperature of burning coal turns the clay minerals present in the coal powder into fused fine particles mainly comprising aluminium silicate. Fly ash produced thus possesses both ceramic and pozzolanic properties. Fly ash is a hazardous waste. The problem with fly ash lies in the fact that not only does its disposal require large quantities of land, water, and energy, its fine particles, if not managed well, by virtue of their weightlessness, can become airborne. When not properly disposed, fly ash is known to pollute air and water, and causes respiratory problems when inhaled.

Fly Ash bricks are made of fly ash, lime, m-sand and gypsum. These can be extensively used in all building constructional activities similar to that of common burnt clay bricks. The fly ash bricks are comparatively lighter in weight and stronger than common clay bricks. Since fly ash is being accumulated as waste material in large quantity near thermal power plants and creating serious environmental pollution problems, its utilization as main raw material in the manufacture of bricks will not only create ample opportunities for its proper and useful disposal but also help in environmental pollution control to a greater extent in the surrounding areas of power plants.

Manufacturing of commercial brick produce a lot of air pollution. The technology adopted for making. The fly ash bricks are eco-friendly. It is no need fire operation in production unlike the conventional bricks among the traditional fossil fuel sources, coal exists in quantities capable of supplying a large portion of nation's energy need.

II. MATERIALS USED

Materials used are fly ash, lime, m-sand and gypsum.

A. *Fly Ash*

Fly ash is finely divided residue resulting from the Combustion of powdered coal and transported by the flue gases and collected by electrostatic precipitators. ASTM broadly classify fly ash into two classes Class F: Fly ash normally produced by burning anthracite or bituminous coal, usually has less than 5% CaO. Class F fly ash has pozzolanic properties only. Class C: Fly ash normally produced by burning lignite or sub-bituminous coal. Some class C fly ash may have CaO content in excess of 10%. In addition to pozzolanic properties, class C fly ash also possesses cementious

EXPREMENTAL STUDY ON PARTIAL REPLACEMENT OF SAND BY SAWDUST IN PAVER BLOCKS

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Abstract :

This study investigates between normal paver block and partially replacement of sand by using sawdust. Today the construction field lags down due to various reason. Among that, important one is lack of sand. To solve this problem we replaced the sand by sawdust for making paver blocks. Sawdust can easily available at low cost. It is environmental ecofriendly material. The development of sawdust concrete is suitable for the production of lightweight load bearing blocks (Outdoor Purpose), where the ingredients used in the mixing are cement, aggregates, water and sawdust. The physical and mechanical properties of sawdust concrete not only depends on the amount of sawdust used but also on the chemical and physical characteristics of the sawdust. In this project, the mix proportion is taken as M_{30} (1:2.2:2) and replacing sand volume 10%, 15%, 20% of sawdust. Here we conduct Compressive strength over the saw dust paver block to determine their properties and strength.

1. Introduction

Sawdust is a by-product of cutting, grinding, drilling, sanding, or otherwise pulverizing wood with a saw or other tool; it is composed of fine particles of wood. Certain animals, birds and insects which live in wood, such as the carpenter ant are also responsible for producing the saw dust. Sawdust has a variety of other practical uses, including serving as mulch, as an alternative to clay cat litter, or as a fuel. Until the advent of refrigeration, it was often used in icehouses to keep ice frozen during the summer. It has been used in artistic displays, and as scatter. It is also sometimes used to soak up liquid spills, allowing the spill to be easily collected or swept aside. As such, it was formerly common on barroom floors. Mixed with water and frozen, it forms pyrite, a slow-melting, much stronger form of ice. Sawdust can be used as alternative substitute for fine aggregate in concrete production. Before using the saw dust it should be washed and cleaned. Concrete obtained from sawdust is a mixture of sawdust, gravel with certain percentage of water to entrance the workability and full hydration of the cement which provide great in bonding of the concrete. Sawdust concrete is light in weight and it has satisfactory heat insulation and fire resisting values. Nails can be driven easily hold in sawdust concrete compare to other lightweight concrete which nail can also easily drive in but fail to hold construction community might well be aware of, incorporating organic materials into solid concrete is not such a good idea to begin with. First of all, its loose molecular structure would cause the structure to fail at a certain stage and second, it would compete and retard the hydration process of cement. Also, presumptions indicate that if each sawdust particle took up enough water during hydration, they could aid the hydration process especially in the center parts of concrete that is impossible to cure with water thus eliminating the need of curing because water deposited in sawdust particles are being harvested by cement particles. The most important aspect and main target of the experiment are proving that sawdust-cement-gravel mixtures can prove to be more lightweight and cost efficient. Since sawdust is already waste then the cost would go down as well as weight cause of its extremely light unit weight. Sawdust is used in concrete more than 40 years.

Experimental Investigation on Cement by Partial Replacement by using Rice Husk Ash

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Abstract— **In India rice milling produces a by product which is known as Husk. This husk is used as fuel in rice mills to produced steam for boiling process .This husk contain near about 75 % organic matter and the remaining 25% of this husk is modified into Ash during the firing process which know n as rice husk ash (RHA). The rice husk ash (RHA) contain near about 85 % to 90 % amorphous silica. By using rice husk ash in concrete , we can improve the properties of concrete. The current study and experimental investigation were taken to study the properties of concrete made with Rice husk ash . the replacement is done partially in the proportion of 0% ,20% and its effect on workability of concrete made with rice husk ash were investigated for the 20% rice husk ash replacement ,the hardened properties such as compressive strength observed were good as compare to 0 % RHA . The compressive strength test was conducted at 0 % and 20 % rice husk ash replacement and the highest compressive strength at 20 % RHA replacement as compared to 0% RHA replacement at 14 ,21 and 28 days. The emission of CO2 has increased due to cement manufacturing and improper disposal of rice hush ash (RHA) leads to air pollution and land fill problem. To mitigate these issues, the RHA has been used as cement additive in concrete making. A Taguchi L27 fractional-factorial matrix was designed to assess the individual effects of key process variables like RHA loading, pozzolano activity, curing time, bulk density and RHA size.**

This Project presents the study of Rice Husk Ash and problems of disposal of the Marble of RHA are also sort out to some extent. Compressive strength test are conducted on RHA mortar. The cube with RHA in various percentage, then properties like compressive strength are studied. Compressive Strength Test will carry for all the mix proportions and for all the replacement For compressive strength test will testing for 7, 14 and 28 days for all the replacements. The study giving comparative results for mortar compressive strength test. In this project we use mortar proportion 1:3, 1:4 and 1:5 and its replaced with RHA 5%, 10%, and 15%.

Keywords— Concrete; Rise Husk Ash, Replacement, Compressive strength

INTRODUCTION

Concrete is the most widely used material on earth after water. Many aspects of our daily life depend directly or indirectly on concrete. Concrete is prepared by mixing various constituents like cement, water, aggregate, etc.In rice mill during the milling of paddy near about 78%of weight is received as rice, broken rice and bran. The rest 22 %of the weight of paddy is received as husk. This husk is also used as fuel in the rice mills for the boilers for processing paddy and also used in a small power plant for producing energy. Rice husk Contains about 75 % organic volatile matter which burns up and the balance 25 % of the weight husk is converted into ash during the firing process which is known as rice husk ash (RHA).This RHA is a great environment threat causing damage to the land and the surrounding area in which itis dumped. Lots of ways are being thought of for disposing it by making commercial use of this RHA. It is estimated that roughly 90 million tons of RHA are generated throughout the world every year. In India 77.7 billion eggs are produced in the year 2010-2011. Tamil Nadu having share of around 20 %, is ranked second with almost 2,000 core Peddy husk ash created in the state every year. The next in the list of prominent RHA producing states in India comprise tamilnadu, karnataka, kerala and West Bengal. Rice husk ash is generally thrown away as a waste. The egg shell also creates some allergies when kept for a longer time in garbage. Disposal is a problem. It creates undesirable smell which can cause irritation. Rice husk partially replacement in cement fine at 5%, 10% & 15% replacement grade of M20.

REVIEWOF LITERATURE

Ashif M. Qureshi et al., [2010] (1) An Experimental investigation to check the effect on Rice husk ash on property of concrete in this paper investigate entire construction industry is in search of an effective the waste product that would considerably minimize the use of cements and ultimately reduces the construction cost. The use of waste -products is an environmental friendly, method of disposal of large quantities of materials that would otherwise pollute land, water and air. In this investigation we use some cementing materials like Rice husk ash (RHA) and Egg shell powder (ESP) as a replacement of cement and found that the strength parameters of concrete (Compressive and Flexural) at different replacement levels at 7, 14 and 28 days of curing for M-25 grade is greater as compare to control concrete.

Ashif M et al., [2015] Innovative use of Rice Husk Ash Fly Ash and Egg Shell Powder in Concrete (2) Throughout the world, concrete is being widely used for the construction of most of the buildings, bridges etc. Hence, it has been properly labeled as the backbone to the infrastructure development of a nation. Currently, country is taking major initiatives to improve and develop its infrastructure by constructing express highways, power projects and industrial structures to emerge as a major economic power and it has been estimated that the infrastructure segment in our country is expected to see investments to the tune of Rs.4356 billion by the year 2009. To meet out this rapid infrastructure development a huge quantity of concrete is required.

D.Gowsika et al., [2014] (3) Experimental

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IOT-INTER AUTOMATED OBJECT DETECTION FOR URBAN SURVEILLANCE SYSTEM

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Abstract:

The Automatic license plate reorganization (ALPR) is one of the solutions of such kind of problem. There is a number of methodologies but it is challenging task as some of the factors like high speed of vehicles, languages of number plate & mostly non-uniform letter on number plate effects a lot in recognition. The license plate recognition (LPR) system have many application like payment of parking fees; toll fee on highway; traffic monitoring system; border security system; signal system etc. In this paper, the different method of license plate recognition is discussed. The systems first detects the vehicle and capture the image then the number plate of vehicle is extracted from the image using image Segmentation optical character recognition technique is used for the character recognition. Then the resulting data is compared with the database record so we come up with the License plate number such as is observed that developed system successfully detects & recognizes the vehicle number plate on real image even when the pixel is of low resolution.

Keywords:

Number Plate Recognition, Gray Processing, Image Acquisition, Image Binarization, Template Matching.

1.Introduction :

Smart transportation and urban surveillance systems are important internet of things (IoT) applications for smart cities [1][2]. In these smart transportation and urban surveillance applications, cameras/imaging sensors are commonly installed to automatically detect and identify potential vehicles/cars through automated object detection methods. Usually, such automated object detection methods demand high-complexity image/data processing technologies and algorithms. Hence, the design of low-complexity automated object detection algorithms becomes an important topic in urban surveillance systems. Among these researches, both vehicle license plate recognition (VLPR) and vehicle recognition are hot research topics worldwide, which can be applied to many IoT applications, such as road traffic data collection/monitoring, automatic parking charging and access control, and searching stolen vehicles. It is known that a license plate number is a unique identification of a vehicle. Specifically, the license plate recognition, i.e. the extraction of a license plate region from an image, is the key module in a VLPR system [3], which influences the accuracy of the VLPR systems significantly. Different algorithms have been proposed for identifying a vehicle license plate using image processing [4]. One typical way is vertical edge matching [5]. The idea is to first locate the two vertical edges of a license plate, and hence to detect its four corners. In this way, the license plate can be extracted accurately. Using the contrast between the grayscale values, [6] proposed a vertical edge based license plate recognition method. Another technology is morphology based license plate detection. This method is to extract important features of contrast as guidance to search the license plates [7]. In [8], to extract potential text information from the image, a method is proposed using adaptive threshold, fractal filter and morphological analysis. In [9] and [10], edge statistics in combination with morphological approaches are proposed to eliminate the undesired edges in the images. Color based methods are also attempted which make use of the colors of the vehicle license plate. In [11], a color based method combined with the texture characteristics is proposed to try to detect license plate from the color image. In [12] and [13], the

AUTOMATIC SMART PARKING SYSTEM

IJTCSE Research
May 1, 2019 · 6 min read

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IJTCSE Research /ISSN 2349–1582 conference publication

ABSTRACT

Parking of a 4-wheeler is one of a troublesome and boisterous occupation particularly in a zone where an empty space is obliged as it includes a progression of forward and invert movements and turns which end up being a complicated task for most auto drivers to deal with. Individuals who have quite recently got the hang of driving may likewise observe parking to be an exceptionally troublesome activity. In this paper we propose an autonomous smart-parking system in a particular parking space. In this system, the vehicle can drive itself and discover the parking spots to automatically park the vehicle utilizing proximity sensors. The system comprises of parking space seeking, vacant space detection and steering control. As indicated by the kind of the parking space (parallel or perpendicular) which has been perceived by the sensors, the system will record the appropriate parking spot and carry out the required parking operation. Our proposed framework is completed with hypothetical calculation, and equipment reconciliation, and besides the outcome demonstrates the capacity of vehicle stopping.

INTRODUCTION

Automatic parking is an autonomous car-maneuvering system that moves a vehicle from a traffic lane into a parking spot to perform parallel or perpendicular parking. Numerous dynamic safety systems have been developed in recent advances of intelligent driver

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A New hybrid Squirrel Search Algorithm and Invasive Weed Optimization Algorithms for Skin Lesion Cancer Classification

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Abstract— *Skin disease is a primary hassle amongst people global. Different learning algorithm getting to know. Strategies can be implemented to perceive lessons of pores and skin sickness. Accurately diagnosing skin lesions to discriminate among benign and malignant skin lesions is critical to make certain suitable affected person treatment. Skin malignant growth is one of most dangerous maladies in people. As per the high closeness among melanoma and nevus sores, doctors set aside substantially more effort to explore these sores. This paper displays another technique dependent on enhancement calculation to order and foresee skin malignant growth maladies tried utilizing certifiable disease datasets. This philosophy going to joins new two sort of calculation. One is squirrel search algorithm(SSA) and another is invasive weed optimization (IWO)algorithm to arrange and anticipate malignant growth prior. The proposed framework is assessed by arranging and expectation malignant growth sicknesses in skin sore disease datasets and assessment measures. The outcomes are thought about with (convolution algorithm)SVM execution benchmark. Framework can defeat to diagnosing the malady rapidly and exactness. Contrasting with other calculation proposed calculation has more precision.*

Key Words: IWO, SVM, SSA data set, Analysis, Clustering, Accuracy

1. INTRODUCTION

Information mining is the procedure where esteemed data is separated from the enormous dataset. It has arrived at the high development over recent years. Because of the convenience of information mining approaches in wellbeing world, it has become the great innovation in medicinal services area. Malignant growth is a speculatively last ailment caused fundamentally by conservational issues that change qualities encoding basic cell administrative proteins. Resultant Many highlights of the cutting edge Western eating routine (high fat, low fiber content) will expand malignant growth recurrence.

2. METHODOLOGY SYSTEM IMPLEMENTATION

The following actions are carried out in the proposed system. They are:

1. Dataset Acquisition
2. Preprocessing
3. Feature Selection
4. Disease Diagnosis
5. Evaluation Criteria

2.1 DATASET ACQUISITION

In this module, transfer the datasets. The dataset might be microarray dataset. Accumulate the information from emergency clinics, server farms and disease inquires about focuses. The gathered information is pre-handled and put away in the information base to fabricate the model.

2.2 PREPROCESSING:

Data pre-handling is a significant advance in the information mining process. The expression "manure in, trash out" is for the most part relevant to information mining and machine ventures. Information gathering strategies are regularly shakily controlled, coming about in out-of-go values, inconceivable information blend, missing qualities, and so forth. Investigating information that has not been deliberately screened for such issues can deliver equivocal outcomes.

2.3 FEATURE SELECTION:

In this module is utilized to choose the highlights of the given dataset. Credit choice was performed to decide the subset of highlights that were exceptionally related with the class while having low inter correlation.

2.3 DISEASE DIAGNOSIS:

Based on the values acquired from training phase, the performance of the NN network is analyzed to obtain appropriate values for testing phase. In order to find the optimum structure, the NN network performance has been analyzed for the optimum number of hidden nodes and epochs. For this situation, the epochs will be set to a definite preset value. Then, the NN network was trained at the appropriate range of hidden nodes. The number of hidden nodes that have given the best performance is then selected as the optimum hidden nodes. After that, by fixing the optimum number of hidden nodes, the epochs will be analyzed in a similar way to obtain the optimal number of periods that container give the highest or best accuracy.

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Design and implementation of Smart Sensor Integrated Chair for Medical Diagnosis

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ABSTRACT

With the design of an Internet of Things (IoT) and telemedicine based health monitoring system- The Smart Chair. Sensors and associated hardware needed to monitor the vital physiological parameters of the human body are available on the chair, thereby leading to the idea of a Smart Chair. It enables the subject to be seated in a relaxed posture during the acquisition of physiological signals from various sensors attached to his/her body. The raw signals from the sensors are processed digitally by an onboard microcontroller and analyzed for any common abnormalities in the health parameters of the subject. The results are then transmitted to a personal computer. The data can be viewed at any later time by a doctor's computer that is connected to Internet. The Smart Chair also sends an SMS with all the health details to a remote doctor's phone in case of an emergency, thus facilitating telemedicine in rural areas. The key focus of the presented work is to propose the design of a chair that will be useful and easily affordable by the people of developing nations who have limited access to proper healthcare facilities. The results Presented show that the proposed system is definitely a low cost affordable solution for IoT based telemedicine system, as compared to existing systems

Key Words: Internet of Things (IOT), Sensor.

2. INTRODUCTION

Wireless sensor network and IoT has become an important technology in various industries with the healthcare sector being the most emerging of all. Remote monitoring of subjects is an innovative way to provide better, instantaneous and low cost access to healthcare. Good amount of research has been done in the field of telemedicine using mobile devices. With the availability of portable biomedical sensors and easy access to internet on mobile devices, medical devices on Internet of Things (IoT) are becoming increasingly common. Custom architectures for IoT based healthcare have also been proposed and the research is ongoing. However, most of the systems currently available in literature are designed to detect a particular physiological abnormality and are sometimes too expensive to be affordable by masses. Machines that monitor the common vital physiological parameters are under development using open source hardware and software. However, the ease of use for the end user is always a challenge. This includes the correct placement of the sensors and ease of operation of the biomedical device. The system architecture is available as open source, but the cost of complete kit is quite high because of the use of off the- shelf biomedical sensors/systems.

3. LITERATURE SURVEY

3.1 Model driven flexible design of a wireless body sensor network for health monitoring

The Wireless Body Sensor Network (WBSN) is a wireless network that is designed to allow communication among sensor nodes that are attached to a human body to monitor the body vital parameters and environment. The design and development of such WBSN systems for health monitoring have received a large amount of attention recently, in research studies and in industry. This attention is mainly motivated by costly health care and by recent advances in the development of miniature health monitoring devices as well as emerging technologies, such as the Internet of Things (IoT), which contribute to the main challenges of 5G.

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AN INTELLIGENT SOLAR LED STREET LIGHTING SYSTEM

IJTCSE Research Follow
May 1, 2019 · 8 min read

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IJTCSE Research /ISSN 2349–1582 conference publication

Abstract -The street lighting system is safety and energy conservation are very important advantages of smart cities. Namely, the city street lamp is correlated with both safety and energy conservation. In this project to address the existing problems, a smart street lamp (SSL) based on decentralized computing for smart cities are proposed in this paper. The proposed SSL is dynamic brightness adjustment, all street lamps can be adjusted dynamically; autonomous alarm on abnormal states, each street lamp can report the abnormal status independently, such as broken, fault, and so on. The experimental results showed that proposed SSL can improve energy efficiency and reduce danger.

Keywords — Smart LED street light; Solar; Energy efficient; Street Lighting, Illumination.

no activity is detected, but brightens when movement is detected. This type of lighting is different from traditional, stationary illumination, or dimmable street lighting that dims at pre-determined times.

Introduction:

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A Data Sharing Protocol to Minimize Security and Privacy Risks in Cloud Storage

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ABSTRACT

Data contribution in the cloud is a procedure so as to allow users to expediently right of entry information in excess of the cloud. The information holder outsources their data in the cloud due to cost lessening and the huge amenities provided by cloud services. Information holder is not able to manage over their information, since cloud examination contributor is a third party contributor. The main disaster with data partaking in the cloud is the seclusion and safety measures issues. Different techniques are obtainable to sustain user seclusion and protected data sharing. This paper focal point on different schemes to contract by means of protected data partaking such as information contribution with forward security, protected information partaking for energetic groups, quality based information partaking, encrypted data sharing and mutual influence Based Privacy-Preserving verification set of rules for right to use manage of outsourced information.

KEYWORDS: *conveniently access data, secure data sharing, forward security, Privacy-Preserving Authentication Protocol*

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INTRODUCTION

Emerging technologies about big data such as Cloud Computing , Business Intelligence , Data Mining, Industrial Information Integration Engineering(IIIE) and Internet-of-Things have opened a new era for future Enterprise Systems(ES) . Cloud computing is a new computing model, in which all resource on Internet form a cloud resource pool and can be allocated to different applications and services dynamically. Compared with traditional distribute system, a considerable amount of investment saved and it brings exceptional elasticity, scalability and efficiency for task execution. By utilizing Cloud Computing services, the numerous enterprise investments in building and maintaining a supercomputing or grid computing environment for smart applications can be effectively reduced. Despite these advantages, security requirements dramatically rise when storing personal identifiable on cloud environment. This raise regulatory compliance issues since migrate the sensitive data from federate domain to distribute domain. To take the benefit enabled by big data technologies, security and privacy issues must be addressed firstly. Building security mechanism for cloud storage is not an easy task. Because shared data on the cloud is outside the control domain of legitimate participants, making the shared data usable upon the demand of the legitimate users should be solved. Additionally, increasing number of parties, devices and applications involved in the cloud leads to the explosive growth of numbers of access points, which makes it more difficult to take proper access control. Lastly, shared data on the cloud are vulnerable to lost or incorrectly modified by the cloud provider or network attackers. Protecting shared data from unauthorized deletion, modification and fabrication is a difficult task.

LITERATURE SURVEY

1. **"Efficient and secure identity-based encryption scheme with equality test in cloud computing,"**

Xinyi Huang et.al [1] (2015) introduced a Identity-based (ID-based) ring signature, which eliminates the process of certificate verification. By providing forward secure ID-based ring signature method security level of ring signature is increased. In this method, if the secret key of any user has been compromised, previous generated signatures of all is included and the user still remains valid. If a secret key of single user has been compromised it is impossible to ask all data owners to reauthenticate their data. It is especially important to any large scale data sharing system and it is very efficient and does not require any pairing operations. The user secret key is one integer, while the key update process requires an exponentiation. This scheme is useful; especially to those require authentication and user privacy.

ACCOUNT TRADE: ACCOUNTABLE PROTOCOLS FOR BIG DATA TRADING AGAINST DISHONEST CONSUMERS

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ABSTRACT

We propose Account Trade, a set of accountable protocols, for big data trading among dishonest consumers. To secure the big data trading environment, our protocols achieve book-keeping ability and accountability against dishonest consumers who may misbehave throughout the dataset transactions. Specifically, we study the responsibilities of the consumers in the dataset trading and design Account Trade to achieve accountability against the dishonest consumers who may try to deviate from their responsibilities. Specifically, we propose uniqueness index, a new rigorous measurement of the data uniqueness, as well as several accountable trading protocols to enable data brokers to blame the dishonest consumer when misbehavior is detected. We formally define, resell the datasets they outsourced to the brokers. On the other hand, concerns arise at the consumer side T. Jung and Z. Qiao are with the Department of Computer Science and Engineering, University of Notre Dame, Notre Dame, IN, 46556, USA X.-Y. Li and W. Huang are with the School of Computer Science and Technology, University of Science and Technology of China, Hefei, Anhui 230027, China J. Qian, L. Chen, J. Han, and J. Hou are with the Department of Computer Science, Illinois Institute of Technology, Chicago, IL 60616, USA X.-Y. Li is the corresponding author, as well: dishonest consumers may illegally resell the purchased datasets. Addressing the first issue is possible because that was one of FTC's main concerns, and FTC has managed to detect and punish dishonest data brokers already; and 2) achieving accountabilit

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Computer Interfaced Smart A.I Battle Field Tank

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Abstract- As the potential for disastrous consequences from threats increases in prevalence, the speed which such cyber threats can occur presents new challenges to understandings of self-defence. This paper first examines the prevention of threats nations could face. It next looks at existing concepts of self-defence with particular focus on anticipatory and pre-emptive self-defence, and then moves to a review of the underlying criteria which govern the right to resort to such actions. Highly sophisticated electronic sensors attached to the tank's hull will project images of the surrounding environment back onto the outside of the vehicle enabling it to merge into the landscape and evade attack. The electronic camouflage will enable the vehicle to blend into the surrounding countryside in much the same way that a squid uses ink to help as a disguise. Unlike conventional forms of camouflage, the images on the hull would change in concert with the changing environment always insuring that the vehicle remains disguised.

Keywords- Internet of Things (IOT), Sensor, genetic algorithm (GA), Mobile ad-hoc networks (MANETs)

I. INTRODUCTION

In this proposed system, the tanker is used to detect the obstacle by capturing the border alert using camera and there is a need of man power to control the machinery. The major disadvantage is the machine is visible and need an man power to control the machine. My aim is to construct an invisible sophisticated tanker. Then introducing a sophisticated tanker which senses the movement in border area without manpower and launches its tube towards the target. Also by using screen and lens over the machine, it has been invisible by adapting towards the environment. In this project, the design a tanker that will be change the color pattern depends on the environment.

Every process will be handled and controlled by microcontroller (PIC series).Field instruments such as ultrasonic sensor used to find object movement and range. Depends on the feedback of ultrasonic sensor, the servo motor will turn the launching tube towards the target .Metal sensor used to find the landmine. Selection switch will design the mode to be operated. The proposed system helps to prevent maintenance and human loss by providing invisible mechanism.

It senses the obstacles by sensor and allows the launching tube towards the target. In this system the introducing a sophisticated tanker which senses the movement in border area without manpower and launches its tube towards the target. Also by using screen and lens over the machine, it has been invisible by adapting towards the environment.

II. LITERATURE SURVEY

1. Transitioning From Federated Avionics Architectures to Integrated Modular Avionics

In this paper identifies considerations for transitioning from a federated avionics architecture to an integrated modular avionics (IMA) architecture. Federated avionics architectures make use of distributed avionics functions that are packaged as self-contained units (LRUs and LRMs).IMA architectures employ a high-integrity, partitioned environment that hosts multiple avionics functions of different criticalities on a shared computing platform. This provides for weight and power savings since computing resources can be used more efficiently. This paper establishes the benefits of transitioning to IMA. To aid in the planning process, the paper also identifies factors to consider before transitioning to IMA. The approach to resource management is identified as the fundamental architectural difference between federated and IMA systems.

2. Uniform Distribution of Mobile Agents Using Genetic Algorithms for Military Applications In MANETs

There has been increased research interest in providing uniform distribution of autonomous mobile nodes controlled by active running software agents over an unknown geographical area in mobile ad-hoc networks (MANETs). This problem becomes more challenging under the harsh and bandwidth limited conditions imposed by military applications. In this framework, the software agent running at the application layer for each autonomous mobile node adjusts its direction and speed by using local information from its neighbours. A genetic algorithm (GA) is used by each node to select the

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HANDWRITTEN RECOGNITION FOR AUTHOR IDENTIFICATION USING IMAGE PROCESSING TECHNIQUES

IJTCSE Research Follow
May 1, 2019 · 7 min read

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IJTCSE Research /ISSN 2349–1582 conference publication

Abstract: This work presents an effective method for writer identification in handwritten documents. We have developed a local approach, based on the extraction of characteristics that are specific to a writer. To extract the features, the image is divided into uniformly sized blocks. This is with a view that a part is a representative of a whole-text and the time required for features extraction will be greatly reduced. Input samples take more space on secondary memory as compared to mathematical data. To reduce the space the features of the writer handwriting which was obtained at different time of the day is computed and averaged. This process is carried out for all writers and features of different writers are stored. To exploit the existence of redundant patterns within handwriting, the writing is divided into a large number of small sub-images, and the sub-images that are morphologically similar are grouped together in the same classes. The patterns, which occur frequently for a writer, are thus extracted. The author of the unknown document is then identified by a neural network classifier

SMART WASTE MANAGEMENT SYSTEM USING IOT

IJTCSE Research Follow
May 14, 2019 · 7 min read

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ABSTRACT:

Nowadays certain actions are taken to improve the level of cleanliness in the country. We will build a system which will notify the corporations to empty the bin on time. This system will help in cleaning the city in a better way. By using this system people do not have to check all the systems manually but they will get a notification when the bin will get filled.In this system, we used ultrasonic sensor on top of the garbage bin which will detect the total level of garbage inside it according to the total size of the bin. When the garbage will reach the maximum level, a notification will be sent to the corporation's office, then the employees can take further actions to empty the bin. In addition to this gas sensor is attached to intimate the evolution hazardous gas in the bin and IR sensor is attached to detect human to open the bin automatically. The system also employs duty cycle technique to reduce power consumption and to maximize operational time. The Smart bin system was tested in an outdoor environment. Through the test, we collected

24/11/19

106

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IJTCSE Research Follow
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ENHANCED CONTENT SHARING IN A SOCIAL NETWORK (WHATSAPP)

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IJTCSE Research /ISSN 2349–1582 conference publication

Abstract — WhatsApp Messenger is a freeware and cross-platform instant messaging and Voice over IP (VoIP) service. The application allows the sending of text messages and voice calls, as well as video calls, images and other media, documents, and user location. The application runs from a mobile device though it is also accessible from desktop computers; the service uses standard cellular mobile numbers. In this WhatsApp messenger have some basic disadvantages. Our idea is tends to overcome this issues. One of the concepts is blocking unwanted friends in group; second concept is used mobile storage saving using replica file detection system. Third concept is fake news avoidance system. The unwanted friend blocking is nothing but in WhatsApp basically have blocking concept for unwanted friends who are in our contacts but this facility is not available is WhatsApp group. So, our design is helps to overcome problem. As result, we can easily block unwanted contact message. (i.e., if unwanted person message in this group or you are messaging in that same group both message are hidden for each other but other peoples who are in group they can view your messages). Duplicate file download make problem of memory. So, before downloading any video or images in WhatsApp will verify with previous downloading available file in device. So, this process helps to save storage space.

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Smart-Home Automation Using IoT-Based Sensing and Monitoring Platform

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ABSTRACT

To comfort the living conditions within of a human his home, she can use home monitoring and automation are utilized. The standards of human's comfort in homes can be categorized into several types. Among these categories, the most significant ones are the thermal comfort, which is related to temperature and humidity, followed by the visual comfort, related to colors and light, and hygienic comfort, associated with air quality.We are proposing a system to monitoring the paremeters range which will increase the comfortness of the human.Additionally,we incorporate the smart home technique which controls the home appliances by intelligent automatic execution of commands after analyzing the collected data. Automation can be accomplished by using the Internet of Things (IoT). This gives the inhabitant accesses to certain data in the house and the ability to control some parameters remotely. We propose the complete design of an IoT based sensing and monitoring system for smart home automation. That uses the EmonCMS platform for collecting and Visualizing monitored data and remote controlling of home appliances and devices. The selected platform is very flexible and user-friendly. The sensing of different variables inside the house is conducted using the NodeMCU-ESP8266 microcontroller board, which allows real-time data sensing, processing and uploading/downloading to/from the EmonCMS cloud server.

Keywords : IOT, CMS, Humidity, Air Quality, Temperature

I. INTRODUCTION

Smart Home is collaboration of technology and services through a network for better quality living. A smart home allows the entire home to be automated and therefore provide ease and convenience to everyday activities in the home. This technology is used to make all electronic devices to act 'smart'. In the near future almost all the electronic devices will take advantage of this technology through home networks and the internet. Many people think this technology as pure networking. Others think this technology will reduce their work load, but smart home technology is combination of both and much more. Smart home technology is currently being implemented for entire house in particularly kitchen and living room. Basically, smart home facilitates users with security, comfortable living and energy management features as well as added benefits for disabled individuals.

This technology might sound new but it just uses the existing technologies. A smart device is a common appliance with a much more complex computer installed to give it more functionality. These functions are the ones which makes it so different

PACIFER (MULTI UTILITY MOBILE APPLICATION)

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Abstract: Every necessary activities and day to day needs cannot be accessed through a single Application. Every android user will have multiple apps on their mobile for different uses and they follow different method to get into that app. Every mobile user will be happy to connect with their daily needs and environment if they come under one roof. Apart from Security, the availability of any basic amenities like notepad, his/her CV, issues addresser and etc. to a user will be encouraged if it comes in common window of single application in mobile itself. Hostel life is much fundamental for understudies yet at the same time there are a few constraints". There are many issues and limitations in the hostel life so we conduct a survey on hostel. In that survey has been found students are facing more problems like water problem, Food problem, Electricity problem, Security Problem, Furniture problem, Medical Services problem, Internet Facility problems. So our project emphasis on the multi utility of the system application like security to ladies, Issues registering for students, notepad, and profile updates etc. that is modified into a user friendly mobile app for the same.

1. INTRODUCTION

Smart-phones have become today's gadgets of necessity. From making calls to checking email, from downloading the latest chart-topper to checking bank balances, they symbolize the convergence of technology in one small, mobile device. Recently, phone vendors have transitioned from highly customized to general purpose operating systems, such as Symbian, Windows Mobile, and Linux, making it easier for third-party developers to build applications. Nowadays the Security concerns in the society have become a major issue that needs to be addressed. The help from the digital world is a necessary phenomenon to this problem. Also, the accessing of security service through technology must be simple and easily accessible. In addition to that, every necessary activities and day to day needs cannot be accessed through a single Application. Every android user will have multiple apps on their mobile for different uses and they follow different method to get into that app.

Every mobile user will be happy to connect with their daily needs and environment if they come under one roof. Apart from Security, the availability of any basic amenities like notepad, his/her CV, issues addresser and etc. to a user will be encouraged if it comes in common window of single application in mobile itself. So our project emphasis on the multi utility of the system application like security to ladies, Issues registering for students, notepad, and profile updates etc. that is modified into a user friendly mobile app for the same.

The mobile application development is a major phenomenon in the current scenario and our project deals with the development of a new multi utility Mobile Application for the wide variety of people as per their own usage. The mobile application deal with the daily usage of people who navigates within their mobile to go to the specific application, this problem is nullified by the introduction of our mobile application called PACIFER. It pacifies the user by reducing his workload and time consumption.

This project is created in such a way that every different group of people like Students, Children, Old people, Ladies and other set of peoples can have their own choice of accessing the modules present in this application. In a nutshell, this project is created as a multi utility application.

2. PURPOSE

The main objective of this project is to cover as much basic amenities of a user as possible in a single window of application for the android users and this project is developed to provide a security, integrity and ease of access to some necessary operations which are carried out in today life and the project helps the user to access some of his basic attributes simultaneously.

3. SCOPE

IOT NETWORKS FINGERVEIN DETECTION USING BIOMETRICS SECURITY INTRUSION DETECTION

IJTCSE Research Follow
May 14, 2019 · 9 min read

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ABSTRACT:

Security is a major concern in today's world due to the increased rate of crimes and identity thefts. To overcome this problem there is a great need for efficient authentication and authorization systems. Among the many authentication systems that have been proposed and implemented, finger vein biometrics is emerging as the foolproof method of automated personal identification. Finger Vein is a unique physiological biometric for identifying individuals based on the physical characteristics and attributes of the vein pattern in the human finger. In this project, we propose real time finger-vein recognition using image processing. Here we implement this system using MATLAB and equipped with finger-vein recognition algorithm. The area of

24/7/19 107

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Real Time Implementation and Investigation of Wireless Device of Electrical Stimulation for Peripheral Nevers

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ABSTRACT

Electrical nerve stimulation (ENS) is the delivery of electricity across the intact surface of the skin to activate underlying nerves; generally with the objective of pain relief. Wearable Intensive Nerve Stimulation (WINS) is an emerging form of ENS in which the device is wearable, automated, and designed for intensive use. This enables regular use throughout the day and night, whenever the patient experiences pain, which is essential for the management of chronic pain. Hence we design and develop a wireless controlled smart tiny wearable medical device that is capable of passing electricity through underlying nerves of human beings for symptomatic relief and management of chronic pain. This project can be applicable for coma persons. When there is a slight improvement in their acceleration, this device will stimulate the peripheral nerves accordingly.

I. INTRODUCTION

In recent years, the average age of the world's population has been increasing, and healthcare monitoring devices have received a lot of attention because they improve the length and quality of people's lives. Healthcare monitoring includes caring for the welfare of every person, which includes early diagnosis of diseases, real-time monitoring of the effects of treatment, therapy, and the general monitoring of the conditions of people's health. As a result, wearable electronic devices are receiving greater attention because of their facile interaction with the human body, such as monitoring heart rate, wrist pulse, motion, blood pressure, intraocular pressure, and other health-related conditions. Unlike conventional health-monitoring systems (e.g., blood pressure meters), wearable electronic devices are portable, wearable, and they provide real-time, continuous, recorded data related to complex health conditions in a timely manner. Furthermore, in order to maximize the portable and wearable advantages of the wearable devices, energy harvesting devices were integrated instead of rigid and bulk batteries. These characteristics of wearable electronic devices can improve the users' or patients' compliance with medical instructions and medication schedules. Since the wearable devices are wireless, the information they gather can be sent to a central node, such as a cell phone or a microcontroller board that can transmit the information to a medical center and display it on a screen.

According to the World Health Organization (WHO), approximately 15 million people suffer strokes and chronic pains worldwide each year. Strokes and chronic pains is a very broad term and include a variety of different types of diseases involving the blood vessels that supply the brain. Treatment depends on the type of stroke and the location of the blood vessels involved. So we develop a Non-Invasive artificial stimulation for those who are unfortunate enough to move their hands due to paralyze attack or coma.

II. METHODS AND MATERIAL

Segmentation of Brain Stroke Image by Abdulrahman Alhawaimil talks about Stroke is the 4th leading cause of death in the US, with one person dying every 4 minutes as a result. Approximately 800,000 people have a stroke each year; about one every 4 seconds. Strokes occur due to problems with the blood supply to the brain; either the blood supply is blocked or a blood vessel within the brain ruptures. Due to the increase in misdiagnosis in medical for example

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ENERGY-EFFICIENT ROUTING PROTOCOL FOR WIRELESS SENSOR NETWORKS

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Abstract **-Wireless Sensor Networks (WSN) services are applied in many civilian, engineering, medical monitoring, automation and military scenarios. WSN are distributed network of sensors, it has different parameters like temperature, humidity, alsohas initiated various security threats, especially in unattended environments. Network consists of three basic components such as Nodes, Base Station, and Batteryunit. This network first sense the data by using sensing element ,because nodes are act as a sensor and process the data .finally data is transmitted using low battery power Because of less battery powered it will get die out quickly . So energy efficiency routing is the important issues in WSN. Nodes are consumes energy while transmitting data, therefore it affects the lifetime of the network. Hence we have to develop an efficient routing algorithm in which nodes consumes less energy .Many algorithms are developed in order to achieve less energy consumed routing algorithm in different layer. Such as Network layer, application layer and data link layer. In this paper the Modified Low EnergyAdaptive Cluster Hierarchy (M_LEACH) routing protocol has been discussed. Implementation has been done by using MATLAB software.**

Key words—LEACH, wireless sensor network, cluster head, energy consumes, dead nodes

1. INTRODUCTION

Wireless Sensor Networks (WSNs) consist of several sensor nodes and are battery powered. The performance of the sensor nodes are affected when the battery die below the predefined level. Each node in this network has restricted energy resources due to limited amount of power .So, the routing protocol should be energy efficient. Nodes are send all the date to a base station (central unit),as shown in figure 1

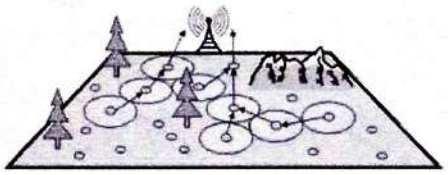

Fig1 : wireless sensor network

The routing protocols gives information about data transmission through the network and also defines the communication between nodes. The routing protocol can be classified in many types as shown in figure2.

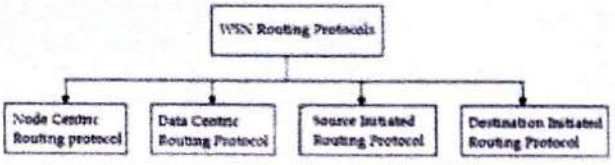

Fig2 : classification of routing protocols

LEACH (the Low Energy Adaptive Clustering Hierarchy), a hierarchical based routing protocol that arranges cluster systematically, such that energy is distributed equally in all the nodes in the network. Cluster consists of several nodes among these nodes one node is considered as a cluster head, that act as a routing node to all other nodes in network. In this way Minimizes the energy dissipation in WSN .

The cluster head is selected before starts the communication between nodes, due to battery dies cluster head fails to communicate.In this proposed M_LEACH the cluster head is selected randomly from the group among several nodes on temporary basis to avoid battery die. This random selection of cluster node is done by themselves under some probability criteria, and is defined in the routing algorithm. Once cluster node is selected it can be informed to the other nodes in the network.

The member nodes communicate directly with the cluster head, Cluster heads receive the data and forwarded it to the

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(UGC Care Journal)

Electronic Demand Draft: Design and implementation of Modified Automated Teller Machine

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ABSTRACT

The system eliminates the drawbacks of the existing set-up. It is placed in the bank branches similar to that of ATM.In proposed system, we use RFID Reader and GSM as communication device, which was operated using Arduino Uno Micro controller. Here, RFID Tag act as a Debit/Credit Card. When user swipe the card in the ATM model machine the reader detects and forward the card information to the microcontroller. At present, intelligent automation has stepped its presence in every field all over the world. This paper is an intelligent automation for issuing the demand drafts in automated way. In present scenario, demand draft was taken manually. Without the help of human source, it is highly impossible to take DD. To take DD the customer has to go for bank and wait for an hour. Initially the customer will be provided DD form, after filling the complete details it will be forwarded to the next level, this process is followed in existing system and DD will be taken only on bank working hours. In order to overcome such kind of difficulties an idea is introduced which allows the customer to take DD automatically. To make the work easier, faster and automated a domain called embedded system is used. In this automated system, the customer has to insert their currency in the rupee slot and have to wait for few seconds to accept it. Then within the next few seconds they have to feed the required details in the PC instead of writing in a form. This is generated and the sum of amount which has been inserted will be added in the softcopy. Then they have to verify once and have to give print. Thus, the Demand Draft will be generated in few seconds instead of standing for hours. Thus, throller process with that information and create the Electronic Demand Draft and transfer the money to the particular person account directly which account details we are inserted in the machine. The amount credit and debit informationare forwarded to both people via SMS service.

Keywords: *ATM, Anywhere banking, beneficiary, barcode, demand draft, account number, customer, financial institution, RFID, AES.*

1. INTRODUCTION

Most banks use Demand draft as an effective method to transfer bank account money to any other purposes. It is a Reachable Apparatus. This method is more or less similar to cheque but without bouncing problem DD provides the guaranteed payment. The DD can be created only the money available in the customer account and amount depicted only when the customer deposits the money.

By using this method, we can ensure the obtain ability of cash in the account till the amount mentioned in the demand draft. Demand drafts are of two different types. Sight demand draft, is approved and paid only after verifying the specific documents. Until the specified document is true, the payee will not be able to receive the money.

Demand draft, DD is payable only after the specific time period and it cannot be withdrawn from the bank before that, the ATM helps to reduce the bank

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Design and Simulation of Wireless Sensor Network based Intelligent Driver Permit Card (IDPC) System

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ABSTRACT

To prevent illegal licenses and therefore causing accidents, a new automated system is proposed. This system is implemented using machine-learning approach and feature extraction algorithm. A system is modeled for understanding the driver behavior and this is implemented towards improving the safety. This paper focuses on implementing a wireless sensor vehicle node and LABVIEW based embedded data logger for automatic vehicle riding pattern recognition, based on machine-learning approach. Result analysis is done by comparing the received data with previous data.

KEY WORDS: WSN, MACHINE LEARNING, LABVIEW, PERMIT CARD, PATTERN RECOGNITION

INTRODUCTION

The evolving technology introduces much progress thereby reduces the manpower and time consumption in day to day life. A driving license is an official document issued by regional transport office certifying that the holder eligible and qualified to drive a motor vehicle. As per the survey, every 30 seconds one person dies in road accident due to untrained driving by illegal license holders. So it is very important to disassociate the driving ability test from the licensing authority. In spite of continued efforts made by the government in India, various organizations continue to highlight the fatalities on the roads caused by conflicting process of issuing driving licenses across India. Based on the independent survey conducted, that close to 60 percent of license holders have not undergone the driving license test and 54 percent of them are untrained to drive (Marianne Bertrand et al., 2007).

As agents promotes corruption and resulting in higher payment for obtaining driving license, thereby reduces driving test skills quality and in unskilled drivers on road (The Times of India, 2010). To overcome this problem, an efficient and cost effective system solution has to be implemented.

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IMPLEMENTATION OF FULLY AUTOMATED PLANT FOR GRAIN STORAGE SYSTEM

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Abstract— *This paper will useful for Tamilnadu Civil Supplies Corporation (TNCSC) to design fully automated plant to storing the paddy properly,in which RFID is used to find the details of the particular farmer[1]. And it will be acknowledge through LCD display. Here the farmers can also re-get the paddy without selling it. First the paddy is transfer from bunker one to bunker two where humidity sensor is placed to detect the moisture level of the paddy. If it is good it's directly divert to selection stage. Else it is diverting to bunker three . Here we use air pre heater to dry the paddy and it's bring back. After that it reaches fd fan and vibrator to remove the waste particle[2]. Atlast the weight scale is placed under master storage system to calculate the quantity of the product. . Bluetooth module is used to send message about all specification such as weight ,cost of the paddy to the corresponding farmer and if we replace bluetooth module by GSM it will link with banking sector to credit money for received paddy.*

Keywords—*Automated plant ; Bluetooth module;Bunker; GSM ;Gearmotor; RFID; Sensors;*

1. INTRODUCTION

1.1 EMBEDDED SYSTEM

Embedded Technology is now in its prime and the wealth of knowledge available is mind blowing. However, most embedded systems engineers have a common complaint. There are no comprehensive resources available over the internet which deal with the various design and implementation issues of this technology. Intellectual property regulations of many corporations are partly to blame for this and also the tendency to keep technical know-how within a restricted group of researchers.

Before embarking on the rest of this book, it is important first to cover exactly what embedded systems are, and how they are used. This wikibook will attempt to cover a large number of topics, some of which apply only to embedded systems, but some of which will apply to nearly all computers (embedded or otherwise). As such, there is a chance that some of the material from this book will overlap with material from other wikibooks that are focused on topics such as low-level computing, assembly language, computer architecture, etc. But we will first start with the basics, and attempt to answer some questions before the book actually begins.

1.2 WHY USED AN EMBEDDED SYSTEM ?

Embedded systems are playing important roles in our lives every day, even though they might not necessarily be visible. Some of the embedded systems we use every day control the menu system on television, the timer in a microwave oven, a cellphone, an MP3 player or any other device with some amount of intelligence built-in. In fact, recent poll data shows that embedded computer systems currently outnumber humans in the USA. Embedded systems is a rapidly growing industry where growth opportunities are numerous.

1.3 POSSIBLE REASONS

Processors have shrunk in size with increased performance Power consumption has drastically reduced. Cost of processors have come down to affordable level. There is a greater awareness now that rather than a totally hardwired electronic system, incorporation of a programmable processor in a circuit makes the design more robust with the reduction in the design time cycle. The concept of a development environment where you can prototype the system and do a simulation/emulation also reduces the design cycle and total development time. The latest model of the Ford car has more than 21 microcontrollers performing functions such as anti-lock breaking system.

2 . PROPOSED SYSTEM

2 .1 BLOCK DIAGRAM

In this project PIC micro controller 18F4520 is used. At the input side of the microcontroller ,RFID reader, temperature, humidity sensors ,selection switch and weight scale are connected. And at the output side Bluetooth module, driver motor, fd fan, vibrator ,blower ,LCD display are connected. RFID is used to know about the details of the farmer. Sensors are used to measure the temperature and humidity level of the paddy.Selection switch is used to select the operation,LCD display is used to shows the details of farmer. Gear motor is used to control the flow of paddy. Fd Fan and vibrator are used to remove the Sheller and stony particles. Blower is used to pass hot air to the paddy. Bluetooth module is used to send the message to the farmer mobile. "Fig. 1," shows the block diagram of our project.

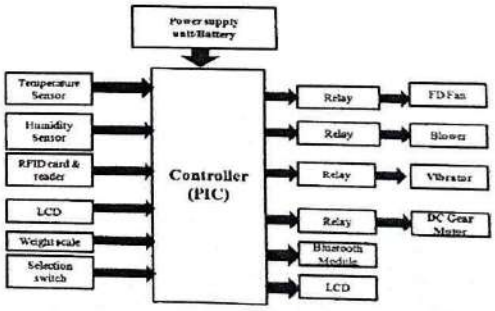

Fig. 1. Block Diagram of Automated Grain Storage System

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Monitoring And Controlling The Surrounding Parameters To Enhance The Earthworm Breeding Using Sensors

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Abstract— Vermicomposting is the process of breaking down biodegradable matter by earthworms to convert the contained nutrients in the organic matter to vermicast. In this paper, the proponents introduced the development of an automated production of vermicast. Four subsystems were designed namely: irrigation, sensor network, worm migration, and communication subsystem to minimize human intervention. The communication system involved the use of 2.4 Ghz. The study uses Arduino uno and Arduino mega microcontrollers, an android phone and liquid crystal display (LCD) for monitoring. The automated project improved the manual process of vermicomposting by eliminating 4 processes from the manual system.

Keywords— Arduino, Soil Moisture, Soil Ph, Soil Temperature, Vermicast, Vermicomposting;

I. INTRODUCTION

Organic farming is a classification of agricultural production that aims to produce food and fiber, it was conceived to be the best alternative production method for a healthier life, since it prohibits the use of synthetic pesticides or fertilizers. This is expected to have high rise in demand. For organic farming, castings of earthworms also known as vermicomposting is an excellent soil enhancer and bioactive high quality fertilizer. Vermicomposting is the process of breaking down biodegradable matter by earthworms to convert the contained nutrients in the organic matter to vermicast. Eudrilus eugeniae or commonly known as African night crawler is an earthworm species indigenous to Africa but extensively bred in the USA, Canada, Europe and Asia [1]. It has high-production rates and is capable of decomposing large quantities of organic wastes quickly and incorporating then to topsoil [2]. It shows preferences for high temperature, with maximum biomass production occurring at 25^0C – 30^0C, while growth rates were very low at 15^0C [3] It can tolerate moisture between 70%-80%, the optimum being 80%-82%. It can also tolerate pH levels from 5-9, but they move on more acid material, with pH material of 5 [4].

There are around 4000 species of Earthworm worldwide and 400 of them can be found in the Philippines. In 1982 Dr. Otto Graff introduced African Nightcrawler (ANC) in the Philippines which originated in West Africa.

In tropical country like the Philippines, ANC increases rapidly due to favorable weather condition. The vermicast production is an emerging farming observed in the developing country like the Philippines and is still in manual system. Region 3 and Region 12 of the country are agriculture-based industry area, where vermiculture and vermicast production industry displays good potentials in the local market. Vermiculture is the culture of earthworms. The goal is to continually increase the number of worms in order to obtain a sustainable harvest [5].The authors conducted site survey of a local vermicast farm industry in Region 3 of the country. The manual process starts by laying of blocks as perimeters for compost. This also serves as the structure for the worm bed. Substrates are then prepared and placed in the whole area of the worm bed. Upon equal distribution of substrates, a net is then

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Design and Analysis of Dual Inductor High Step-up DC-DC Converter Based on CockCroft-Walton Multiplier for Renewable Energy Applications.

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***Abstract*— In this paper, a new converter design based on cascaded-diode capacitor structure has been proposed here. New proposed design contains two low voltage common-emitter switches with high step-up DC-DC converter that can be used as step-up power stage for low power renewable energy sources. In order to eliminated the problems such as voltage ripple and voltage droop a new design converter circuits which improves high voltage gain, continuous input current and higher efficiency in addition with design considerations and analysis of the converter is performed and discussed prototype design will demonstrate the functional analysis of the new converter.**

I.Introduction

Due to the advantages of solar energy (PV panels) and fuel cell stacks, such as availability, cost, and reliability, they have become two of the most popular renewable energy sources. However, due to the wide-range low DC output voltage of these types of green energy sources, employing a high voltage ratio boosting stage in the power electronic interface can be necessary in order to generate the required DC bus voltage for grid/utility connected dc-ac inverters.

[1]. Classical non-isolated converters are not practically applicable, as the voltage gain is limited at extremely high duty cycles due to the losses in the parasitic components and the problem of diode reverse recovery. Several high step-up DC-DC converter topologies have been proposed in the literature with three distinct configurations:

- Impedance -source networks converter.
- Transformer isolated (and inductor coupled) DC-DC converter.
- Switched capacitor Converters.

Recently, many industrial applications need non-isolated high step-up high efficiency DC/DC converters, such as dc back-up energy systems for UPS, renewable energy systems, fuel cell systems, and hybrid electric vehicles [1–6]. Step-up capability and efficiency are the two main concerns which determine the performance of these converters.

Theoretically, a continuous-conduction-mode (CCM) boost converter can realize high gain, but the voltage stresses on the switch and output diode are equal to the high output voltage, a usage of high-voltage rating devices. High-voltage rating switch means high on-resistance, so the conduction losses are large. Moreover, a high-voltage rating diode causes a severe reverse recovery problem, which gives a detrimental effect on the efficiency of the converter. Consequently, it is very difficult to satisfy high voltage gain ratio and high efficiency at the same time. In practice, the voltage gain ratio of a boost converter with high efficiency is limited to approximately four times [7]. Thus, the conventional boost converter would not be acceptable for these high step-up and high voltage applications.

In order to achieve high voltage gain conversion ratio with high efficiency, many transformer-based or couple-inductor-based topologies have been developed [9-23]. Transformer-based isolated converters can achieve high voltage gain conversion ratio with a reasonable duty ratio by selecting the turns ratio of the transformer properly. Compared with the voltage-fed converters, the current-fed converters are inherently suitable for high step-up applications because of their boost-type configuration [9-12]. However, they need snubbers to limit the voltage spike across the switches caused by the transformer leakage inductance and an auxiliary circuit is necessary for operation below 0.5 duty cycle [13, 14]. Moreover, these isolated converters need transformer and inductor, so the circuit volume is large.
Coupled-inductor-based converters are favorable candidates for their simple structure. Similarly, the coupled-inductor – based converters can realize high voltage gain conversion ratio easily by adjusting the turns ratio of the coupled-inductor. However, the leakage inductance of the coupled inductor induces high voltage spike on the switch, lead to

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IMPLEMENTATION OF BORDER ALERT SYSTEM BY USING INVISIBLE TANKER IN MILITARY FIELD

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ABSTRACT:

As the potential for disastrous consequences from threats increases in prevalence, the speed which such cyber threats can occur presents new challenges to understandings of self-defense. This paper first examines the prevention of threats nations could face. It next looks at existing concepts of self-defense with particular focus on anticipatory and preemptiveself-defense, and then moves to a review of the underlying criteria which govern the right to resort to such actions. Highly sophisticated electronic sensors attached to the tank's hull will project images of the surrounding environment back onto the outside of the vehicle enabling it to merge into the landscape and evade attack . The electronic camouflage will enable the vehicle to blend into the surrounding countryside in much the same way that a squid uses ink to help as a disguise . Unlike conventional forms of camouflage, the images on the hull would change in concert with the changing environment always insuring that the vehicle remains disguised.

KEY WORDS: sophisticated tanker, militarytanking, findingobjects, automatic field controller.

I.INTRODUCTION

In this proposed system,the tanker is used to detect the obstacle by capturing the border alert using camera and there is a need of man power to control the machinery.The major dis advantage is the machine is visible and need an man power to control the machine.Our aim is to construct an invisible sophisticated tanker.we are introducing a sophisticated tanker which senses the movement in border area without manpower and launches its tube towards the target. Also by using screen and lens over the machine, it has been invisible by adapting towards the environment.

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ENERGY MANAGEMENT SYSTEM FOR INTELLIGENT BUILDINGS USING GRID CONNECTED SYSTEMS

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Abstract*—Buildings are the major factor of power demand because, they consumes 40% of total power in a systems. So, Demand Side Management (DSM) is a promising technology for power balancing in future energy systems. To avoid or delay large investments in grid infrastructures and storage facilities we have an idea i.e., Energy management using grid connected sources Smart buildings provide customers with information on various services and allow them to track the impact of their resource consumption on the overall sustainability of their buildings. Energy management is one of the most demanding issues within such urban centers owing to the complexity of the energy systems and their vital role. This project introduces a planning and operation models within the smart buildings by classifying roles demand side management (DSMs) into main intervention areas: parameters and temperature constraints, tracking human, energy prices, regulatory constraints and energy demand. More-complex building energy models integrating more than one intervention area are also reviewed, outlining their advantages and energy demand, existing trends and challenges, and some relevant applications. Finally, a methodology for developing an improved energy model in the smart buildings context is proposed, along with some additional final recommendations

Keywords: Intelligent building, load shedding, grid, PIR,Human detection, LDR,temperature sensor.

1.INTRODUCTION

The concept of intelligent building was born in the United States of America in the early 1980sThe first ever intelligent building in the world, according to China Intelligent Building Technology Information Network (C1BTIN) (2002) was built in Hartford in the United States in 1984.That notwithstanding, there has not been a clearly defined concept of what is to be considered an intelligent building even till date. Those outside the construction industry often wonder how an assembly of inanimate building materials can be intelligent, even members of the industry, especially developers and owners. Some see buildings furnished with the latest technology as being intelligent. The Intelligent Building Institute in the United States has proposed thus; *"an intelligent building is one that provides a productive and cost-effective environment* through optimization of its four basic elements - structure, systems, services and management, and the interrelationships between them. Intelligent buildings help business owners, property managers and occupants to realize their goals in the areas of cost, comfort, convenience, safety, long-term flexibility and marketability .*Such definition certainly leads to a broader meaning* - **overall performance, not only of the building itself, but also of the entire construction process.** The new trend in intelligent buildings is concentrated on both economic and environmental sensitive developments. Flexibility and low energy consumption have become the issues, which must be addressed, to cope with the fast growing technology and ever changing of the modern world.[1].This project will changes many complications surrounding the definition of intelligent building and attempts to summarize them into more simplified, clearer and un-ambiguous terms. It also seeks to enlighten both the private and corporate building developers on this emergent high-tech, environmental friendly, safe and automated buildings, with effective telecom systems, and bring to fore, some challenges it poses to building practitioners, in Nigeria in the 21st century The increasing availability and affordability of wireless building and home automation networks has increased interest in residential and commercial building energy management [2]. This interest has been coupled with an increased awareness of the environmental impact of energy generation and usage. Residential appliances and equipment account for 30% of all energy consumption in OECD countries and indirectly contribute to 12% of energy generation related carbon dioxide (CO2) emissions (International Energy Agency, 2003) [3].These figures highlight the importance of managing energy use in order to improve stewardship of the environment. They also hint at the potential gains that are available through smart consumption strategies targeted at residential and commercial buildings. The challenge is how to achieve this objective without negatively impacting people's standard of living or their productivity. The three primary purposes of building energy management are the reduction/management of building energy use; the reduction of electricity bills while increasing occupant comfort and productivity; and the improvement of environmental stewardship without adversely affecting standards of living. Building energy management systems provide a centralized platform for managing building energy usage. They detect and eliminate waste, and enable the efficient use electricity resources.[3] The use of widely dispersed sensors enables the monitoring of ambient temperature, lighting, room occupancy and other inputs required for efficient management of climate control (heating, ventilation and air conditioning), security and lighting systems. Lighting and HVAC account for 50% of commercial and 40% of residential building electricity expenditure respectively, indicating that efficiency improvements in these two areas can significantly reduce energy expenditure. These savings can be made through two avenues: the first is through the use of energy-efficient lighting and HVAC systems; and the second is through the deployment of energy management systems which utilize real time price information to schedule loads to minimize energy bills. The latter scheme requires an intelligent power grid or smart grid which can provide bidirectional data flows between customers and utility companies. DSM is used to control the customers' load demand. Thus, it modifies the customer's energy consumption and also improves customer satisfaction. In order to implement DSM, a Home Energy Management System (HEMS) is required to flatten peak hour demand and reduce power consumption[4] .The smart grid is

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IMPLEMENTION OF SYSTEM FOR MONITORING AND CONTROLLING OF STREET LIGHT IN SMART CITIES BY USING CLOUD COMPUTING

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Abstract*—India is one of the developing countries facing difficulties with shortage of power resources, availability of energy due to ever increasing population. Over dependency on fossil fuel can cause problems that affect the next generation to survive. In the current context, it is very important to know how to minimize the energy consumption and how to adapt various energy efficient techniques at least for power limited systems to overcome the energy crisis. Many research works are carried out and people are looking for a clean and better solution for the next generations. The new era Internet of Things has given a new dimension leads to an energy efficient management system. Internet of Things can overcome the existing energy wastage problems to a great extent. IoT is a combination of electronic devices like sensors and intelligent software applications to build an effective data exchange network. In this paper, it is proposed that smart street light design which is one of the basic ideas in reducing wastage of power as in the concept of building a flexible smart city management plan which is essential to the prosperous life of the future generations residing in city environments. This paper is tended to design an automation control and monitoring of the system based on internet of things (IoT) system to address the problems. Several sensors, microprocessor system, actuators and a software graphical user interface are utilized in this research. Based on several experiments it can be said that the proposed system able to maintain Street Lighting System more satisfaction, low maintenance system and accurate.

***Keywords*—street lighting system; control and monitoring; internet of thing**

I.INTRODUCTION

This project presents an idea of developing an IoT based application to monitor and control street light efficiently and improve its maintenance facilities. Now-a-days, street lights are the most important aspect of the city as it leads to most of the accidents due to low light. Lighting creates large amount of load when used in offices and large complexes. The energy saving potential is often ignored. According to a study about 4400MW of power is spent in India on street lightning. Therefore, the street lamps are relatively simple but with the development of urbanization, the number of streets

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Wireless Laser Power Transmission: A Review of Recent Progress

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Abstract— **Laser power transmission (LPT) is one of the most promising technologies in the long-range wireless power transfer field. LPT research has been driven by the desire to remotely power unmanned aerial vehicles (UAVs), satellites and other mobile electric facilities. However, the low overall efficiency is the main issue that limits the implement of high intensity laser power beam (HILPB) system. As seen from the contemporary understanding of efficiency of laser power transmission channel, the efficiencies of laser and PV array are the main limiting factors to the HILPB system from the perspective of power conversion. Thus, a comprehensive overview of LPT technology is presented from the point of efficiency optimization view in this paper. First, the basic principles of laser power transmission are briefly summarized. Then, a survey of the efficiency optimization methods for HILPB system with regard to the laser and PV technologies is provided in detail. Additionally, the open issues and challenges in implementing the LPT technology are discussed.**

Index Terms—Laser, photovoltaic (PV), Gaussian beam, Optical propagation, Efficiency, Wireless power transmission

I. INTRODUCTION

IRELESS power transfer (WPT) is the technology that the electrical energy is transmitted from a power source to an electrical load without any electrical or physical connections. Compared to traditional power transfer with cord, wireless power transfer introduces many benefits such as better operational flexibility, user friendliness and product durability. Therefore, WPT technology is ideal in applications where conventional conduction wires are prohibitively inconvenient, expensive, hazardous or impossible [1]. Nowadays, WPT technology is attracting more and more attention and evolving from theories toward commercial products, from low-power smartphones to high-power electric vehicles, and the wireless powered products will come to a 15 billion market by 2020 [2].

The development of WPT technology is advancing toward two major directions, i.e., near-field techniques, which ave a typical transmission distance from a few millimeters to a few meters, and far-field techniques, where the coverage is greater or equal to a typical personal area network.

The former consists of two techniques: capacitive power transfer (CPT) [3], and inductive power transfer (IPT) [4-5], while the latter can be further sorted into microwave power transfer (MPT) [6] and laser power transfer (LPT) [7]. The key advantages of CPT are high power transfer up to several kilowatts,Transferr power through metal objectss without generating significant edddy currents losses,Use metal plates to transfer power to reduce cost, Suitable for small size application and can be used in large size applications such as EV. The potential disadvatages of CPT are limited efficiency at the range of 70%-80% but it can reach 90%in some applications, Short transmission distance which is usually within the hundered of mm range, The challenge comes ffrom the conflict amog the transfer distance and power as well as the capacitance value.The advantages of IPT are High efficiency which higher than 90% is possible, High powerr transfer upto several killowatts, Good galvanic isolation, Suitable for applications that from low power smartphones to high power EV. The potential disadvantages of IPT are Limited transmission distance with vary from cm to m, the significant eddy current loss is generated in nearby metals which limits its application area. The key advantages of MPT are long effective transmission distance upto several km, suitable for mobile applications, potential to transfer several killowatts power. The potential disadvantages are low efficiency less than 10% for high power applications(such as transfer several kw power or more), complex implementation. The key advantages of LPT are long efffective transission distance upto several km, flexible device, suitable for mobile applications, potential to transfer several kw power . The potential disadvantages are low efficiency around 20% or less, line to sight to the receiver.

To date, both of the CPT and IPT can offer the capability of supporting high power transfer above kilowatt level with high efficiency in close distance [8-9]. However, the transferred power of these technologies attenuates quickly with the increase of the transmission range. Thus the power transfer distance is largely limited. Because of the ease and low-cost of implementation, these near field WPT technologies have found niche applications in everyday life, such as wireless charging of consumer electronics, electric vehicles (EV), robot manipulation and biomedical implanted devices.

field wireless power research has been gathering momentum in the last decade. Both the microwave and

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Wireless Power Transmission using High Intensity Laser Power Beam

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ABSTRACT— **Laser Power Transmission (LPT) is one of the most promising technologies in the long-range wireless power transfer field. LPT research has been driven by the desire to remotely power unmanned aerial vehicles (UAVs), satellites and other mobile electric facilities. However, the low overall efficiency is the main issue that limits the implement of high intensity laser power beam (HILPB) system. As seen from the contemporary understanding of efficiency of laser powertransmission channel, the efficiencies oflaser and PV array are the main limiting factors to the HILPB system from the perspective of power conversion. Thus, a comprehensiveoverview of LPT technology is presented from the point ofefficiency optimization view in this paper. First, the basic principles of laser power transmission are brieflysummarized. Then, a survey of the efficiency optimization methods for HILPB system with regard to the laser and PV technologies is provided in detail. Additionally, the open issues and challenges in implementing the LPT technology are discussed.**

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The development of WPT technology is advancing toward two major directions, i.e., near-field techniques, which have a typical transmission distance from a few millimeters to a few meters, and far-field techniques, where the coverage is greater or equal to a typical personal area network. The former consists of two techniques: capacitive power transfer (CPT) [3], and inductive power transfer (IPT) [4-5], while the latter can be further sorted into microwave power transfer (MPT) [6] and laser power transfer (LPT) [7]. To date, both of the CPT and IPT can offer the capability of supporting high power transfer above

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Using Li-Fi in Smart Sensors Integrated Chair for Medical Monitoring

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ABSTRACT:

Constant monitoring of patient's health condition in hospital is either manual or wireless fidelity (Wi-Fi)-based system. Wi-Fi-based system becomes slow in speed due to exponentially increased scalability. In this scenario, light fidelity (Li-Fi) finds the places wherever Wi-Fi is applicable with additional features of high speed data network. Apart from the speed factor, Li-Fi is more suitable in hospital application for monitoring the patient's conditions without frequency interference with human body. This paper proposes an application of Li-Fi network in the hospital for monitoring the patient's conditions such as temperature, pressure, heartbeat, glucose level, and respiratory conditions using respective sensors. The collected data from the sensors is transmitted to the sink, and further these data are processed using microcontroller and sent to display unit in the form of graphs or charts. Based on the concept of visible light communication, a prototype model is built with the PIC microcontroller and basic sensors as peripherals and tested it's working. Thus, the application of Li-Fi as a health monitoring system demonstrated experimentally.

Keywords: **Health-care monitoring, Light emitting diode light, Medical equipment, Patient condition, Visible light communications.**

I.INTRODUCTION:

Light fidelity (Li-Fi) is a revolutionary solution for the high speed data network, proposed by a German physicist Harold Haas. Li-Fi networks support the transmission of data through illumination of light emitting diode (LED) bulb, thereby it is also termed as visible light communications (VLC). In the epoch of internet, there is a continuous urge for faster, secure, and reliable wire-wireless connectivity in all fields, while wireless networks are more preferable in all domestic application in general and health-care application in particular. The reason for depending on wireless network in hospital is the cables which are running over the patient's body interconnecting the devices may cause contamination. Dependency on the wireless internet increases the burden on wireless fidelity (Wi-Fi) technology which, in turn, creates a huge demand for bandwidth and radio spectrum[1]. To reduce the load on Wi-Fi, an alternate mean of wireless internet is Li-Fi finds which find its applications in almost every field, even in vehicle technology[2].

For a long time, medical technology has lagged behind the rest. With more and more number of wireless medical devices coming up, utilizing the radio frequency (RF) spectrum increases which lead an electromagnetic interference (EMI) that results in potentially hazardous events related to medical equipment operations[3]. Apart from the interference with medical equipment, an EMI affects human body also in the form of diseases, immune dysfunction, electromagnetic hypersensitivity, etc., and in worst case, it may lead

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AUTOMATIC AGRICULTURE PROCESS USING EMBEDDED CONTROLLER.

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Abstract--The paper aims on the design, development and the fabrication of the robot which can plough and dispense the seeds. More than 40% of the population in the world chooses agriculture as the primary occupation, in recent years the development of the autonomous vehicles in the agriculture has experienced increased interest. The real power required for machine equipment depends on the resistance to the movement of it. Even now, in our country 98% of the contemporary machines use the power by burning of fossil fuels to run IC engines or external combustion engines. This evident has led to widespread air, water and noise pollution and most importantly has led to a realistic energy crisis in the near future. Now the approach of this project is to develop the machine to minimize the working cost and also to reduce the time for digging and seed sowing operation by utilizing solar energy to run the robotic machine. A concept is been developed to investigate if multiple small autonomous machine could be more efficient than traditional large tractors and human forces.

Keywords: Direct Current Motor; Infrared Sensors; Internal Combustion Engines; Special Purpose Vehicle.

I.INTRODUCTION

The idea of applying robotics technology in agriculture is very new. In agriculture, the opportunities for robot-enhanced productivity are immense - and the robots are appearing on farms in various guises and in increasing numbers. We can expect the robots performing agricultural operations autonomously such as ploughing and seed sowing. Watching the farms day & night for an effective report, allowing farmers to reduce the environmental impact, increase precision and efficiency, and manage individual plants in novel ways. The applications of instrumental robotics are spreading every day to cover further domains, as the opportunity of replacing human operators provides effective solutions with return on investment. This is specially important when the duties, that need be performed, are potentially harmful for the safety or the health of the workers, or when more conservative issues are granted by robotics.

II .OBJECTIVES

The objective of this paper is to present the status of the current trends and implementation of Agricultural and autonomous systems and outline the

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WOMEN SAFETY DEVICE WITH HIDDEN CAMERA DETECTOR

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ABSTRACT - In the current scenario the safety of persons is a major concern in India and other countries. The rising increase to provide safety of the persons is a major concern and challenge in front of the society. From the past many decades Individuals are facing much unethical physical and mental harassment which even leads to casualty. In the minds of every individual they feel comfortable when they are safe to move freely on the streets even in the odd hours. More accidents occur for women, children and elderly people who always feel that they need the support to move around. With the help of advanced technology individuals can make use of a simple gadget which can be used whenever they are in unpredictable circumstances to establish connectivity between police and family. The device designed is a portable one which can be activated as per the requirement of the individual which will locate the victim using GPS and with the help of GSM emergency messages can be sent to the respective locations as per the design. The gadget provides an alarm system, call for help, and electric shock to get rid of the attacker. The system provides safety for the person and makes them fearless.

Keywords-GPS, GSM, Individual, Security.

1. INTRODUCTION

It is an unfortunate observation that there has been a substantial increase in crimes against women in the past decade. With a variety of software applications now in action, to help women, the statistics have not lowered. According to the National Crime Records Bureau (NCRB), in India, 93 women were raped everyday in the year 2014.Also 3,307,922 cases of crime against women were reported in year 2014 alone. The current practices in female security broadly fall into different categories ranging from android applications developed for mobile phones, and extend to fashionable apparels that can be wore and carried in day to day life. However, our focus is on creating a safety system that merges the benefits of existing techniques and brings about a solution that ensures both defense and creation of a seamless pathway to initiating legal procedures, if any; have to be taken by the victim. We intend to create a

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IoT based Vibration and Temperature Analytics of Electrical Machines

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Abstract — **The aim of this research is to propose an IoT based model for real-time condition monitoring of electrical machines, which addresses the challenges of data storage and scalability. The proposed model is evolved with an experimental setup having two sets of DC motor coupled to AC Generator and an IoT device to elucidate integrated monitoring and decision making. This IoT based vibration and temperature analytic model uses an IoT2040 Gateway with custom Linux OS image built for acquisition and streaming of vibration signals. The Python target application acquires DC motors'shaft vibration using vibration sensors and communicates the data as events to cloud through serial device driver interface. The IoT service running in cloud receives the data from multiple machines through lightweight RESTful HTTP and records the same which are retrievable for analysis and algorithm development in any platform. The retrieved data have been analyzed using the proposed statistical classification based signal decomposition algorithm as well as time-frequency analysis to estimate the vibration thresholds of every machine connected to IoT cloud. Such estimated thresholds corresponding to different operating and environmental conditions maintained in cloud are used to build a repository of context specific solutions for machine conditions leading to improved maintenance decisions. The uniformity of threshold values obtained from IoT based model in comparison with that of analysis carried out on the machines locally using myRIO for data acquisition ensures the integrity of the proposed statistical classification algorithm and reliabilty of the IoT model for condition monitoring with assured scalability.**

Index Terms— **Electrical machines, Condition monitoring, IoT Gateway, Vibration Analytics, Signal Processing, Cloud.**

I. Introduction

Condition monitoring is the most predominant strategy used for predictive maintenance of machines. In any enterprise or industry, the objective of plant maintenance has always been to maximize the uptime and efficiency through better preventive or predictive maintenance and condition monitoring diagnostics so that the desired targets could be achieved with increase of revenue. At present, most of the condition monitoring systems are local systems, which collect vibration data from the machines and use various algorithms to check for defectiveness or unusual behaviour and compare the results with the knowledge base for effective decision making. This is the usual methodology adopted in many industries, which faces certain challenges such as inadequate storage space for data and especially scalability when multiple machines at different locations are to be monitored. The preciseness, volume, variety and analysis of the machine data are the major contributing factors for effectiveness in condition monitoring. High volume and variety of data to be collected from the machines at different locations during online monitoring for the interpretation of their behaviour at dynamic or abnormal operating conditions pose the challenges of data storage and scalability [1].

The practical challenges faced by maintenance engineers are the introduction of new technologies for the enhancement of plant productivity, methods of data acquisition and analysis, inconsistent outcomes and shortage of resources. The present condition monitoring systems possess advanced instrumentation that could acquire data at high throughput with less noise but lags in volume, variety and extent of data analysis. The preliminarily identification of the machine's abnormal behavior is carried out by comparing the measured value with the vibration severity limits prescribed in IS12075, Bureau of Indian Standards, 2008. The method is simple but lacks sufficient information to identify the behavioural patterns during dynamic conditions [2]. National Instruments while discussing the aforesaid challenges and benefits of fleetwide monitoring has cited that maintenance managers require innovative strategy for continuous and automated data collection from more industrial assets to make data comparison with baseline behaviour and analyse the performance using algorithms specific to application so that the maintenance and the real-time decisions are improved [3]. This kind of maintenance strategy could successfully be achieved by practising IoT based condition monitoring in cloud platform. Advantech in its white paper [4] has discussed on the importance of the implementation of cloud based SCADA system using Industrial IoT (IIoT) and points out that even though SCADA monitors the instantaneous conditions well within the enterprise, the adoption of cloud offers pervasive analytics and decisions additionally irrespective of the hardware used and thus making Industry 4.0 effective. It is observed that condition monitoring, a process which involves data acquisition, data processing and information extraction plays the lead role in bringing out successful diagnostics and prognostics. Mallikarjun Kande et al. [5] have extensively reviewed and discussed about existing machine condition monitoring techniques and industrial automation for plant-wide condition monitoring of rotating electrical machines, which includes machine diagnostics using artificial intelligence. They pointed out the importance for on-equipment, on-premise and

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TECHNICAL PAPER

Multi-objective Optimization of Cold Upsetting Parameters for Aluminium Metal Matrix Composites

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Received: 6 July 2017 / Accepted: 20 October 2017

Abstract Hybrid aluminium metal matrix composites reinforced with 20 wt% of silicon carbide and 3 wt% of yttria at three different aspect ratios of 0.75, 1 and 1.25 was successfully fabricated through powder metallurgy. The state of reinforcements was examined through the X-ray diffraction analysis and scanning electron microscopy analysis. The cold upset experimentation was performed in the developed composites using the Taguchi's L_9 orthogonal design array by considering the aspect ratio, load and friction factor as the process parameters. After the experimentation, the responses (barrel radius and the workability) were calculated. A multi objective optimization was performed with the objective of maximum barrel radius and maximum workability with the help of grey relational analysis combined with Taguchi technique. The optimal process parameters were identified through the main effect plot and the significant parameters on the responses were identified with the analysis of variance.

Keywords Hybrid metal matrix composites · Cold upset · Barrel radius · Workability · Taguchi analysis · Grey relational analysis

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1 Introduction

Powder metallurgy processing finds a wide range of applications such as metal polishing wheels, grinding media, seed coatings, lawn and garden equipment, jet engines, heat shields, rocket nozzles, high temperature components, thermal shields, fuel cells, capacitors, resistors, contacts, locks, wrenches, cutting tools, dies, tools, bearing surfaces, ammunition, penetrators, fuses, explosives and flares. Components made from composite materials have potential to sustain under various working conditions due to its low density [1, 2], high stiffness [3] and strength [1, 2], thermal stability, improved fatigue properties [4, 5] and wear resistance [1, 2]. Generally metal matrix composites reinforced with two or more ceramic particles are found to possess superior material properties such as greater strength and higher wear resistance [6] because of which they are suitable for automotive, aerospace and many engineering applications. Tribological characteristics [7], abrasive wear behavior [1, 8], high temperature creep behavior [9] and thermal conductivity [10] of Al–SiC powder metallurgy composites have already been studied in depth by various researchers [8–10]. Metal Matrix Composites produced with two different reinforcement particles have been found with improved workability behavior [11]. Mechanical properties of aluminium hybrid nano-composites retain higher strength and wear resistance as compared to hybrid composites [12]. The addition of nano sized particles show improved mechanical properties without compromising the ductility of the composites [13]. Kumar et al. [14] reported that increased percentage of SiC and Glass particles increases the formability stress index, and also affects the strain hardening index value. The addition of SiC along with Al_2O_3in aluminium hybrid metal matrix composites

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Experimental Investigation on Machining of Titanium Alloy (Ti 6Al 4V) and Optimization of its Parameters using ANN

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1. Introduction

Cutting force, tool wear and temperature rise during machining are some of the key considerations for both the designer, manufacturer of machine tools, and to the end user as well. [1, 2]. Manufacturing industries continuously focus on low cost machining solutions with reduced lead time and good surface quality in order to maintain their competitive edge and efficiency [3]. Recent developments in cutting tool grades are intended to permit multipurpose use both in machining and finishing operations and for a wide range of materials [4]. Advancements in coating technologies have produced wide range of tools which have a special wear resistant coating. Coated tools used for metal cutting possess a combination of abrasive wear resistance and chemical stability at high temperature to meet the demands of the application [5-7].

Product quality is a well-known vital factor that has a direct bearing on customer satisfaction. In any industrial sector, be it a small-scale industry or a large industrial sector, surface quality is determined by surface roughness of the product [8]. Measuring and characterizing the surface finish are the two main indicators of machining performance. Since the newer materials are being developed and introduced rapidly in the manufacturing industry, it is very difficult for an operator to select optimum cutting parameters to achieve best surface finish [9, 10]. The cost of machining accounts for a major part of the total value of products in any manufacturing industry and plays a central role in modern manufacturing. Modeling with the help of experimental results forms an integral part in the investigation of the complicated dynamic mechanisms of machining operations. Various approaches have been proposed to model and to simulate the machining processes [11]. Optimization of cutting parameters is necessary for the achievement of minimal surface roughness. The Taguchi method of experimental design is one of the widely accepted techniques for off line quality assurance of products [12, 13]. This method is a traditional approach for robust experimental design that seeks to obtain the best combination of parameters and their levels with the lowest cost to meet customer requirements [14]. Cutting fluids decrease friction between the cutting tool and the work piece material, preventing surface roughness. The conventional cutting fluids utilized in machining are considered as a problem for manufacturers. Environmental concerns have become increasingly important to production processes [15]. Dry machining and minimum quantity lubricant machining have become the focus of attention of researches and technicians in the field of machining as an alternative to conventional fluids [16, 17]. Optimization of machining parameters not only improves machining economics, but also the quality to a greater extent. Developments in modeling surface roughness and optimization of controlling parameters to obtain a surface finish of desired level is possible through proper selection of cutting parameters which produce better performance [18–20]. Influence of built up edge on process forces, surface quality and minimum chip thickness during machining of titanium alloys, reveals that the good surface integrity in terms of favorable stress and surface roughness were achieved in machining of titanium alloys [23–25].

The literature survey reveals that the machining of titanium alloy has not been attempted by many researchers. In the present investigation, an attempt has been made to optimize surface finish and material removal rate on machining Titanium alloy (Ti 6Al 4V) with ceramic coated cutting tool insert. Taguchi parameter design approach and ANN technique has been employed to accomplish the objectives.

2. Experimental details

Based on a number of research works published in the past, three cutting parameters viz., cutting speed, feed rate and depth of cut were selected for the experimental work.

2.1. Machine, material and tool insert

The turning operation was conducted using CNC-Super Jobber 500 LM Industrial type of production lathe machine with a range of spindle speed 30 rpm to 3000 rpm and a 10 kW motor drive. The material used was Ti-6Al-4V titanium alloy round bar of 30 mm diameter and 100 mm long. The specimens were turned, centered and cleaned by removing the skin for 1mm depth, prior to the actual machining. The cutting tool insert used for this study was ceramic coated. Fig. 1 shows the sample of Ti-6Al-4V materials, and Fig. 2 shows the microstructure of the Ti-6Al-4V material. Chemical composition of Titanium alloy (Ti 6Al 4V) is given in Table 1.

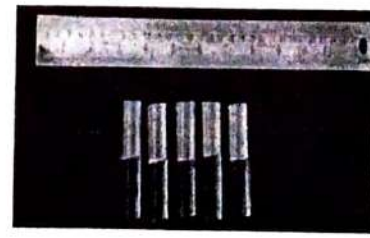

Fig. 1 Ti–6Al–4V

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Application of the grey based Taguchi method and Deform-3D for optimizing multiple responses in turning of Inconel 718

Anwendung des Grey-basierten Taguchi-Verfahrens und von Deform-3D zur Antwortoptimierung beim Drehen von Inconel 718

Jeevanandam Rajaparthiban and Abdullah Naveen Sait

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Abstract

The austenitic nickel-chromium based super alloy Inconel 718 is considered a difficult material to machine due to a combination of nickel, iron and cobalt. The material exhibits mechanical strength and resistance to surface degradation under extreme pressure and heat. It employed widely in aerospace, jet engines, gas turbine etc. This research work focuses on the optimization of cutting variables for each performance measure obtained by employing grey-Taguchi techniques. The orthogonal array, grey relation analysis and analysis of variance are employed to study the performance characteristics in turning Inconel 718 using a carbide cutting tool insert. Further, a simulation model based on an finite element approach is proposed using DEFORM-3D software for the prediction of tool wear through Usui's tool wear model. The study highlights the optimum cutting conditions and a favorable range of the machining variable values. Finite element method results show that predicted tool wear values according to DEFORM-3D produce a useful and adequate level of accuracy.

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Development of Coloured Emulsion Paints with IR Resistant Coatings over Asbestos sheets

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Abstract

The sun radiates energy in a wide range of wavelength. Most of the solar radiation that reaches earth is made up of visible and infra light. These radiations are absorbed by buildings and responsible for discomfort in living houses and working environment. Therefore energy consumption and their expenditure rise up, for cooling the buildings to have easing life. A new innovative water borne emulsion special coating is formulated using IR reflective pigment blending with acrylic resin for colour coating over asbestos sheet is promising to reflect the radiations in the UV/NIR spectrum. The morphology of the coating is examined using SEM with EDX. The coated panels are tested for IR reflectivity and finally the UV/Vis/NIR reflectance for the coated panel is evaluated. The results indicate an effective coating to reflect NIR and decrease the building temperature when used as exterior emulsions.

Keywords: *IR reflective pigment, water borne emulsion paint, reflect NIR spectrum.*

1. Introduction

Solar radiation is all of the light and energy that comes from the sun, and these are many different forms. The most important parts of the sunlight electromagnetic spectrum are ultraviolet radiation (UV), invisible to the eye, visible light that allows us to see, and infrared radiation, which is our main source of heat but is also invisible. The sun is sending us radiation over a wide range of wavelength at varying intensities. It ranges from 295-2500 nanometers (nm) [1-3]. The foremost purpose of IR-reflective coatings is to keep objects cooler than they would be using standard pigments. The easiest way to increase IR reflectivity is to use white pigments like titanium dioxide. TiO_2 reflects in the visible and in the infrared. But there is a interest to produce colored IR-reflective coatings is to use pigments that absorb in the visible to produce color and reflect in the IR for coolness. The effective coating should meet infrared reflectivity and long-term durability requirements and provide deep and rich colors [4-8]. This formulation is find use to stay cool is a valuable benefit.

Infrared reflective pigments are complex pigments, which reflect the wavelengths in infrared region. The reflectivity and absorptivity of the pigment are independent of each other. These pigments are highly stable and chemically inert, also stable to high temperatures. They even remain colorfast in the presence of strong acids, bases, oxidizing or reducing agents. Because of these properties, these pigments last as long as 30 years in outdoors. IR reflective pigments do not absorb in near infrared region. They either reflect it or transmit it. Absorption of light occurs when light energy promotes electrons from one bonding state to another. If light of a different wavelength is used to cause this energy transition, it will not be absorbed. There is no method to predict the IR reflectivity of an inorganic or organic compound. This property appears to be an inherent characteristic property [9-12]. In the existing work water borne air-dry acrylic was used to make coatings with varied-to-binder ratios. The formulation is made to reflect UV/IR with the inclusion of fluorocarbon as a promising IR reflective pigment along with other additives. The new coatings was developed with light fast yellow colour coating. It is then applied over the asbestos sheet with different varied PVC concentrations. The

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RESEARCH ARTICLE

ECONOMICAL DEVELOPMENT OF IR COATINGS IN ASBESTOS SHEET

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ABSTRACT

A new innovative water based emulsion coating is prepared with IR resist inorganic pigment blending with acrylic resin. The highlight of this formulation is to resist UV and IR radiation which reflects much of the Sun's radiant energy - an important feature to designers, builders and building owners concerned about rising energy consumption costs and global warming. In this present work water based UV/IR resist paint is formulated in different concentrations (30, 40, 50 % of PVC) and coated over the asbestos sheet. The morphology of the coating is examined using SEM with EDx. The initial test of physical properties like specific gravity, total solid of the paint and viscosity are examined for the formulation. A UV/VIS/NIR spectrometer used to measure the % of reflectance in Asbestos sheet. The 100% reflectance observed in visible region of (400-700nm) and 95% of reflectance is observed in IR region with increasing wavelength of 700-1400nm respectively.

Key words: Acrylic, pigments, coatings, water, UV/IR resistance, formulation.

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INTRODUCTION

Water based paints are gaining immense popularity with the public's effort to avoid using paints that involve harmful solvents and dangerous chemicals in its application and cleanup. Whereas, water based paints grip well to almost any surface and are weather-resistant. The paints are less likely to attract the growth of mildew on it. It can be used on almost all types of surfaces without any pre-treatment. These paints have a less potent odor and take less time to dry. They don't become brittle over time and require less ventilation than other oil based paints. Water based paints are also known to have more elasticity than oil based paints (Shibe and Chawla, 2013; Coser *et al.*, 2015; Malshe and Bendiganavale, 2008; Levinson *et al.*, 2005 and Kaur *et al.*, 2012). Water based paints use water as the medium which carries the colour pigment to the surface that is being painted. By the time the paint dries, the solvent evaporates completely. These paints have very little risks for humans and animals around because the only thing that evaporates and enters the air is hydrogen and oxygen. However in the case of solvent-based paints, solvents like epoxy, release harmful organic chemicals in the air while drying which is harmful to humans and animals, especially children (Bendiganavale and Malshe, 2008; Sainz *et al.*, 2003; White, 2000; Hunter, 1987 and Nixon, 2004).

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The easiest way to increase IR reflectivity is to use white pigments like titanium dioxide. TiO_2 reflects in the visible and in the infrared. The key to fight this "White Blight" and produce innovative, colored IR-reflective coatings is to use pigments that absorb in the visible to produce color and reflect in the IR for coolness. From these demands, Shepherd Color has developed a line of highly engineered products called Arctic® IR-reflective pigments. The Arctic line of pigments provides a palette of colors that allows the formulation of coatings and the design of materials to meet infrared reflectivity and long-term durability requirements, and provide deep and rich colors. (Keefe, 2006; Sliwinski *et al.*, 2002; Yanagimoto *et al.*, 2003 and http://www.ferro.com/Our+ Products/ Pigments/Pigment+ Systems/ US+ Products +and + Markets/Products/Cool+Colors+and+Eclipse.htm). Large buildings situated in hot regions of the Globe need to be agreeable to their residents. Air conditioning is extensively used to make these buildings comfortable, with consequent energy consumption. Absorption of solar visible and infrared radiations are responsible for heating objects on the surface of the Earth, including houses and buildings (Chang *et al.*, 1995). To avoid excessive energy consumption, it is possible to use coatings formulated with special pigments that are able to reflect the radiation in the near- infrared, NIR, spectrum (Haacke, 1976; Chang *et al.*, 1995; Sutter *et al.*, 2002 and Patton, 1998). Roughly 5% of the Sunlight that reaches the Earth's surface is in the form of ultraviolet (UV) (wavelength

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A Study on Problems of Agriculture Export with Special Reference to Exporters, Tamilnadu, India.

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Abstract— Agriculture is the fastest growing component of global demand. the World's second largest developing country, is contributing to the expansion through the rapid growth of its Agriculture sector. In India, Agriculture sector growth is being driven by rising incomes, together with the emergence of vertically integrated Agriculture producers that have reduced consumer prices by lowering production and marketing costs. Integrated production, a market transition in products, and policies that help ensure supplies of competitively raced domestic or imported products to future Agriculture industry growth in India and in other developing countries. The paper mainly focuses the problems of Agriculture exports in Tamilnadu.

Keywords— India, developing countries, Agriculture firm, demand, Global competition

I.INTRODUCTION

Fare advertising implies sending out merchandise to different nations of the world. It includes extensive methods and customs. In send out advertising, products are sent to another country according to the techniques encircled by the trading nation and in addition by the bringing in nation. Fare advertising is more muddled to local promoting because of worldwide confinements, worldwide rivalry, extensive strategies and customs et cetera. In addition, when a business crossed the fringes of a country, it turns out to be interminably more mind boggling. Alongside this, send out showcasing offers open doors for winning gigantic benefits and profitable remote trade.

Fare promoting has more extensive financial criticalness as it offers different points of interest to the national economy. It advances monetary/business/mechanical

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A study on marketing strategies of health care services and patients' decision making regarding choice of a hospital.

By

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Abstract

The healthcare delivery market in India is expected to be more than double within the next decade. India is witnessing an era where new hospitals are being built at a pace like never before. There are exciting challenges that these hospitals are facing while they are being commissioned. One challenging task that every hospital, new or old, small or big, is facing today is the task of marketing itself. With increasing competition, healthcare marketing is undergoing a transition from service providers' dominance to service seekers preference. A study was therefore undertaken to understand the factors influencing patients' decision making with respect to choice of a hospital. Marketing professionals in leading hospitals in Thanjavur were also interviewed in order to gather information on current marketing practices.

Keywords: Healthcare scenario, Decision making, Healthcare services marketing, India

I .Introduction

The Indian healthcare sector has emerged as one of the largest service sectors in India in terms of revenue and employment, and the sector is expanding rapidly. The sector has registered a growth of 9.3 percent between 2000-2009, comparable to the sectoral growth rate of other emerging economies such as China, Brazil and Mexico. At the current growth rate, the healthcare industry in India will touch US$ 275 billion by 2020, according to a recent press release by the Confederation of Indian Industry (CII). The high growth of the industry is primarily driven because of domestic reasons and some of these are:-

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Experimental Study On Strength Characteristics Of Steel Fiber Reinforced Concrete

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Abstract: The concept of utilization of steel fiber in concrete (SFRC) increases the strength of concrete. It has superior resistance to cracking and crack propagation. During the past decade steel fibre-reinforced concrete has progressed from a new relatively untied and unproven material to one which has now achieved recognition in a variety of engineering applications. The addition of fibres in the matrix has many important effects. Most notable among the improved mechanical characteristics of Fiber Reinforced Concrete (FRC) are its superior fracture strength, toughness, impact resistance, flexural strength resistance to fatigue, improving fatigue performance is one of the primary reasons for the extensive use of Steel Fiber Reinforced Concrete (SFRC) in pavements, bridge decks, offshore structures and machine foundation, where the composite is subjected to cyclically varying load during its life time. The steel fiber are able to hold the matrix together even after extensive cracking. Corrugated fibers with aspect ratio of 45 were used in this project. The M30 grade of concrete was used in this project. The main reasons for adding steel fibres to concrete matrix is to improve the post cracking response of the concrete, i.e., to improve its energy absorption capacity and apparent ductility, and to provide crack resistance and crack control. Also, it helps to maintain structural integrity and cohesiveness in the material. Specimens were cast without fibres and with fibres of 0.5% and 1.0%. Tests were conducted for studying the compressive, tensile strength. SFRC has maximum load carrying capacity and strength as compared to plain cement concrete

Keywords—homomorphic encryption, securedanalysis, medicaldata, ROW's algorithm

I. INTRODUCTION

Concrete is one of the most versatile building materials. It can be cast to fit any structural shape from a cylindrical water storage tank to a rectangular beam or column in a high-rise building. The advantages of using concrete include high compressive strength, good fire resistance,
high water resistance, low maintenance, and long service life. The disadvantages of using concrete include poor tensile strength, low strain of fracture and formwork requirement. The major disadvantage is that concrete develops micro cracks during curing. It is the rapid propagation of these micro cracks under applied stress that is responsible for the low tensile strength of the material. Hence fibres are added to concrete to overcome these disadvantages. The addition of fibres in the matrix has many important effects. Most notable among the improved mechanical characteristics of Fibre Reinforced Concrete (FRC) are its superior fracture strength, toughness, impact resistance, flexural strength resistance to fatigue, improving fatigue performance is one of the primary reasons for the extensive use of Steel Fibre Reinforced Concrete (SFRC) in pavements, bridge decks, offshore structures and machine foundation, where the composite is subjected to cyclically varying load during its life time.

The fact is fibres of almost any description improve the ability of substances to withstand strain.
The main reasons for adding steel fibres to concrete matrix is to improve the post cracking response of the concrete, i.e., to improve its energy absorption capacity and apparent ductility, and to provide crack resistance and crack control. Also, it helps to maintain structural integrity and cohesiveness in the material.

II. MATERIALS USED

2.1 Cement:

Ordinary Portland cement was utilized.

Properties of Cement Test Results

1) Specific gravity - 3.05
2) Normal Consistency - 28%
3) Initial setting time - 30 min
4) Final setting time - 600 min

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Experimental Study On Partial Replacement Of Coarse Aggregate By Coconut Shell And With Addition Of Chicken Feather In Concrete

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Abstract: *Traditional disposal strategies of chicken feathers and coconut shells are expensive and difficult. Currently, the quantity of chicken feather produced annually by the poultry industry as a waste in worldwide, is a serious solid agricultural waste problem. Thus disposal methods are restricted, generate greenhouses gases or pose danger to the environment. Several commercial applications have been explored to utilize fibers from chicken feathers. The feather is highly micro crystalline, very durable and resistant to both mechanical and thermal stress because of the presence of protein Keratin. They are proved to be stronger than wood. Its value is similar to polypropylene. Feathers comprise over 90% of proteins the main component being beta keratin, a fibrous insoluble protein containing disulphide bonds. An innovative way to utilize poultry feather into a novel composite material is to bind them with Portland. Cement bonded composite, offers on environmentally friendly method of disposing a serious waste product and promotes competitiveness of both the poultry and construction industries. The behavior of the chicken feather fibers are made to understand their usability as a reinforcing material for composite fabrication. A concrete mix as control, while coconut shells are used to replace crushed granite by volume. The use of coconut shells as partially replacement of conventional aggregate. The replacement of coarse aggregate by coconut shell by 0%, 10%, 20% and 30%.Cubes are produced and compressive and tensile strength are evaluated at 7 days, 14 days and 28 days. It should be encouraged as an environmental protection and construction cost reduction measure.*

Key words: *Coconut shell, Chicken feather, Compressive and Tensile strength.*

I. INTRODUCTION

COCONUT SHELL & CHICKEN FEATHER

1.1 General

Concrete is the premier civil engineering material. Concrete manufacturing involving ingredients like cement, aggregates, water & admixtures. Among all the ingredients, aggregates form the major parts. Aggregate of two billion are produced by each year. In 1960, the primary aggregate was 110 million tones in UK and reached nearly 275 million tons by 2006. Use of natural aggregates in such a rate leads to a question about the preservation of natural aggregates sources. In addition, operation associated with aggregates extraction and processing is the principal causes environmental concern. In light of this in the contemporary civil engineering construction, using alternative materials in place of natural aggregate in concrete production makes concrete as sustainable and environmentally friendly construction material. Coconut shell being a hard and not easily degrade material if crushed to size of coarse aggregate can be a potential material to substitute coarse aggregate. At present, coconut shell has also been burnt to produce charcoal and activated carbon for food and carbonated drink and filtering mineral water use. However, the coconut shell is still under-utilized in some places. The chemical composition of the coconut shell is similar to wood. It contains cellulose, lignin, pentosans and ash.

INFLUENCE OF CURING: A TECHNICAL STUDY TO INCREASE RATE OF CURING

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Abstract

Now a day's conventional concrete has been replaced by self-compacting concrete and Prestressed Concrete. Both of these types of concrete have less shrinkage, less creep and reduced deflection due to dead and live load. Material properties are improved in Pre-stressed concrete. Also total construction time is also less in case of pre-stressed concrete. One of the major properties of concrete that makes pre-casting economically feasible is its ability, under the proper conditions, to gain compressive strength extremely rapidly. In this study, we have discussed various methods of curing and different recent techniques to accelerate the curing rate. There are various methods to accelerate the rate of curing. Some are: 1) the use of physical processes, and 2) the use of admixtures to act as catalysts for the hydration process, resulting in the achievement of high compressive strengths in relatively short periods of time. Many physical processes used to increase the curing process are generally obtained by increases in curing temperature, introduction of moisture to curing environment.

Keywords: *Pre-stressed concrete, curing, admixtures, Self-compacting concrete, methods of curing*

1. Introduction

Curing is the maintenance of a satisfactory moisture content and temperature in concrete for a period of time immediately following placing and finishing so that the desired properties may develop. The need for adequate curing of concrete cannot be overemphasized. Curing has a strong influence on the properties of hardened concrete; proper curing will increase durability, strength, abrasion resistance, volume stability, and resistance to freezing [1] and thawing [2] and deicers. In modern construction practices main focus is set up on the faster and economical construction. This includes the use of waste materials and admixtures in concreting. As such, the construction industry is constantly searching for ways to improve their product. One means to this end is, rather than relying

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COMPARITIVE STUDY OF STEEL SLAG WITH COARSE AGGREGATE AND TESTING ITS BINDING PROPERTIES WITH BITUMEN

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Abstract— **This paper deals with the study of steel slag with coarse aggregate and testing its binding properties with bitumen. Steelslag is a by-product produced from the steel industries. In India more than 50 iron and steel industries are available and around 72.20 million metric tonnes of steel is produced. The amount of waste generated is 19 million metric tonnes worldwide. Due to lack of utilization of these steel slag huge amount of waste are dumped in the agricultural land and pollute the environment. The main objective is to make proper utilization of the waste disposal material produced from the steel industries into effective construction materials. These materials are broken down to smaller sizes to be used as aggregate in pavement layers. The purpose of this study is to review the engineering properties of steel slag and its utilization for road construction in different way.**

Keywords — **Steel slag, industrial waste materials, engineering properties, construction materials.**

I. INTRODUCTION

The huge quantities of waste (such as scrap tires, glass, blast furnace slag, steel slag, plastics, construction and demolition wastes) accumulating in stockpiles and landfills throughout the world are causing disposal problems that are both economically and environmentally expensive. Dealing with the rising trouble of disposal of these materials is a matter that requires management and commitment by all parties involved. One of key solution to a portion of the waste disposal problem is to recycle and use these materials in the construction of highways.

During the production of three tons stainless steel around one ton of steel slag is generated. It has been noticed that per year fifty million tons of steel slag is generated from different steel industries throughout the world. It contain minerals of cementing properties such as C2S and C2S.SO.steel slag is industrial waste resulting from steel refining plants in conversion process. The method followed for the production is two type they are basic oxygen steel (BOS) and electric arc furnace(EAF).From EAF method the aggregate produced is used in road construction because of its sustainable characteristics.

The waste material is neutral and non organic hazardous is natural as per chemical analysis report of central pollution control board India (CPCB).the quantity of generation of this steelslag is around 24 lakhs metric ton per year from different steel industries in India CRRI 2010.the steel slag is a non-metallic ceramic material formed from the reaction of flux such as calcium oxide with the inorganic non metallic components present in the steel scrap.

This research deals with the sustainable replacement of natural aggregate, in which coarse aggregate were partially replaced with steel slag aggregate in the construction of roads and also review the engineering properties of steel slag.

II. PREPARATION PROCESS OF STEEL SLAG

Steel slag, a by-product of steel making, is produced during the separation of the molten steel from impurities in steel-making furnaces. The slag occurs as a molten liquid melt and is a complex solution of silicates and oxides that solidifies upon cooling. Virtually all steel is now made in integrated steel plants using a version of the basic oxygen process or in specialty steel plants (mini-mills) using an electric arc furnace process. The open hearth furnace process is no longer used.

In the basic oxygen process, hot liquid blast furnace metal, scrap, and fluxes, which consist of lime (CaO) and dolomitic lime (CaO.MgO or "dolime"), are charged to a converter (furnace). A lance is lowered into the converter and high-pressure oxygen is injected. The oxygen combines with and removes the impurities in the charge. These impurities consist of carbon as gaseous carbon monoxide, and silicon, manganese, phosphorus and some iron as liquid oxides, which combine with lime and dolime to form the steel slag. At the end of the refining operation, the liquid steel is tapped (poured) into a ladle while the steel slag is retained in the vessel and subsequently tapped into a separate slag pot.

There are many grades of steel that can be produced, and the properties of the steel slag can change significantly with each grade. Grades of steel can be classified as high, medium, and low depending on the carbon content of the steel. High grade steels have high carbon content. To reduce the amount of carbon in the steel, greater oxygen levels are required in the steel-making process. This also requires the addition of increased levels of lime and dolime (flux) for the removal of impurities from the steel and increased slag formation.

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Design and implementation of Smart Sensor Integrated Chair for Medical Diagnosis

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ABSTRACT

With the design of an Internet of Things (IoT) and telemedicine based health monitoring system- The Smart Chair. Sensors and associated hardware needed to monitor the vital physiological parameters of the human body are available on the chair, thereby leading to the idea of a Smart Chair. It enables the subject to be seated in a relaxed posture during the acquisition of physiological signals from various sensors attached to his/her body. The raw signals from the sensors are processed digitally by an onboard microcontroller and analyzed for any common abnormalities in the health parameters of the subject. The results are then transmitted to a personal computer. The data can be viewed at any later time by a doctor's computer that is connected to Internet. The Smart Chair also sends an SMS with all the health details to a remote doctor's phone in case of an emergency, thus facilitating telemedicine in rural areas. The key focus of the presented work is to propose the design of a chair that will be useful and easily affordable by the people of developing nations who have limited access to proper healthcare facilities. The results Presented show that the proposed system is definitely a low cost affordable solution for IoT based telemedicine system, as compared to existing systems

Key Words: Internet of Things (IOT), Sensor.

2. INTRODUCTION

Wireless sensor network and IoT has become an important technology in various industries with the healthcare sector being the most emerging of all. Remote monitoring of subjects is an innovative way to provide better, instantaneous and low cost access to healthcare. Good amount of research has been done in the field of telemedicine using mobile devices. With the availability of portable biomedical sensors and easy access to internet on mobile devices, medical devices on Internet of Things (IoT) are becoming increasingly common. Custom architectures for IoT based healthcare have also been proposed and the research is ongoing. However, most of the systems currently available in literature are designed to detect a particular physiological abnormality and are sometimes too expensive to be affordable by masses. Machines that monitor the common vital physiological parameters are under development using open source hardware and software. However, the ease of use for the end user is always a challenge. This includes the correct placement of the sensors and ease of operation of the biomedical device. The system architecture is available as open source, but the cost of complete kit is quite high because of the use of off the- shelf biomedical sensors/systems.

3. LITERATURE SURVEY

3.1 Model driven flexible design of a wireless body sensor network for health monitoring

The Wireless Body Sensor Network (WBSN) is a wireless network that is designed to allow communication among sensor nodes that are attached to a human body to monitor the body vital parameters and environment. The design and development of such WBSN systems for health monitoring have received a large amount of attention recently, in research studies and in industry. This attention is mainly motivated by costly health care and by recent advances in the development of miniature health monitoring devices as well as emerging technologies, such as the Internet of Things (IoT), which contribute to the main challenges of 5G.

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An Event Reporting and Monitoring in Underground Coal Mine Environment using Wireless Sensor Networks

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Abstract:- **In the mining environment, the coal miners death rate is double compared to previous year, every year miners lives and worthy infrastructure get lose due to accident and disasters in underground coal mine environment. Wireless Sensor Networks (WSNs) are used in many applications like mining environment, animal monitoring and etc. WSN are used to monitoring that environment and frequently reporting the situation of the environment to the worker can reduce the disaster. This Proposal is focused on underground coal mine monitoring and an event reporting of that environment using Wireless Sensor Network. Our system measures various parameters such as temperature level, methane gas level, vibrating level of mine environment, pulse rate of miner, all data are stored in database, by using data mining algorithm, we compare the parameter level (because dynamic nature of coal mining environment) with correct data level, if any change occurs, our system alert the coal miner and overall controller of coal mine environment. The HC12 transceiver is used send and receive the monitored information. Hazardous condition information and frequently what happen in mine environment reporting employed for early warning to coal mines worker by the mobile node which is along with them.**

The vibration level of environment is sensed by stationary node. We use microcontroller for connecting the server to the different sensors like methane sensor, temperature sensor, vibration sensor, carbon mono -oxide health sensor.

I. INTRODUCTION

Wireless sensor networks areorganizational structure containing computing, sensing and communication element that try to give its organizer the ability to compute, collect and react to occurrence in monitored environment.WSN are used in several fields such as wild life monitoring, health care monitoring, industry monitoring, etc.. This research proposal is basically for underground coal mine environment and an event reporting using wireless sensor networks. Lot of coal miners lose their lives due to roof collapse,rock burst, gas poisoning and gas explosion in underground coal environment. In underground mine the monitoring of proper ventilation and poisoning gases is emphasized to avoid .The are more danger occur in underground coal mines ,they are Firedamp, Blackdamp ,Afterdamp, Stink damp , White damp These dangers occur due to some poisonous gases present are high in underground mine that poisonous gases are follow methane , carbon mono- oxide, nitrogen , carbon dioxide. These gases affect the lungs of coal miners,so in this research we monitor the poisonous gas level as well as coal miners health. The mine environment are dynamic suddenly roof collapse may happen so it is very important to monitor the condition of roof ,in this paper we also monitor the roof of mine environment.In this proposal we particularly concentrate the life of coal miners, here we use three nodes mobile node, stationary node . If any poisonous gas level increases or oxygen level decreases the mobile node alert the miner to get out from that place and send the message to server through stationary node. Forwireless communication HC12 are used. The HC-12 is a half-duplex wireless serial communication module with 100 channels in the 433.4-473.0 MHz range that is capable of transmitting up to 2 km.**The HC12** maximum transmitting power is 100mW 20dBm, the receiving sensitivity is -117dBm at baud rate 5000bps in the air, communication distance up to 1000m on open space. Using HC12 transceiver send the collected information to the server.HC12 range is also high compare to some protocols. Here stationary node also act as gateway node to transmit the data.

II. RELATED WORK

Title : Underground Coal Mine Monitoring with Wireless Sensor Networks

Authour:Pournima S. Sawai, C. Satyanarayana

Concept :

In this project, they discuss the design of a Structure-Aware Self-Adaptive WSN system, SASA. By regulating the mesh sensor network deployment and formulating a collaborative mechanism based on a regular beacon strategy, SASA is able to rapidly detect structure variations caused by underground collapses in underground coal mine environment.

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Trust Based Cluster-Energy Efficient Multicast Routing In Mobile Adhoc Networks

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Abstract: MANET is a set of wireless communication module practiced globally for well-established networking. MANETS are largely utilized as a part of networking and used by large network users all over the world. These network communication utilize hubs for interconnection and consume large capacity of energy for processing. The consumption and protection of networking in MANET have been researched for the recent couple of years. Somehow the researches for limiting the resources has been explored to some level. The most challenging assignment is the security issues in MANETS. The adaptation of harmful elements can affect the system and its associated consumer which prompts problems in communication. The main objective of this research paper is to give optimal security and energy consumption during routing of the network nodes. This paper proposes a cluster based routing strategy to give optimal security and energy consumption during networking. The fuzzy k-means clustering is induced to cluster the network into same cluster heads. During routing the cluster, heads finds the optimal path to transmit data with a minimal energy. The proposed routing protocol is a trust based on demand multicast routing which gives optimal security by securing the transmission of data during routing. The proposed protocol is modeled and experimented in the Network Simulator 2, and the performance of the routing protocol proposed in this paper are evaluated with the existing approaches in terms of quality of service (QoS) and energy efficiency. From the analyzed results, it shows that the proposed protocol is an efficient routing strategy offering optimal security and energy efficiency in mobile adhoc networks

Keywords: Manet, Fuzzy K-Means Clustering, Multicast Routing, Network Simulator, Quality of Service (QoS)

1 Introduction

Over the most recent couple of years, the efficiency of wireless communication has expanded colossally by opening new fields of use in the area of systems networking. One of such field's concerns mobile adhoc networks systems (Manets) in which portable hubs compose themselves in a system without the assistance of any predefined foundation [1]. Manet is choosing up prevalence due to the convenience of ease cell phones and its capacity to give moment remote systems administration abilities where execution of wired system is impractical or exorbitant. Manets is a remote correspondence innovation. This enables individuals to impart, and it does not have a settled framework as the clients are persistently moving. The Adhoc network handles the system by control, i.e. to set up a network and so on [2]. Every hub is being able to assemble a network by finding the hub to communicate and share the information using radio waves. Manets are defenseless against different sorts of assault as a result of its elements like perpetual evolving topology, resource imperatives and inaccessibility of any brought together the infrastructure. Manet have specific security issues which won't be settled by another security instrument as a result of some issue. Trust control is vital because the foreordained conduct of hub can stay away from any additional harmful interchanges and let the reliable hubs impart quickly [3].

Due to the unsteady expansion of wireless communication utilization in the coming recent years, from satellite to personal wireless area networks [4]. Customarily, security requirements should not be setting delicate as registering existed inside a static situation. Nonetheless, as registering innovation turns out to be increasingly coordinated into a regular daily existence. It is essential that security components turn out to be more

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Bandwidth-Availability-Traffic-Service: Real Time Service Orient Buffer Management for QoS Development in IP Networks

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The problem of queue management for the development of quality of service in IP networks has been well studied in many occasions. The protocols prescribed earlier have several issues in achieving the QoS parameters. The performance of the entire network is highly depending on the efficiency of queue management. So to improve the performance of queue management an efficient approach is discussed in this paper. This paper discuss about a real time service orient multi constrained buffer management approach. The protocol monitors the Bandwidth-Availability-Traffic-Service (BATS), for the dynamic management of buffer size. The proposed algorithm maintains multiple queue for different data packets and its size are modified at runtime according to various conditions of BATS. The proposed algorithm improves the throughput of the network and reduces latency and PDR.

Keywords: IP Networks, Queue Management, QoS, BATS.

RESEARCH ARTICLE

1. INTRODUCTION

The IP network is the collection of routers which connects different networks of the world. Any router can become a gateway for any particular network and they can send/receive packets they have to communicate through the routers. The IP network is the collection of Network on chip routers which contains buffers and processing elements. Irrespective of packet type, the packet that approached will be queued in the buffers and the scheduling algorithm schedules the packets to the output port of the router. There may be different type of packets that approaches the routers but the performance of the network is highly depending on the management of queues. When the incoming rate of the packet is higher than the queue size then the packets will be dropped in the generic case.

As there exist communications with the neighbor routers, in IP networks the conditions of the neighbor router can be obtained easily. By communicating and monitoring the neighbor router conditions the problem of queue management can be performed efficiently. The queue management is the process of ordering the queue or providing space for the incoming packets. For example, In a situation that there is almost no space condition in the queue where there exist set of packets with less TTL values, and there is an incoming packet with higher TTL value then how the space allocated for the newly received packet is the million dollar question. In this case, as of the existing packet is highly close to its TTL, it will be discarded at the receiver side in any case. So, the queue management algorithm should drop the packet and allocate the space for the newly received packet. This would increase the throughput of the network and in this way the buffer management can be performed efficiently. Similarly there are number of conditions should be identified and considered before scheduling the packets.

A collection of several function that are used to support different type of services for different packets like classifier, admission control, scheduler and rate controller is normally named as QoS-enabled network. In general, the function scheduler is used to identify the sequence in which the nodes are handled at the sender node and also along the link the data are transmitted. In the same way, the congestion avoidance and packet drop policy (named as Active Queue Management) are used to direct the packet in the required Sequence.

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HYBRID ENERGY SOURCE BASED THREE LEVEL DC-DC CONVERTER FOR ELECTRICAL VECHILES

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Abstract: To enhance the opulence of hybrid energy source in electrical vehicles and to have a sophisticated usage which results in bi-directional power flow capability with wide voltage conversion range thus a three level dc-dc converter for electrical vehicles are proposed. This unique technology was extracted from buck and boost three level dc-dc converter with high voltage gain and non extreme duty cycle. One of the most critical issues for the environment today is pollution generated by hydrocarbon combustion, which is one of the main sources of power for transportation. In recent years, energy storage systems assisted by super capacitor have been widely researched and developed to progress power systems for the vehicles. In this paper, a bi-directional DC-DC converter and its control methods are proposed. From the results of detailed experimental demonstration, the proposed system is able to perform adequate charge and discharge operation between low-voltage and high-voltage with drive vehicles and main battery. In a hybrid or electric vehicle, a dc-dc converter enables reduction of the size of the electric machine and optimization of the battery system. The experimental results validate the feasibility of the proposed topology and the correctness of its operating principles.

Keywords—: Bidirectional DC-DC converter, Capacitor voltage balance, High voltage gain, Non-extreme duty cycles.

I. INTRODUCTION

In recent years, the global energy crisis has become increasingly intensified. As a result, the greenhouse effect, air pollution and other environmental issues have been gradually getting worse. The environment and human lives have been seriously affected by the massive amount of automobile exhaust emissions. It is an effective solution to replace conventional vehicles with new energy vehicles which can greatly reduce the environmental impact because of their pollution-free characteristics. As an important part of new energy vehicle technology, electric vehicles have become the inevitable trend of the automobile industry. The energy-storage systems used in electric vehicles must provide a high specific energy and a high specific power for long time operations. Although the energy density of battery stacks is very high, the power density is low, so they are not suitable for large current charge or discharge. A possible solution for this problem is combining battery stacks with super-capacitors, which can provide a high specific power and a high specific energy Therefore, the hybrid energy source system can greatly improve the performance of electric vehicles. Super-capacitors are connected to the battery stacks in parallel through a bidirectional DC-DC converter. The battery stacks provide stable levels of energy to extend the driving range of electric vehicles, while the super-capacitors discharge during acceleration and charge during braking, in which instantaneous pulse powers are needed and generated. This shows the important role of the bidirectional DC-DC converters in the hybrid energy source electric vehicles.

II. EXISTING SYSTEM

The existing system described a battery charging method using DC-DC converter. The full-bridge DC-DC converter assisted with passive auxiliary circuit offers ZVS for all main switches throughout the battery charging range. It also minimizes the voltage spikes across secondary rectifier diodes as the converter is integrated with clamping diode network of the primary side. The output voltage is controlled using asymmetrical pulse width modulation (APWM) technique and also this system discussed the steady-state analysis of the auxiliary circuit with PSM and APWM, and ZVS transition of main switches.

III. PROPOSED SYSTEM

Hybrid electric vehicles (HEV) and full electric vehicles (EV) are rapidly advancing as alternative power for green transportation. The vehicles' electrification not only involves the traction parts, but it is also generating new applications

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Solar Panel Tracking & Monitoring System Using GSM

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Abstract: This project details about the development of an Automatic Solar radiation tracker. To make solar energy more viable, the efficiency of solar array systems must be maximized. A feasible approach to maximizing the efficiency of solar array system is sun tracking. Proposed in this project is a system that controls the movement of a solar array so that it is constantly aligned towards the direction of the sun. The power obtained from the generation can be used for the needs in any system. The PIC Controller is used to control the direction of the Solar Panel based on sun direction. The dust gets accumulated on the front surface of the module and blocks the incident light from the sun. It reduces the power generation capacity of the module. The power output reduces as much as by 50% if the module is not cleaned for a month. Automatic Sun Tracking System is a hybrid hardware/software prototype, which automatically provides best alignment of solar panel with the sun, to get maximum output (electricity) In order to regularly clean the dust, a sun tracking- cum- cleaning system has been designed, which not only tracks the sun but also cleans the modules automatically.

Keywords: Solar Panel, Monitor, GSM

I. INTRODUCTION

As the range of applications for solar energy increases, so does the need for improved materials and methods used to harness this power source. There are several factors that affect the efficiency of the collection process. Major influences on overall efficiency include solar cell efficiency, intensity of source radiation and storage techniques. The materials used in solar cell manufacturing limit the efficiency of a solar cell. This makes it particularly difficult to make considerable improvements in the performance of the cell, and hence restricts the efficiency of the overall collection process. Therefore, the most attainable method of improving the performance of solar power collection is to increase the mean intensity of radiation received from the source. There are three major approaches for maximizing power extraction in medium and large scale systems. They are sun tracking, Maximum Power Point (MPP) tracking or both.

A. SOLAR ENERGY

One of the most important problems facing the world today is the energy problem .This problem is resulted from the increase of demand for electrical energy and high cost of fuel. The solution was in finding another renewable energy sources such as solar energy, wind energy, potential energy...etc. Nowadays, solar energy has been widely used in our life, and it's expected to grow up in the next years.

Solar energy has many advantages:

1. Need no fuel
2. Has no moving parts to wear out
3. Non-polluting
4. Adaptable for on-site installation.
5. Easy maintenance
6. Can be integrated with other renewable energy sources
7. Simple & efficient

Tracking systems try to collect the largest amount of solar radiation and convert it into usable form of electrical energy (DC voltage) and store this energy into batteries for different types of applications. The sun tracking systems can collect more energy than what a fixed panel system collects.

B. TRACKING TECHNIQUES

There are several forms of tracking currently available; these vary mainly in the method of implementing the designs. The two general forms of tracking used are fixed control algorithms and dynamic tracking. The inherent difference between the two methods is the manner in which the path of the sun is determined. In the fixed control algorithm systems, the path of the sun is determined by referencing an algorithm that calculates the position of the

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An Automated Weed Expropriation System for Agriculture

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***Abstract*— In recent years, a fully automated system has been receiving increased attention because of high efficiency and accuracy. Robotics is a rapidly growing field. The development in the robotics make an intelligent robot and user friendly which has found jobs in several fields. Robots are introduced in the area of agriculture too. Weed expropriation is the paramount process in paddy cultivation. In this paper weed expropriation is done by robotic arm. A visual texture based image processing technique using MATLAB® software is utilized to detect the weed. The robotic arm and its moment are controlled by FPGA controller.**

Index Terms*— *Image processing, FPGA controller, Weed Expropriation, Robotic arm.

I. INTRODUCTION

In India 52% of populace are associated with paddy cultivation [6]. Control of weed is the consequential process where numerous procedures like tillage, planting, fertilizer application, irrigation etc., are utilized for engendering propitious condition for crop. These practices are carried opportunely it availed in controlling weeds. In earlier days, weeds are identified by human. They check each and every places of field then pluck out the weed physically and furthermore work deficiencies have prompted higher expenses for hand weeding.

The conventional technique cannot control weeds however it diminishes the weed population. Later weed control is accomplished by chemicals which mean herbicides utilized to slaughter the weed. The herbicide is to be showered all through the crops. Some herbicide may kill a wide range of vegetation, not simply weeds and it influence nature, people and other living life forms. So an intellective weed control system is needed. An automation based weed expropriation system is utilized to differentiate the weed from crop and expel the weed. The proposed system is utilized to supersede the shortage of labor.

The required amount of herbicide is spread into the field [1] where weed exist. The plant health is checked and the specific infection in a plant is identified with the assistance of image processing technique in MATLAB® software [2]. Predicated on the colour, the need of plant is recognized ahead of time by contrasting the crop leaf colour with the leaf colour chart in image processing [3]. The different biometric features are available to classify the plant species. The plant with healthy leaves can be identified. The fungal disease in the crop is detected by image processing techniques based on the spots on leaves.

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A GPS Based Novel Bull Tracking System for Jallikattu

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***Abstract*— In this paper an efficient bull tracking system is designed and implemented for tracking the movement of bull from any location at any time is discussed. The proposed framework made great utilization of prominent innovation that consolidates a mobile application with a microcontroller. The system works on Global Positioning System (GPS) technology for tracking. Arduino microcontroller is used to control the GPS and SIM908 Quad-Band GSM / GPRS module which combines GPS technology. The tracking system uses the GPS module to get geographic location coordinates at regular time intervals. The GSM module is used to transmit and update the bull location to a database. The Google Maps API is used to display the bull location in the mobile of the client.**

***Index Terms*—Bull Tracking, Global Positioning System, GSM module, Arduino**

I. INTRODUCTION

Jallikattu is a customary spectacle in which a bull is relinquished into a horde of people, and numerous human participants endeavor to grab the large hump on the bull's back with both arms and hang on to it while the bull endeavors to elude [8]. An innovation is used to determine the area of an escape bull utilizing distinctive techniques like GPS and other navigation system working by means of satellite and ground based stations. The GPS/GSM based system is a standout amongst the most vital frameworks, which incorporate both GSM and GPS innovations. It is fundamental due to the huge number of uses of both GSM and GPS frameworks and the wide use of them by a huge number of individuals all through the world [1]. In [2], a vehicle tracking system is installed in a vehicle to enable the owner or a third party to track the vehicle's place. This paper is proposed to design a bull tracking system that works using GPS and GSM technology. This framework is based on embedded system, used for tracking and positioning of bull by using Global Positioning System (GPS) and Global System for Mobile Communication (GSM). This design will continuously watching the movement of bull and report the status on demand.

II. PROPOSED SYSTEM

This paper demonstrates a contemporary Bull Tracking System (BTS) use GPS technology to monitor and locate bull anywhere on the earth. Tracking system is tagged in the horn of the bull that provides efficacious real time location and the information can even be

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Integrated Renewable Energy Sources with EMS using Fuzzy Control and WSN for Smart Grid Applications

A. Albert Martin Ruban, R. Anandaraj, K. Selvakumar, N. Kannan

Abstract: ***This paper deals with the integrated renewable energy sources with EMS using fuzzy control for smart grid applications. This paper comprised of power supply which obtains its power from the green energy resources, which includes solar, wind, and fuel cell. The modeling of the above mentioned generating system and storage device was simulated by using MATLAB/ Simulink. The RS 485 ZigBee network, a communication protocol employed to monitor and command the EMS. The fuzzy employed to manage the battery.***

Keywords: EMS, Fuzzy control, Smart grid, Solar, Wind, Fuel cell, Zigbee, Renewable Energy.

I. INTRODUCTION

The development of the renewable energy (also called green energy) system has overcome all the disadvantages of the conventional or non renewable energy sources. The current green energy systems employed in the power generation are: Solar, wind, biomass, tidal [1]. These renewable energy resources are developed in many countries. In USA, electrical grids consists of around 5,000 power projects, over 2, 00,000 miles of high tension (HV) transmission lines, and around 55,00,000 miles of low tension distribution lines [2]. EPRI (Electrical Power Research Institute) estimates the annual cost of US business power outages [2]. The renewable energy generations are in the form of DC that can be employed for the DC application. This generated power can be utilized for the AC system by using the inverter with power factor correction. The generation of green energy to the DC grid is far different from the conventional power generation [1]. The hybrid power system provides better reliability than the isolated stand alone system [3]. The hybrid system comprised of more than one generating sources [4]. The integrated power system can be used with grid connected and stand alone mode of operation [5]. The optimization and distributed energy generation can be achieved in the smart grid [6]. This paper is comprised of the sources, storage systems, DC bus regulators, and Energy Management Systems (EMS) with fuzzy controller. The optimization and distributed energy generation of the grid was achieved by using the Energy Management System.

The storage system employed here is the Lithium ion battery. The EMS employs RS 485 ZigBee network, a communication protocol for commanding operation [7]. Fig.1 is a block diagram of proposed system comprised of five major blocks: generation block, storage block, regulator block, load blocks and management block.

The generation block includes PV, wind turbine, and fuel cells (Integrated renewable energy sources). The storage block includes battery and its charge controller. The regulator block includes the EB supply. The load employed in this proposed work is DC loads, which constitutes a multi agent system, supplies the power to the stand alone DC loads [8].

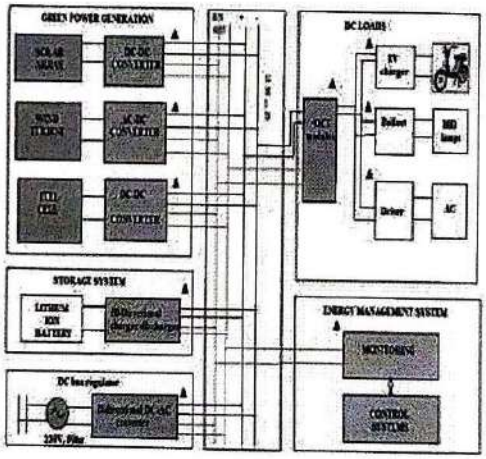
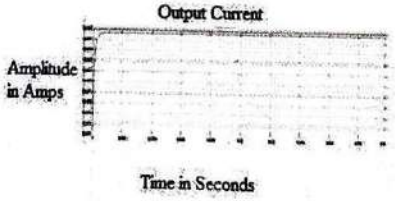


Fig.1. Block Diagram



The PV and Wind turbine deliver maximum power to the grid during normal conditions with the help of maximum power trackers. The fuel cell and the EB supply are used as a standby system which delivers power during power failure conditions. The fuel cell delivers the base power during power failure condition.

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Two Level Fuzzy Based Energy Management System with Integrated Solar and Wind Based Generating System in Smart Grid Environment

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Abstract: **As conventional energy sources are depleting, renewable energy sources play a vital role. The renewable energy sources such as solar and wind based power production is the appropriate solution due to its surplus availability. However, the uncertainty in the availability of these resources due to environmental factors results in uncertainty in power production which ought to be dealt seriously. The power produced from these resources is connected through grid to the loads. If the produced power exceeds the total demand by the loads, then excess power can be sold to utility. Hence, it is mandate to produce maximum possible power from these renewable resources irrespective of the environment influencing factors. To achieve this, a novel two level fuzzy based energy prediction system is proposed. The proposal considers the influencing parameters for both solar and wind energy based power production. Accordingly, the first level fuzzy based controller which is designed to produce maximum power is tuned to obtain maximum power from these resources. The total power generated from the integrated system is compared with that of the total demand. If the demand is lesser, then excess power is used to charge the battery and hence, the State of Charge of the battery can be increased up to 95%. Using second level fuzzy logic controller, the excess power will be predicted which will be sold to the utility. The algorithm is implemented in Matlab. The proposed methodology exhibit the efficacy of the proposal.**

KEYWORD – Smart Grid, FLC, Solar PV, Wind, Units sold

I. INTRODUCTION

Due to depletion of conventional energy sources and environmental hazards, renewable energy sources are the synergetic and eco friendly energy solution. Among these renewable energy sources ,the most promising power generation technologies are solar and wind energy as it is available in abundance. However, there is an uncertainty in power generation due to variation in geographic and seasonal climatic conditions that affect the solar and wind energy output. Hence, a backup power system is needed for reliable and sustainable power generation and is achieved through batteries. Further, the dynamic interaction between the load demand and the integrated renewable energy sources lead to stability and power quality problems that are not very common in conventional power systems. Therefore, managing the flow of energy throughout the hybrid system is essential to ensure the continuous energy flow [1][2].

Several research works are proposed in the literature. The energy management in stand-alone hybrid power systems is proposed [3]. Maximum Power Point (MPP) is achieved through neural network whereas fuzzy logic controller is used to manage charging and discharging of batteries for performance optimization. However, the system did not consider all the influencing parameters for hybrid energy based power production. A fuzzy logic based controller for the voltage control of the designed hybrid system is proposed and compared with a classical PI controller for performance validation [4]. Nevertheless, the system is unpredictable as it considers wind speed alone rather than all the influencing parameters. An adaptive neuro-fuzzy inference system with wind velocity and Reynold's number as input parameters for wind power extraction is proposed [5]. Here, Reynold's number depends on free stream wind velocity, dynamic viscosity and chord length. However, all the influencing parameters for wind power extraction are not considered.

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Hardware Realization of Two Level Fuzzy Based Energy Management System Using Wireless Sensor Network

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Abstract: Conventional energy sources are diminishing and also creating environmental hazards. Hence, renewable energy sources play a crucial role since they are more synergetic and provide eco friendly energy solution. Among the renewable energy sources, solar and wind are the most promising power generation technologies owing to their accessibility in abundance. On the other hand, due to variation in geographic and seasonal climatic condition, there is an uncertainty in power generation leading to improbable power production which ought to be dealt seriously. Therefore, a two level fuzzy based Energy Management System was proposed [13]. The proposed scheme is validated using hardware. The temperature, relative humidity, wind direction and wind velocity are sensed using respective sensors and the rest of the parameters are taken based on the literature. The first level fuzzy based controller is implemented to decide the duration and the instant of triggering pulses of converter in order to produce the maximum power from these renewable sources. Then, the total power generated from the integrated system is fed along with state of charge of the battery and total demand by loads as input to the second level fuzzy logic based Energy Management System. Using the second level fuzzy logic controller, the excess power is predicted and exported to the utility grid. Thus, hardware of two level fuzzy based Energy Management System using Wireless Sensor Network is realized and the results exhibit proximity with the simulation results.

Keywords: EMS, FLC, PV, WIND, WSN

I. Introduction

Ultra capacitor based Energy Management System (EMS) using fuzzy controllers is proposed [1]. The analysis and evolution of better battery power management systems with optimal storage, charging and discharging characteristics of ultra capacitor is carried out. Nevertheless, the renewable energy sources are not considered. Model of Micro grids with steady state and their transient responses to changing inputs are presented [2]. Current models of a fuel cell, micro turbines, wind turbine and solar cell have been discussed. Finally a complete model including a Micro grid, the power sources, the electronics part, a load and a mains in MATLAB/Simulink is presented. However, the model is not validated through hardware. Regulation of the energy management for a normal day in summer via intelligent control is proposed [3]. Solar panel and wind turbine are the generators and the load is assimilated to a residential demand. This fuzzy logic based approach considers electricity prices, renewable production and load demand as the parameters. Furthermore, the command rules are developed in order to ensure a reliable grid taking into account the financial aspect to decide the load modification's level. A fuzzy control approach based Battery management using hybrid solar photovoltaic and wind power system for stand-alone applications is proposed [4]. In this work, the life cycle of the battery is improved with the desired State of Charge (SOC). The performance of fuzzy controller is compared with that of classical PI controller and is found to be superior. Energy management system for DC microgrid is implemented [5]. In this design, analysis and control of power sources are performed using Matlab/Simulink and Integration of these models is carried out using Labview. The Microgrid contains a solar panel, wind turbine, lithium ion battery and a fuel cell for continuous supply of power to the grid. For the improvement of battery life and its usage, state of charge has been introduced and its desired state is managed by fuzzy control of Labview.

To overcome the problem of power distribution, this paper provides an overview of wireless sensor network by managing the equal power distribution using zigbee sensor network [6]. The hardware demonstration of the Home Energy Management (HEM) system for managing end-use appliances is proposed [7]. The communication time delay of the HEM to perform load control is analyzed, along with its energy consumption. It provides a homeowner the ability to perform smart load controls based on utility signals, customer's preference and load priority automatically. An energy management system, which controls power generation and consumption optimally based on the mixed integer linear programming method, is developed [8].

Impact of rate of recurrent communication of sensor node on network lifetime in a wireless sensor network

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- « Previous Article
- Table of contents
- Next Article »

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Article

Recent research works suggest cluster head reselection as a mechanism for network lifetime improvement. Cluster head reselection is either energy or time dependent. However, frequent cluster head reselection increases time overhead and energy consumption leading to reduction in network lifetime. Hence, an attempt is made to minimise the cluster head reselection frequency. The cluster head reselection is carried out whenever the energy of current cluster head falls below the threshold and this threshold corresponds to the minimum energy required for a node to survive. It is this selection of the threshold value that favours reduction in cluster head reselection frequency. Further, the cluster head reselection is based on energy drainage parameters such as the rate of recurrent communication of sensor node in addition to the residual energy of the node and distance of the node from the base station. To demonstrate the effect of rate of recurrent communication of sensor node on cluster head reselection, experiments are conducted both through simulation and hardware. Further, to study the effectiveness of the proposal, comparisons are made with other algorithms such as low energy adaptive clustering hierarchy (LEACH)-C, adaptive decentralised re-clustering protocol and T-LEACH. Reduced cluster head reselection frequency exhibits low energy consumption and time overhead with enhanced network lifetime.

Inspec keywords: wireless sensor networks

Other keywords: low energy adaptive clustering hierarchy; energy drainage parameters; energy consumption; time overhead; wireless sensor network; sensor node; network lifetime; recurrent communication rate; residual energy; cluster head reselection frequency

Subjects: Sensing devices and transducers; Wireless sensor networks

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Design and Implementation of Five Level Multilevel Inverter Fed Motor Drive

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Abstract— **In recent years, multilevel power converters have been receiving increased attention because they can withstand high voltage and engender a proximately sinusoidal waveform. Large-motor drive systems are generally utilized with transformers to control the voltage stress on semiconductor devices in the converter circuit. If multilevel converters are instead used for this purpose, the transformers can be omitted because these converters reduce the voltage stress on each switching device. However, multilevel converters have certain disadvantages such as the need to balance the voltage of the dc-bus capacitors. In this paper a novel five level diode clamped multilevel inverter is proposed. A three phase five level diode clamped multilevel inverter is analyzed through simulation using MATLAB® Simulink and it is implemented in hardware. The Total Harmonic Distortion (THD) of five level diode clamped multilevel inverter (DCMLI) is verified and the results are compared.**

Index Terms—**Diode clamped multilevel inverter (DCMLI), Total Harmonic Distortion (THD).**

I. INTRODUCTION

Power-electronic inverters are becoming more popular for various industrial applications. In recent years high-power and medium-voltage drive applications have been installed [1]. To overcome the limited semiconductor voltage and current ratings, some kind of series and/or parallel connection will be necessary. Due to their ability to synthesize waveforms with a better harmonic spectrum and attain higher voltages, multi-level inverters are receiving increasing attention in the past few years [9],[10].

The multilevel inverter was introduced as a solution to increase the converter operating voltage above the voltage limits of classical semiconductors. The multilevel voltage source inverter is recently applied in many industrial applications such as AC power supplies, static VAR compensators, drive systems, etc. One of the significant advantages of multilevel configuration is the harmonic reduction in the output waveform without increasing switching frequency or decreasing the inverter power output. The output voltage waveform of a multilevel inverter is composed of the number of levels of voltages, typically obtained from capacitor voltage sources. The so called multilevel starts from three levels. As the number of levels reach infinity, the output THD (Total Harmonic Distortion) approaches zero [3], [9]. The number of the achievable voltage levels, however, is limited by voltage unbalance problems, voltage clamping requirement, circuit layout and packaging constraints. Multilevel inverters synthesizing

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Wind Power Economic Dispatch for Steady-State Secure Region Using GSIP

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Abstract— **In this paper, an economic dispatch model considering a flexible generation dispatch is proposed for managing the wind power variability in electric power systems. The model considers the base case operation cost as well as the steady-state secure region for the variable wind energy. The generation schedule in the secure region provides grid operators with the boundary for absorbing wind power. The proposed model is formulated as a generalized semi-infinite programming (GSIP) problem and the corresponding solution is presented. The impact of flexible thermal resources and transmission capacity on the calculation of the wind power secure region is also discussed.**

Index Terms— **Variable wind power utilization, steady-state secure region, economic dispatch, generalized semi-infinite programming (GSIP)**

Nomenclature

A. Sets and Index

gi	Index of generators
i	Index of load buses
j,k	Index of grid constraints and extreme wind power conditions
K	Set of grid constraints
l	Index of transmission lines
wi	Index of wind farms

B. Parameters

$a_{gi,k}$	Coefficients in grid constraints
$b_{wi,k}$	Coefficients in grid constraint
c_l	Cost coefficient of load curtailment
c_w	Cost coefficient of wind spillage
d_i	Load power at Bus i
F_l	Transmission capacity of Line l
m_k	Coefficients in grid constraints
NL	Number of transmission lines
$p_{gi,max}$	Maximal output of Generator gi
$p_{gi,min}$	Minimal output of Generator gi
R_{gi}	Ramping rate of Generator gi
$rw_{wi,max}$	Upper bound of the secure region of Wind Farm wi
$rw_{wi,min}$	Lower bound of the secure region of Wind Farm wi
T_a	Allowed generation adjustment time duration
$w_{wi,max}$	Real maximal power output of Wind Farm wi
$w_{wi,min}$	Real minimal power output of Wind Farm wi
t	Timeslot duration
i,l	Power flow distribution factor of load
gi,l	Power flow distribution factor of generation
wi,l	Power flow distribution factor of wind power

C. Variables and Functions

INTRODUCTION

WIND power has been experiencing a rapid deployment across the world. The large integration of wind power could help reduce emissions and alleviate the dependence on fossil fuels. However, the deployment also imposes significant challenges on the power system operation because of the variable nature of wind power. In such cases, the flexible generation capacity should be properly reserved to manage the variations in the real-time generation availability caused by the wind power uncertainty.

A large volume of research has been devoted to dealing with the economics and the security of variable wind power in the power grid operation [1]-[8]. In such cases,

stochastic and robust programming methods are widely adopted under the framework of unit commitment (UC) and economic dispatch [1]-[4]. In the former

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Performance And Emission Studies On Cashewnut Shell Liquid Bio-Oil Fuelled Diesel Engine With Acetone As Additive

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Abstract :

Vegetable oils are a potential alternative to partial or total substitution of diesel fuels. In this study, we used Acetone as an additive to investigate the possible use of increased percentages of bio-oil in diesel engine without any retrofitting. Bio-oil was made by pyrolysis process. Cashew nut shell liquid (CNSL) was feed stroke for bio oil. Number 2 diesel fuel containing 20% bio oil and 80% diesel fuel, is called here as B20. The effects of Acetone, blended with B20 in 4, 8, 12 % by volume were used in a single cylinder, four strokes direct injection diesel engine. The effect of test fuels on engine torque, power, brake specific fuel consumption, brake thermal efficiency, exhaust gas temperature, were ascertained by performance tests. The influence of blends on CO, HC, NO and smoke opacity were evaluated by emission tests. HC emission was reduced by 34%, smoke density reduced by 16% and the NO emission is reduced remarkably by 49.4% while the engine was operated by 12% Acetone with B20 when comparing neat diesel operation. KEYWORDS: Biodiesel, Cashew Nut Shell Liquid (CNSL), Emission, Acetone, Pyrolysis.

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Investigation of Al6063/Sic/15P with Mg for Heat Transfer Application in Pin Fin Apparatus – An Experimental Approach

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Abstract

Aluminium reinforced silicon carbide particle composite possess improved operational potential for critical structural components due to its attractive properties when compared to monolithic materials. These properties include improved strength and stiffness, high elastic modulus, hardness; wear resistance and low coefficient of thermal expansion. The combination of Al/Sic/15p with Magnesium plays a vital role in the recent advancement in composite mixtures. The aim of the present study is to improve the heat transfer characteristics and to investigate the performance of fin efficiency by using fins of different materials in pin fin apparatus. Here the system follows forced convection as the mode of heat transfer and it is the principle used in it. Engine cylinder can be cooled by fluids like oil and air as media. To improve the efficiency of air cooling, fins will be provided as they provide the more surface area for heat dissipation. But when we keep increasing the surface area, there are other factors like weight & size will shoot up which will complicate the design of fins and engine cylinder. The work discussed about the composite of Al/Sic/15p in addition to Magnesium, to evaluate the heat transfer properties through Pin- Fin apparatus.

Keywords: Aluminium, Silicon Carbide, Composite, Heat Transfer coefficient, Pin-Fin apparatus

I. INTRODUCTION

Al-Mg-Si alloys are being increasingly used in automotive and aerospace industries for critical structure applications because of their excellent castability and corrosion resistance and, in particular, good mechanical properties in the heat treated condition [1]. Parametric Study of Extended Fins in the Optimization of Internal Combustion Engine they found that for high speed vehicles Engines thicker fins provide better efficiency [2, 3]. When fin thickness increases, the gap between the fins reduces that resulted in swirls being created which helped in increasing the heat transfer. The rectangular shaped extended surfaces shows the high rate of heat transfer when compared to other extensions at same length and also made many experiments to find the fin efficiency and concluded that the efficiency of fin is useful when the value of NTU is zero otherwise the fin efficiency is high when the NTU is high and is used in air conditioning systems [4, 5]. Some work explained that the notch is provided on the surface of fin with a rectangular shape the fin supports for much heat transfer and compared the heat transfer rate of fins by changing the material from Aluminium to copper and found that copper shows much heat transfer value than aluminium [6, 7]. As earlier resulted that to achieve high thermal performance the cylindrical perforated pin fins are used they leads to high heat transfer than the cylindrical pin fins. The efficiency varies depending upon clearance ratio and inter-spacing ratio and also lower clearance ratio, lower inter-fin spacing ratio and lower Reynolds numbers are suggested [8].

In view of the above-mentioned heat transfer problems, the main objective of the paper is to study of the various combinations of composites for the perfect heat transfer in Pin-Fin apparatus.

II. FABRICATION OF COMPOSITES

The base metal Al6063 is cleaned using acetone. Then it is melted using electric arc furnace (capacity 20kg/melt).Temperature of the melting process is 710- 725 degree centigrade. At this, stage all cover flux is added in the furnace. Once the base alloy is melted completely, degassing process is carried out by adding hexachloroethane tablets. This removes nitrogen, carbon-di-oxide and other gases absorbed by the melt in the furnace. The silicon carbide is now preheated to a temperature of 790 degree centigrade. The melted base alloy is stirred for about 5-6 minutes at 450rpm.Silicon carbide and magnesium are continuously added to the melt. The magnesium is added in order to compensate for its losses during melting and for wetting purposes. After this stirring purpose the molten mixture is poured into the steel moulds of required diameter and length.

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Experimental Investigation of Cutting Parameters Influence on Tool Wear and Surface Roughness in Turning of EN 31 Steel using Carbide Insert in CNC Turning Center

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Abstract:- In modern machining processes, there are continuous cost pressures and high quality expectations in the product. Turning is one of the prominent and fundamental process in the field of machining. Turning is largely used in aerospace, automotive, machinery design and also in manufacturing industries. Tool wear and surface roughness are widely considered most challenging aspect causing poor quality in machining of the steel. Optimization of cutting parameters is essential for the achievement of high quality and high rate of mass production. In the present work, an attempt has been made to investigate the effect of process parameter performance characteristics in turning of EN31steel using carbide insert and there by optimizing the process parameter using Taguchi's DOE method. Three process parameters namely speed, feed and depth of cut are used to optimize multi quality characteristics namely surface roughness and tool wear. The results reveal that Taguchi's technique used for minimizing the surface roughness and tool wear using MINITAB 16 produce a favourable range of the machining parameter values is proposed for efficient machining.

Keywords: EN31 steel, surface roughness, tool wear, optimization, Taguchi DOE

I. INTRODUCTION

Surface finish plays vital role in service life of components and it ensures a great reliability of components. It required to optimize process parameter for better surface finish [1]. The research represents an optimization model for machining parameter in steel using tungsten carbide inserts [2]. The research reveals that three purpose namely, systematic procedure based on, data observed, secondary finding out the optimal combination of process parameter and finally the effect of lubricating temperature in steel [3]. The study conclude that the design of experiments (DOE) methodology constitute a better approach for roughness prediction [4]. The effects of the cutting parameters and tool materials on surface roughness were evaluated by the analysis of variance [5]. Experimental study of the effect of the main turning parameter such as feed rate, tool nose radius, cutting speed and depth f cut on the surface roughness of AISI 410 steel [6]. The turning operations were carried out with TiC and TiCN coated carbide cutting tool inserts. The experiments were conducted at three different cutting speeds (80, 100 and 120 m/min) with three different feed rates (0.04, 0.08 and 0.12 mm/rev) and a constant depth of cut (0.5 mm). The predicted results are found to be closer to experimental results within 8% deviations [7]. The experimentation plan is designed using Taguchi's L9 Orthogonal Array (OA) and MINITAB-16 statistical software is used. Optimal values of process parameters for desired performance characteristics are obtained by Taguchi design of experiment. Prediction models are developed with the help of regression analysis method using MINITAB-16 software [8]. The performance of multi-layer TiN coated tool in machining of hardened steel (AISI 4340 steel) under high speed turning, which has also been compared with that of uncoated tool. The influence of cutting parameters (speed, feed, and depth of cut) on surface roughness have been analysed using Taguchi methodology. The machining of hard materials at higher speeds and lower feeds is improved by using coated tools [9]. The author represents an optimization of machining parameters with multiple cutting tools. This is required to reduce the cutting forces and

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Automotive Application and Mechanical Property Characterisation of Sisal Fiber Reinforced Epoxy Composite Material

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***Abstract*:- Many work described in the past refers to the mechanical characterisation of fibre reinforced composite materials with an epoxy matrix. Sisal is a natural fibre used as a base mat structure in which the epoxy resin is added for adhesion. Sisal with the botanical name Agave sisalana, is a species of Agave native to southern Mexico but widely cultivated and naturalized in many other countries. Sisal fibre is derived from the leaves of the plant. It is usually obtained by machine decortications in which the leaf is crushed between rollers and then mechanically scraped. The prepared sisal fiber composite is compared with a reference glass fibre reinforced composite and the other natural fibres composites is made. It is also presented the influence of the surface treatment in the mechanical characterizations of the natural fibres. The present study is to investigate the mechanical properties of sisal fiber reinforced composites. The sisal fiber used as mat form and epoxy used as reinforcement for fabricating of composites. The composites were prepared by hand layup technique. The tensile, hardness and impact tests were carried out of composites. The aim of the study is to fabricate new class of epoxy based composites reinforced with randomly oriented short sisal fiber. The results reveals that the major mechanical properties viz Tensile, Hardness and Impact were studied and found to be satisfactory.**

Keywords: Sisal fiber, tensile, hardness, impact, mechanical testing.

I. INTRODUCTION

Research have began to focus attention on natural fiber composites(i.e. coir, jute, sisal, banana, hemp and bagasse fibers) which are composed of natural or synthetic resins, reinforced with natural fibers. Natural fibers exhibit many advantageous properties; they are low density natural yielding relatively light weight composites with high specific properties. These fibers also have significant cost advantages and ease of processing along with being highly renewable resources. Natural fiber composites are very cost effective material especially in building and construction purpose packaging, automobile and railway coach interiors and storage devices. These can be potential candidates for replacement of high cost glass fiber for low load bearing applications. Natural fibers have the advantages of low density, low cost and biodegradability. However, the main disadvantages of natural fibers and matrix and the relative high moisture absorption. Therefore chemical treatments are considered in modifying the fiber surface properties [1].sodium hydroxide (NAOH) treatment on the fiber would remove the impurities like pectin, facts and lignin in the fiber, resulting in improvement in the adhesion between fiber and matrix also increases mechanical (tensile, flexural and compression) properties of fabricated component[2]. The hybrid composites were studied extensively by researchers and they concluded that hybrid composites can offer better resistance to water absorption, cost reduction, weight savings and increase modulus of materials. A fabricated composite specimen of different weight % of alkaline treated sisal fibers and performed mechanical characterization. Results indicate the tensile strength increases with increasing fiber percentage up to a certain limit. The effect of hybridization on mechanical Properties of coir. Composites fabrication was done using compression moulding technique. The results demonstrated that hybridization plays an important role for improving the mechanical properties of composites. The tensile and flexural properties of hybrid composites are improved markedly as compare to un hybrid composites [4]. The tensile and flexural properties of hybrid of glass/sisal fiber and glass/jute fiber reinforced epoxy composites. Glass/sisal fiber reinforced epoxy composite exhibits more tensile strength and glass/jute fiber reinforced epoxy composite exists more flexural strength [5]. The mechanical properties of ukam banana, sisal, hemp, coconut and e-glass fiber reinforced to access the possibility of using it as a new material in engineering application. Samples were fabricated by the hand layup process [6]. The mechanical property of chemically treated hemp fiber reinforced composites. They found that due to

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Assessment of Factor Influencing Surface Roughness and Tool Wear on the Machining of Austenitic Stainless Steel Grade 304

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Abstract

Stainless steel are iron based alloys containing a minimum of about 12% chromium, this forms a protective self-healing oxide film. The ability of the oxide layer to heal itself means that the steel is corrosion resistance. The austenitic stainless steel contains 16% of the chromium and 6% of the nickel and range through to the high alloy or super austenitic. Additional elements can be added such as molybdenum, titanium or copper, to modify or improve their properties, making them suitable for many critical applications involving high temperature as well as corrosion resistance. The present work focuses on finding the optimal machining parameters setting for machining of Stainless steel grade 304. To achieve better surface finish and tool wear under dry machining conditions using coated carbide tool. Tool wear and the surface roughness was analyzed for various cutting conditions. Taguchi based statistical approach is employed to investigate the relationship between various machining parameters and their response. By applying ANOVA and mathematical model, the response factors are modelled in terms of input machining parameters. The developed model describes the interaction i.e. either single/multiple parameters of various input parameters with respect to response factors. Statistical approach has been proven to be a very powerful tool for solving optimization problems in industrial manufacturing conditions.

Keywords: Stainless steel, Optimization, DOE, ANOVA, Machining parameters

I. INTRODUCTION

A large number of engineering components such as shafts, gears, bearings, clutches, cams, screw nuts etc., need reasonably high dimensional and form accuracy and good surface finish for serving their functional purposes. In many applications, the surface finish requirements restrict the range of cutting process parameters which can be used. The increased use of high speed machining, particularly with automated machine tools, has spurred the use and development of several free cutting steels. These steels machine, readily and form small chips when cut. These smaller chips reduce the length of contact between the chip and cutting tool thereby reducing the associated friction and heat and therefore, the power and tool wear. The formation of small chips also reduces the likelihood of chip entanglement in the machine and makes chip removal much easier. The material used here is low carbon steel, which is Free-cutting steel for bulk applications for joining elements in mechanical engineering and automotive components. Manganese sulphide exists as globules in the microstructure which aid machining. These act as discontinuities in the structure which serve as sites to form broken chips. Many of the researchers conducted experiment on turning steel with multiple objective using DOE and reported that the proposed method simultaneously minimize the response. One of the investigation stated that the influence of cutting speed, feed rate and depth of cut on surface roughness, material removal rate and cutting force during turning of AISI 304 steel. L27 orthogonal array design of experiments was adopted .The proposed hybrid approach in optimizing the process parameter during turning of EN-31 and reported that the optimal machining setting increases the production capacity. A large number of researchers investigated the influence of machining parameter on surface finish and tool life during micro turning of steel alloy. Some studied the machining characteristics of EN-31 steel using Tungsten carbide insert and reported that use of cooled lubricant increases the surface finish. Detailed reports proposed a hybrid technique for optimizing the machining condition and reported that the results of the proposed technique are in good agreement with the other standard technique. Some used teaching learning based algorithm for optimizing the machining process parameters of cutting speed, feed rate and number of passes and reported the effectiveness of the proposed algorithm in terms of lower production cost and number of passes. Many studied the machining characteristics of duplex stainless steel and optimized the turning process parameter using Taguchi method. Their results are found to be in good agreement with the actual values less than 8% deviation. Few research actions on taguchi based optimization of machining parameters on steel alloys were investigated and studied the optimization of cutting force and surface roughness through the optimal setting of performance level of cutting speed, feed rate and depth of cut in high-speed turning of using carbide tools insert has been discussed. The surface quality of the machined part not only depends on the machining condition but also the type of cutting insert used. The behaviour of the tool can be attributed to the type of coating used. Coatings increase the wear resistant properties of the tool and may also reduce cutting forces and temperatures. It was concluded from the work that multi-

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Influence of Machining Parameters on the Responses for Al/SiCp Composite

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Abstract

The manufacturing industries specially are focusing their attention on dimensional accuracy and surface finish. The important goal in the modern industries is to manufacture the products with lower cost and high quality in short span of time. There are two main practical problems that engineers face in a manufacturing process. The first is to determine the values of the process parameters that will yield the desired product quality, in other words attaining the technical requirements. And the second one is to maximize the manufacturing system performance using the available resource. For many researchers the term metal matrix composite (MMC) is often equated with the term light metal matrix (LMC) because of their strength to weight ratio. This paper presents the influence of process parameters like cutting speed, feed and depth of cut on surface roughness (Ra) in turning Al/SiCp metal matrix composites using carbide insert. The experiments have been conducted based on Taguchi's L9 orthogonal array. The optimal parametric combination for surface roughness was found. Mathematical models for surface roughness found to be statistically significant.

Keywords: Machining parameters, Aluminium, Silicon carbide, SEM, Optimization

I. Introduction

Metal matrix composites (MMCs) are newly developed materials in recent years having favourable mechanical properties like high strength, hardness, wear resistance and strength to weight ratio. It has a wide range of application in industrial sectors like automotive to aerospace [1]. As MMCs contain softer matrix reinforced with very hard particulate, machining of such material becomes difficult and put challenges in machining sectors. MMCs are basically manufactured by performing process to produce near net shape product. Machining is essentially required to obtain desired dimensional accuracy, form accuracy, surface finish to satisfy functional requirements [2]. This semi finishing and finishing operation is normally done by traditional machining processes like turning or milling etc. Machinability is termed as 'ease' with which a material can be machined. Machinability is difficult to quantify because of the large number of variables involved [3]. Generally, machinability characteristics of any combination of tool-work pair can be judged by (a) magnitude of cutting forces, (b) chip forms, (c) magnitude of cutting temperature (d) surface finish and (e) tool wear and tool life [4]. Machinability will be considered desirably high when cutting forces, temperature, surface roughness and tool wear are less, tool life is long and chips are ideally uniform and short enabling short chip-tool contact length and less friction. Traditional tool materials like high speed steel is not suitable for machining MMCs due to rapid growth of tool wear [5]. Experimentally investigated the machinability aspects of Al–SiC MMCs with PCD and coated tungsten carbide tools in context to tool wear, cutting forces and surface finish. PCD tool have shown 30 times higher tool life than carbides under similar cutting conditions. Abrasion was found to be the primary wear mechanism. It was found that the flank wear is the primary mode of tool failure in machining Al/SiC MMC with PCD tool. With increase of cutting speed and feed, flank wear was found to increase [6]. Discontinuous chip formation was observed due to the presence of uniformly dispersed Sic particles. Some of researchers investigated the comparative performance of PCD and Chemical Vapour Deposition (CVD) diamond coated carbide insert during machining MMCs. It was revealed that PCD inserts performed much better compared to CVD coated diamond inserts [7]. It was observed that PCD tool performed better compared to poly crystalline boron nitride (PCBN) tool in terms of tool life during machining MMCs. Built-up- edge formation and grooving wear was noticed in PCBN tools and eliminated by the use of coolant. Some of the researchers investigated the machining of Al/SiCp-MMC using PCD and conventional tungsten carbide tools. Adhesion was found to be dominant wear mechanism during machining. PCD tool offered greater benefit in the machining of MMCs [8]. Al-Si particle composite was produced using stir casting technique. Taguchi's L9 orthogonal array was used to investigate the process parameters. Experimental results indicate that multi-response characteristics such as density and hardness can be improved effectively through Taguchi analysis. Researchers observed that carbide inserts showed better surface finish as compared to ceramic insert during machining.

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Design Optimization of Dynamic Vibration Absorber for Boring Process

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Abstract

Mechanical systems with flexible dynamics often suffer from vibration induced by changes in the reference command or from external disturbances. The technique of adding a vibration absorber has proven useful at eliminating vibrations from external disturbances and rotational imbalances. In this paper, the application of a Dynamic Vibration Absorber for suppression of chatter vibrations in the boring manufacturing process is presented. The boring bar is modelled as a cantilever Euler–Bernoulli beam and the DVA is composed of a mass and a spring and elements. After formulation of the problem, the optimum specifications of the absorber such as spring stiffness, absorber mass and its position are determined. The analog-simulated block diagram of the system is developed and the effects of various excitations such as step, ramp, etc. on the absorbed system are simulated. In addition, chatter stability is analysed in dominant modes of boring bar.

Keywords: Vibration Absorber, Boring, Simulink, Dynamic Analysis, Optimum

I. INTRODUCTION

Vibrations are present in many machines and structures. In general, vibrations adversely affect the performance of a machine. Vibrations may also cause fatigue failure or even damage the machine or structure by causing excessive levels of stress. The prevention or control of the vibration of machines and structures is therefore an important design consideration. There are numerous ways of reducing and preventing vibrations, for example, by changing the stiffness of a structure, increasing damping by using materials that have high damping properties, or by using control. Three types of control can be distinguished: active, semi-active and passive control. A dynamic vibration absorber (DVA) is a typical example of a passive controller. It consists of an auxiliary mass-spring system which tends to neutralize the vibration of a structure to which it is attached. The basic principle of operation is vibration out of phase with the vibration of such structure, thereby applying a counteracting force. An important advantage of a DVA in comparison with other methods that reduce vibrations is that it can also be applied to structures which are already in operation and appear to have unsatisfactory dynamic properties. DVA's are also advantageous because they are able to reduce the vibration level of a structure at a comparatively low cost of a few additional materials. Dynamic Vibration Absorber for suppression of chatter vibrations in the boring manufacturing process is presented. The boring bar is modelled as a cantilever Euler–Bernoulli beam and the DVA is composed of a mass and a spring and elements. After formulation of the problem, the optimum specifications of the absorber such as spring stiffness, absorber mass and its position are determined.

II. SIMULATION

Simulation of boring bar is simulated in this chapter. First the boring bar without absorber is simulated. Figure 1 shows Simulink of boring bar without absorber. Here how the operation would be during machining is simulated. Absorber is not attached with the primary mass, so vibration amplitude is maximum in this model.

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Finite Element Analysis of Welding induced Residual Stresses for Duplex Stainless Steel Weld Joint using Contour Method

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Abstract

In fusion welding, thermal cycle leads to undesirable metallurgical structure and causes residual stresses gets induced near the weld zone which plays an important role in determining the reliability of the weld joint. In this present work, the prediction of residual stresses in a welded joint has been done using Contour method. The measurements of the cross-sectional residual stress profile in a Duplex stainless steel 2205 welded with ER 2209 filler material are validated in the longitudinal direction. This method is simple in principle and easy in use. According to this method, the weld metal containing residual stresses is cut along the plane perpendicular to the weld line. The deformations occurring at the cut surfaces as a result of relaxation of the residual stresses are measured. The measured deformations are given as displacement boundary conditions to a finite element model to calculate the corresponding stresses normal to the cutting plane. This superposition principle assumes that the material behaves elastically during relaxation of residual stresses and that the cutting process does not introduce any new stresses to influence the measured displacements. It requires only one straight cut through a sample on the plane of interest, followed by measurement of the surface contour produced by relaxation of the internally stored stress field. This study indicates that the contour method is a powerful novel technique to obtain an accurate full three-dimensional map of residual stress field.

Keywords: Residual Stresses, Contour Method, Surface Fitting, Duplex stainless steel, FEM

I. INTRODUCTION

Residual stresses are introduced in the engineering components by various manufacturing process. Welding is the primary manufacturing process for joining metals in automobile, aerospace and marine industries. [1] During welding there is a significant change in the material properties and distortion takes place due to the severe thermal cycle loading. Due to these stored residual stresses near the weldment and heat affected zone, crack initiation takes place at the surface. The crack further gets rooted due to the environment such as corrosion, low temperature brittle behaviour, stress corrosion cracking and hydrogen embrittlement. This leads to the sudden failure in the weld joints. [2, 3] Thus the prediction of residual stresses in engineering components is essential to predict the failure criteria. Though many methods are available for measuring residual stresses such as x ray diffraction, hole drilling method, ultrasonic method etc., these methods have lots of limitations while achieving the accuracy of result. [4,5] Contour method was developed for measuring the residual stresses for the entire cross section of the material by using this method, the equilibrium residual stress pattern can be arrived in the form of a profile. Contour method was first introduced by Prime in 2001. The application of contour method follows the principle of Bueckner's elastic super position principle. It states that "If a cracked body subjected to an external loading or prescribed displacements at the boundary has forces applied to the crack surfaces to close the crack together, these force must be equivalent to the stress distribution in an uncracked body of the same geometry subjected to the same external loading". During welding residual stresses get stored in the weld and the heat affected zone. [6,7] The stored residual stresses are released when the weld region is cut into two halves in the transverse direction of weld, and plastic deformation induced in the cut surface due to residual stress relaxation. Contour method follows the above principle to study the effect of residual stresses due to welding. During wire cut EDM operation, the residual stresses are released in the form of normal and shear stress components over the surface. [8, 9] This stress relief causes distortion on the cut surface. Some of the assumptions made in the implementations of the method are (i) Stress relief after cutting is purely elastic. (ii) The cutting process does not introduce any stress. (iii) The cut surface is perfectly flat. (iv) Only normal stress from the cut surface is evaluated in the analysis. Shear stress component during relaxation has not been considered in the analysis. This study indicates that the contour method is a powerful novel technique to obtain an accurate full three-dimensional map of residual stress field.

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Predicting the Machining Performance of in-situ of Aluminium and Silicon Carbide Composite Using Wire EDM Technique

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Abstract

Wire-cut electrical discharge machining (WEDM) is one of the most emerging non-conventional manufacturing processes for machining hard to machine materials and intricate shapes which are not possible with conventional machining methods. This paper focuses on prediction and comparison of machining performance during Wire Electric Discharge Machining process of Aluminium- SiC in-situ composite to achieve minimum surface roughness. The control factors considered for this study are speed, wire feed, Pulse On-Time and Pulse Off-Time. The Universally known statistical software Minitab 16 is used for the research. The process parameters have been selected based on Taguchi's L27 orthogonal array. The research reveals the better characteristics of Aluminium composite which a good scope in aerospace application. The predicted machining characteristics are in good agreement with the experimental values. Further the research can extend for different process parameters and various levels for the better optimal machining characteristics.

Keywords: Wire EDM, Aluminium, Silicon carbide, Taguchi's L27 array, Surface roughness

I. INTRODUCTION

Electrical discharge machining (EDM) is a non-traditional, thermoelectric process which erodes material from the work piece by a series of discrete sparks between a work and tool electrode immersed in a liquid dielectric medium. These electrical discharges melt and vaporize minute amounts of the work material, which are then ejected and flushed away by the dielectric. The sparks occurring at high frequency continuously & effectively remove the work piece material by melting & evaporation. The dielectric acts as a deionising medium between 2 electrodes and its flow evacuates the resolidified material debris from the gap assuring optimal conditions for spark generation. In micro wire EDM metal is cut with a special metal wire electrode that is programmed to travel along a pre-programmed path. A wire EDM generates spark discharges between a small wire electrode (usually less than 0.5 mm diameter) and a work piece with deionized water as the dielectric medium and erodes the work piece to produce complex two- and three dimensional shapes according to a numerically controlled (NC) path. The wire cut EDM uses a very thin wire 0.02 to 0.3 mm in diameter as an electrode and machines a work piece with electrical discharge like a band saw by moving either the work piece or wire, erosion of the metal utilizing the phenomenon of spark discharge that is the very same as in conventional EDM . The prominent feature of a moving wire is that a complicated cut-out can be easily machined without using a forming electrode .Wire cut EDM machine basically consists of a machine proper composed of a work piece contour movement control unit (NC unit or copying unit), work piece mounting table and wire driven section for accurately moving the wire at constant tension ; a machining power supply which applies electrical energy to the wire electrode and a unit which supplies a dielectric fluid (distilled water) with constant specific resistance. The main goals of WEDM manufacturers and users are to achieve a better stability and higher productivity of the WEDM process, i.e., higher machining rate with desired accuracy and minimum surface damage. However, due to a large number of variables and the stochastic nature of the process, even a highly skilled operator working with a state-of-the-art WEDM is unable to achieve the optimal performance and avoid wire rupture and surface damage as the machining progresses. Although most of the WEDM machines available today have some kind of process control, still selecting and maintaining optimal settings is an extremely difficult job. The lack of machinability data on conventional as well as advanced materials, precise gap monitoring devices, and an adaptive control strategy that accounts for the time-variant and stochastic nature of the process are the main obstacles toward achieving the ultimate goal of unmanned WEDM operation. Many researches devised an approach to determine machining parameter settings for wire edm process .Based on the taguchi quality design and the analysis of variance (ANOVA), the significant factors affecting the machining performance such as MRR, gap width ,surface roughness ,sparking frequency ,average gap voltage, normal ratio(ratio of normal sparks to total sparks) are determined. By means of regression analysis, mathematical models relating the machining performance and various machining parameters are established. Based on the mathematical models developed, an objective function under the multi-constraint conditions is formulated. The optimization problem is solved by the feasible direction method, and the optimal machining parameters are obtained. Experimental

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Influence of Friction Stir Welding Parameters on Microstructural and Mechanical Properties of Dissimilar AA6061 and AA7075 Alloy Joints

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Abstract

The main objective of this research is to conduct an investigation into the effect of welding parameters on the microstructural and mechanical properties of friction stir (FS) welded butt joints of dissimilar aluminum alloy AA6061 and AA7075. Friction stir welding (FSW) is a relatively new solid-state joining process. This joining technique is energy efficient, environment friendly, and versatile. This will be used to join aerospace aluminum alloys and other metallic alloys that are hard to weld by conventional fusion welding. In this process, two metal pieces, AA6061 and AA7075, 100 x 50 x 6mm thick, are welded under different welding parameters like tool rotation speed and transverse feed. The effects of welding parameters were evaluated by studying the resulting mechanical properties such as hardness distribution and tensile properties for axial welded zone.

Keywords: Aluminum Alloy AA6061, AA7075, Friction Stir Welding, conventional fusion welding, Hardness and microstructure

I. INTRODUCTION

Aluminum alloys are predominant for the fabrication of structures and components which require low weight, high strength or electric current carrying capabilities to meet their service requirements. Among all aluminum alloys, AA 6061 alloy plays major role in the aerospace industry in which magnesium and silicon are the principal alloying elements. It is extensively used in the aerospace applications because it has good formability, weldability, machinabilty, corrosion resistance and good strength compared to other aluminum alloys. When using the conventional arc welding techniques, long butt or lap joints between AA 6061 and other aluminum alloys are particularly difficult to make without distortion because of high thermal conductivity and special welding procedures and high levels of welder skill are generally required.

AA 7075 aluminum alloy is an aluminum alloy, with zinc as the primary alloying element. It is strong, with strength comparable to many steels, and has good fatigue strength and average the first AA 7075 was developed in secret by a Japanese company, Sumitomo Metal, in 1943.AA 7075 was after a period of time used for airframe production in the Imperial Japanese Navy.

Friction Stir Welding (FSW) is a solid state welding process developed and patented by The Welding Institute (TWI) in 1991. It is emerged as a novel welding technique to be used in high strength alloys that were difficult to join with conventional welding techniques Friction Stir Welding (FSW) is a relatively new joining process that has exhibited many advantages over traditional arc welding processes, including greatly reducing distortion and eliminating solidification. The present work aims to determine the feasibility to weld two pieces of aluminum plate (100 x 50 x 6 mm) by friction stir welding process and study the effect on the mechanical properties of welding joints.

In recent years, demands for light-weight and/or high strength sheet metals such as aluminum alloys have steadily increased in aerospace, aircraft, and automotive applications because of their excellent strength to weight ratio, good ductility, corrosion resistance and cracking resistance in adverse environments. Semi-solid metals (SSM), mostly aluminum alloys, have emerged in the usage of casting components in various applications. Joining between SSM356-T6 casting aluminum alloy and AA6061-T651 is a common combination that requires good strength joints and an easy process. Joining of aluminum alloys has been carried out with a variety of fusion and solid state welding processes.

As the FSW process does not release toxic acids or fumes, it is an environment protective process. No consumable filler material or edge preparation is normally necessary. The distortion is significantly less than that caused by arc fusion welding techniques. By welding Aluminum alloys by fusion welding process there is possibility of cracks, porosity, alloy segregation and hot cracking and the fusion welding process completely alters microstructure and varies the mechanical properties [3]. By FSW both similar and dissimilar materials can be successfully joined.

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Influence of Al_2O_3 Additive on the Performance of a Diesel Engine Fueled with Jatropha Oil and Diesel Fuel

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Abstract

Demands to use the world's fossil fuel reserves have been getting higher recently due to global industrialization and the increase of road vehicles running on petroleum-based fuels. Nowadays, fossil fuels are used mostly in the transportation sector; in which diesel is the most commonly used fuel. The fuel properties put great impact on engine performance. The Biodiesel cannot be directly used in the diesel engines because some of its fuel properties which poorly affect engine operation, but it can be blended with diesel fuel or alcohols. The present research is aimed at exploring technical feasibility of Jatropha oil in compression ignition engine without any substantial hardware modifications. In this work the methyl ester of Jatropha oil was investigated for its performance as a diesel engine fuel. The blends were obtained by mixing diesel and esterified Jatropha in the following proportions J10D90 which indicates jatropha biodiesel 10% and Diesel 90%, Similarly J20D80, J30D70, J40D60, J50D50, J75D25 and J100D0 were prepared. Experiments have been conducted with J0D100 (Pure diesel) and J100D0 (Pure biodiesel). The aluminium oxide additive is added to methyl ester of Jatropha to study the performance and exhaust emissions of diesel engine. Further the proportions extends to the different ratios of prepared biodiesel. Performance parameters like brake thermal efficiency, specific fuel consumption, brake power were determined. Exhaust emissions like CO_2, CO, NOx and smoke have been evaluated.
Keywords: Jatropha oil, Al_2O_3 additive, Diesel engine, Transesterification, Performance

I. Introduction

The development of human society has relied heavily on fossil fuel [1]. Large quantities of fossil fuels have been consumed, and harmful emissions are being released into the environment by automobiles, especially in recent decades [2]. To solve the energetic and environmental dilemmas, the application of biomass-based fuels in automobiles is receiving increasing public and scientific attention [3]. As alternative fuels, biomass-based fuels, commonly known as biofuels, have many advantages over fossil fuel [4]. Firstly, biofuels from common biomass sources are readily available. Secondly, the application of biofuels circulates carbon between the air and the fuel, and the problems such as greenhouse gas emissions and energy shortages can be solved simultaneously. Thirdly, most biofuels, such as biodiesel and ethanol, have suitable physicochemical properties for effective combustion in internal combustion engines without or with minor modifications. In particular, most biofuels contain a certain proportion of molecular oxygen which can help the combustion of fuel. In fact, there have been great successes in the application of biofuels in the field of internal combustion (IC) engine [5]. Bioethanol has been widely used as a renewable substitute for gasoline in spark ignition (SI) engines [6]. After extensive studies, it has been seen that biodiesel, due to its biodegradability and renewability can be used as an alternative to diesel. However, the use of 100% biodiesel has potential downsides such as fuel-related phase separation and higher emissions as compared to diesel. Bio alcohols which can be produced from renewable feedstock cannot directly be used in diesel engines because of low cetane number and high latent heat of evaporation as well as high water content in low temperatures. In spite of such disadvantages, biodiesel and bio alcohols are still two of the most important alternative types of fuels for use in diesel engines. Most of the research in that regard has focused on blends with diesel and in order to reduce the disadvantages of vegetable oils used in biodiesel production and other fuel-related problems, with research showing particular focus on alcohols such as methanol (CH3OH) and ethanol (C2H5OH) [7]. Direct use of consumable vegetable oils in biodiesel production can have adverse effects on their availability for human use and thus, biodiesel made of waste vegetable oils and non-edible oils is a preferred source of fuel. With the fact that methanol and ethanol have phase separation at low temperatures and that diesel engines have high cost of repairs, there are hurdles to use both alcohols. In addition, methanol and ethanol have shown low engine performance and high emissions as well. In order to solve such problems, it has been proposed to use alcohols with higher carbon chains, which eventually have better fuel properties such as higher cetane number, higher calorific value and lower latent heat of evaporation. The application of biodiesel in compression ignition (CI) engines has also been studied in detail [8]. Recently, the preparation and application of biogas have been extensively studied [9, 10]. Generally, the main compositions of biogas can be divided into two constituents: combustible components and non-combustible components. Typically, the composition of biological gas is likely to be methane (approximately 55–70% by volume) and carbon dioxide (30–40%). Depending on the raw

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Design Analysis and Performance Evaluation of Shell and Tube Heat Exchanger in Automotive Engine

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Abstract

Automotive engines eliminate a considerable amount of heat energy to the environment through the exhaust gas. Significant reduction of engine fuel consumption could be attained by recovering of exhaust heat by using thermoelectric generators. One of the most important issues is to develop an efficient heat exchanger which provides optimal recovery of heat from exhaust gases. The work presents a design and performance measurements of a prototype thermoelectric generator mounted on self-ignition (Diesel) engine. Using the prototype generator as a tool, benchmark studies were performed for improvements in the heat exchanger including determination of temperature distribution and heat flux density.

Keywords: Engine, Heat Exchanger, Thermo electric generator, Shell and Tube

I. INTRODUCTION

Contemporary car engines exchange app. 30-40% of heat generated in the process of fuel combustion into useful mechanical work. The remaining heat is emitted to the environment through the exhaust gases and the engine cooling systems. Therefore, even partial use of the wasted heat would allow a significant increase of the overall combustion engine performance. Changing the heat energy of the exhaust gases into electric power would bring measurable advantages. Modern cars equipped with combustion engines tend to have large numbers of electronically controlled components. The observed tendency is to replace mechanical components with the electronic ones. This increases the demand for electric power received through the power supply systems of the vehicle. This tendency will undoubtedly remain at least due to the legal regulations connected with the on-board diagnostic systems, which force a more comprehensive control of operation of the vehicle components in the respect of safety improvement and emission control. This leads to the significant increase of demand for electric power in the vehicle which has to be generated by the alternator. It is predicted that if only 6% of the heat contained in the exhaust gases was changed into electric power, it would allow to lower fuel consumption by 10% due to the decreased waste resulting from the resistance of the alternator drive. Power generation system using the thermoelectric generator should generally consist of the following components: heat exchanger, thermoelectric module, cooling system and DC/DC voltage converter. One of the most important design issues related to the construction of the thermoelectric generator TEG is to develop an efficient heat exchanger, which should provide optimal recovery of heat from exhaust gases. The heat exchanger delivers heat power received from the exhaust gases to the structure of TE modules. Due to the high speed of the exhaust gases flux, the heat exchange surface area in the heat exchanger should be increased by using the ribbing, grooving and protrusions which would introduce a turbulent flow allowing the increased flow of heat due to convection. Heat absorption from gases should occur on a relatively short distance, due to the possibility of increasing the back pressure which would contribute to the changing operating conditions and limiting the engine power. The paper puts together the comparison of testing designs of thermoelectric generators and exchangers using the exhaust gas heat. On the basis of test results of the thermoelectric generators, the design issues can be divided into three groups: a) related to design of the heat exchanger allowing the absorption of the sufficient amount of heat energy from the gases, b) related to the selection of materials for the construction of the TE modules and their installation, c) related to the selection of the appropriate cooling system to ensure significant heat power exchange at low ambient temperature. The development of heat exchange systems could allow for the creation of generators of a relatively large capacity based on the already known thermoelectric materials.

The purpose of this paper was to design and test the model thermoelectric generator located behind the catalytic converter. The tests were aimed at determining the distribution of temperature inside the heat exchanger the engine power balance at different RPM and load conditions.

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Low Cost of Chitosan Composite Carbon Paste Modified Electrode Using Glucose Biosensor

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To develop reusable Gamma iron oxide-chitosan composite containing carbon paste electrode for biosensor application. Glucose oxidase (GOx) enzyme was used to prepare Gamma iron oxidechitosan nanocomposite containing carbon paste electrode for sensitive detection of glucose. The immobilized enzyme retained its bioactivity, exhibited a surface confined reversible electron transfer reaction, and had good stability. The surface parameters like surface coverage, Diffusion coefficient (D_0), and rate constant (k_S) were studied. The excellent performance of the biosensor is attributed to large surface-to-volume ratio, high conductivity and good biocompatibility of chitosan, which enhances the enzyme absorption and promotes electron transfer between redox enzymes and the surface of electrode. The shelf life of the developed electrode system is about 12 weeks under refrigerated conditions. We report for the low cost of carbon paste bioelectrode containing Gamma iron oxide-chitosan-GOx.

Keywords: CHITOSAN; COMPOSITE; GLUCOSE BIOSENSOR; GLUCOSE OXIDASE; IRON OXIDE
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Synthesis and Characterization of Iron Oxide-Chitosan Nano Composite

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Keywords: nanocomposite, self-assembly, microwave, iron oxide, chitosan.

ABSTRACT. The focal point of this paper, nanocomposite of hybrid materials Chitosan(CH) with α -Fe_2O_3, Chitosan with γ-Fe_2O_3 was synthesized. The α-Fe_2O_3 and γ-Fe_2O_3 nanoparticles were synthesized by the self-assembly and microwave method and characterized. The average particle size was found to be 27–30nm by XRD and AFM. The synthesized nanoparticles were dispersed into the prepared chitosan (CH) solution. After the dispersion, the CH-α-Fe_2O_3, CH-γ-Fe_2O_3 nanocomposite was subjected to characterizations such as UV-Visible, XRD and SEM with EDX. The CH-α-Fe_2O_3 nanocomposite to impart good antibacterial activity compared to that of pristine α -Fe_2O_3 and pristine chitosan. Electrochemical response studies were carried out using CH-γ-Fe_2O_3 nanocomposite with carbon paste modified electrode.

Introduction. Nanoparticles (NPs) are solid particles or particulate dispersions with a size in the range between 1 and 100 nm. Among the various nanomaterials, magnetic nanoparticles have been recently increased interest due to promising applications as; Drug delivery, Hyperthermia treatment, Cell separation, Biosensors and enzymatic assays etc. Pure magnetic nanoparticles themselves may not be very useful in practical applications because they are more likely to aggregate for their large ratio of surface area to volume and strong magnetic dipole-dipole attractions between particles compared with other nanoparticles and have limited functional groups for selective binding [1-9].

In order to improve the stability and biocompatibility, the iron oxide NPs are often modified with biopolymer. Among the various biopolymers, chitosan (CH) along with NPs has been utilized as a stabilizing agent due to its Excellent film–forming ability, Mechanical strength, Biocompatibility, Non-toxicity, High permeability towards water, Susceptibility to chemical modifications, Cost-effectiveness etc. for enzyme immobilization [10-21]. Iron oxide NPs with polymer are usually composed of the magnetic cores to ensure a strong magnetic response and a polymeric shell to provide favorable functional groups and features. Chitosan with iron oxide composites have recently attracted much attention since surface functionalization of the nanoparticles allow their covalent attachment, self assembly and organization on surface making them promising for the loading of biomolecules in a favorable microenvironment for the development of a biosensor [22-29].

In the present work, the iron oxide particles were synthesized by two different methods such as self-assembly and microwave. The synthesized iron oxide particles were characterized by XRD, FT-IR, SEM and AFM. Chitosan was prepared and characterized by using XRD, FT-IR and SEM techniques. The synthesized iron oxide particles, chitosan and iron oxide-chitosan composite were used for; Antibacterial activity and Electrochemical response studies.

Chemicals. Chemicals such as ferric chloride ($FeCl_3$), urea (CH_4N_2O), tetra-n-butylammonium bromide ($C_{16}H_{36}N_{Br}$), ethylene glycol ($C_2H_6O_2$), potassium hydroxide (KOH), sodium hydroxide (NaOH), zinc chloride ($ZnCl_2$), ethanol (C_2H_5OH), Acetone (C_3H_6O), Hydrochloric acid, Acetic acid,

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On Regular Complex Neutrosophic Graphs

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Abstract. In this paper, we introduced a new concept of complex neutrosophic graphs called regular complex neutrosophic graph with degree for complex neutrosophic graphs and studied some properties of this new concept. The concept of regular complex neutrosophic graph is an extension of complex neutrosophic fuzzy graphs of type.

Keywords: Complex fuzzy set, Fuzzy graph, Complex fuzzy graph, Neutrosophic fuzzy graph, Regular complex neutrosophic graph.

AMS Mathematics Subject Classification (2010): 05C72

1. Introduction

Fuzzy set was introduced by Zadeh [10] whose basic component is only a membership function. In Zadeh's fuzzy set, the sum of membership degree and a non-membership degree is equal to one. Complex fuzzy set (CFS) [6]-[7] is a new development in the theory of fuzzy systems in [10]. The concept of CFS is an extension of fuzzy set, by which the membership for each element of a complex fuzzy set is extended to complex-valued state. The first definition of fuzzy graphs was proposed by Kauffmann [2] in 1973, from the Zadeh's fuzzy relations [10,11,12]. The first definition and applications of a complex fuzzy graph defined in [1,9].In this paper, we planned to extend our theoretical concepts of complex fuzzy graph into regular complex neutrosophic fuzzy graph.

In this paper, Section 1 describes about introduction and informative collection of existing concepts about complex fuzzy set and fuzzy graph. Definition of complex fuzzy set, complex fuzzy graph discussed in section 2. In section 3, new and innovative concept of complex neutrosophic fuzzy set, complex neutrosophic graph, and introduced degree of complex neutrosophic graph and regular complex neutrosophic graph with example and its applications are discussed. Concluded of this paper in section 4.

2. Complex fuzzy sets

In a complex fuzzy set, membership values are complex numbers in the unit disc of the complex plane [6]-[7]. Although the introductory theory of the CFS has been presented [6], the research on complex fuzzy system designs and applications using the concept of

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Pentagonal Numbers, Heptagonal Numbers and Pythagorean Triangles

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Abstract. Oblong numbers as figuret numbers, which were first studied by the Pythagoreans are studied in terms of special Pythagorean Triangles. The two consecutive sides and their perimeters of Pythagorean triangles are investigated. In this study, the perimeter of Pythagorean triangles are obtained as addition of pentagonal and heptagonal numbers.

Keywords: Pentagonal numbers, Heptagonal numbers, Pythagorean Triangles, Diophantine equation.

AMS Mathematics Subject Classification (2010): 11D09

1.Introduction

Mathematicians all over the ages have been fascinated by the Pythagorean Theorem and are solving many problems related to it thereby developing mathematics. Integral solutions [1] and [2] and special Pythagorean triangles are generated by [3,4]. [5] Have given perimeter of Pythagorean triangles with their perimeter as addition of pentagonal and heptagonal numbers. Such triangles with two consecutive sides and perimeter as addition of pentagonal and heptagonal numbers are also studied.

2. Method of analysis

The primitive solutions of the Pythagorean Equation,
$X^2+Y^2=Z^2$, is given by [5] (1)
$X=m^2-n^2$, $Y=2mn$, $Z=m^2+n^2$ (2)
for some integers m, n of opposite parity such that $m>n>0$ and $(m, n)=1$

2.1. Perimeter is an addition of pentagonal and heptagonal numbers

Definition 1. A natural number P is called addition of pentagonal and heptagonal number if it can be written in the form $\frac{(3\alpha^2-\alpha)}{2}+\frac{(5\alpha^2-3\alpha)}{2}=2(2\alpha^2-\alpha),\ \alpha\in N$

Regular Equitable Domination Number in Fuzzy Graph

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Abstract— In this paper the new kind of parameter regular equitable domination number in a fuzzy graph is defined and established the parametric conditions. The properties of regular equitable domination number are discussed.

Key words: Dominating Set, Equitable Dominating Set, Regular Equitable Dominating Set

I. INTRODUCTION

Fuzzy graphs were introduced by Rosenfeld [6]. Rosenfeld has described the fuzzy analogue of several graph theoretic concepts like paths, cycles, trees and connectedness and established some of their properties. Nagoorgani A and K. Radha [5] introduced the concept of regular fuzzy graphs. Ravi Narayanan .S, et all.[8] discussed the regular domination in fuzzy graphs. Revathi .S, et all [2] introduced the concept of equitable domination in fuzzy graphs. In this paper we discussed the regular equitable domination in fuzzy graphs and establish the relationship with parameter which is also investigated.

II. PRELIMINARIES

A fuzzy graph $G=(\sigma,\mu)$ is a pair of functions $t:V \to [0,1]$ is a fuzzy subset μ: $V\times V\to[0,1]$ fuzzy relation on the fuzzy subset σ such that $\mu(u,v) \le t(u) \wedge t(v)$ for all $u,v\in V$.

A fuzzy graph $G=(t,\mu)$ with the underlying set V, the order of G is defined and denoted by $O(G) = \sum_{u\in V} t(u)$ and size of G is define and denoted by $S(G)= \sum_{u,v\in} \mu(u,v)$.

Let $G=(t,\mu)$ be a fuzzy graph. The degree of a node is defined as $d(u)= \sum_{v\neq u\ ,v\in V} \mu(u,v)$

Let $G= (t,\mu)$ be a fuzzy graph .Let $u ,v\in V$.We say that u dominates v in G if (u,v) is a strong arc or strong edge. A subset S of V is called a dominating set of G if for each vertex v is not in S , there exists $u\in S$ such that u dominates v.

A dominating set S of a fuzzy graph G is said to be a minimal dominating set, if for each vertex v in S, S-{v} is not a dominating set of G.

The minimum fuzzy cardinality of a minimal dominating set of G is called the domination number of a fuzzy graph G. It is denoted by γ_f (G).

A dominating set S is a equitable dominating set of a fuzzy graph G if for every vertex $v\in V - S$ there exists a vertex $u\in S$ such that $uv \in E(G)$ and $|\deg(u) - \deg(v)| \le 1$.

The minimum fuzzy cardinality taken over all minimal equitable dominating set if for each vertex u in S,S-{u} is not a equitable dominating set of G .

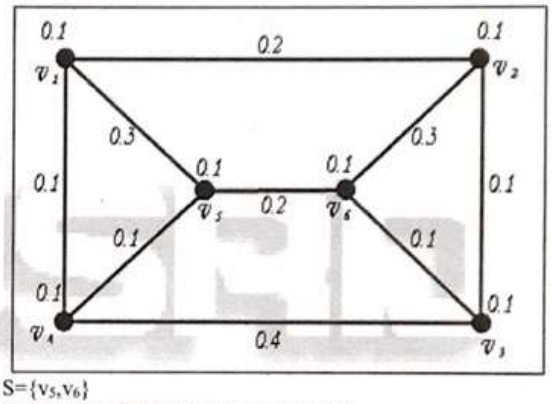
The minimum fuzzy cardinality taken over all minimal equitable dominating set of G is called the equitable domination number of a fuzzy graph G. It is denoted by γ_{fe}(G).

The dominating set S of a fuzzy graph $G=(t,\mu)$ is said to be regular dominating set if every vertex in S is of same degree.

A dominating set S of a fuzzy graph G is said to be minimal regular dominating set, if for each vertex v in S, S-{v} is not a regular dominating set of G.

The minimum fuzzy cardinality taken over all minimal regular dominating set of G is called the regular dominating set of G is called the regular domination number of a fuzzy graph G.It is denoted by γ_{fr}(G).

A. Example



S={v_5,v_6}
Regular domination number =.1+.1=.2
deg (v_5)=.6
deg (v_6)=.6
Every vertex in S has same degree

III. MAIN RESULTS

The equitable dominating set S of a fuzzy graph $G=(t,\mu)$ is said to be regular equitable dominating set if every vertex in S is of same degree.

A dominating set S of a fuzzy graph G is said to be minimal regular equitable dominating set ,if for each vertex u in S ,S-{u} is not a regular equitable dominating set of G.

The minimum fuzzy cardinality taken over all minimal regular equitable dominating set of G is called the regular equitable domination number of a fuzzy graph G. It is denoted by γ_{rfe} (G).

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Hexagonal Numbers and Pythagorean Triangles

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Abstract. The oblong numbers were first studied by Pythagorean. These numbers are studied in terms of special Pythagorean Triangles. The perimeters of such triangles are obtained as a double of hexagonal numbers. Existence of Pythagorean triangles with two consecutive sides and their perimeters as a double of hexagonal numbers is also investigated.

Key words: Hexagonal numbers, Pythagorean Triangles.

AMS Mathematics Subject Classification (2010): 11D09

1. Introduction

In 2005, Gopalan and Devibala [2] studied Special Pythagorean triangle. In 2008, Gopalan and Janaki [3] investigated Pythagorean triangles with perimeter as a pentagonal number. In 2010, Gopalan and Vijayalakshmi [1] observed Special Pythagorean triangles generated through the integral solutions of the equation $y^2 = (k^2 + 1) x^2 + 1$. After that Mita [4] investigated about oblong numbers and Pythagorean triangles. He found that perimeter of the Pythagorean triangles are as oblong numbers.

Inspired by all the aforementioned results, this paper aim to study the perimeter of the Pythagorean triangles are as a double of hexagonal numbers.

2. Method of analysis

The primitive solutions of the Pythagorean Equation,
$X^2 + Y^2 = Z^2$, is given by [5] (1)
$X = m^2 - n^2$, $Y = 2\,m\,n$, $Z = m^2 + n^2$ (2)
for some integers m, n of opposite parity such that $m > n > 0$ and $(m, n) = 1$

3. Perimeter is a double of hexagonal number

Definition 3.1. A natural number 'h' is called a double of hexagonal numbers if it can be written in the form $2u(2u - 1)$, $u \in N$.

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A Study on Problems of Agriculture Export with Special Reference to Exporters, Tamilnadu, India.

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Abstract— Agriculture is the fastest growing component of global demand. the World's second largest developing country, is contributing to the expansion through the rapid growth of its Agriculture sector. In India, Agriculture sector growth is being driven by rising incomes, together with the emergence of vertically integrated Agriculture producers that have reduced consumer prices by lowering production and marketing costs. Integrated production, a market transition in products, and policies that help ensure supplies of competitively raced domestic or imported products to future Agriculture industry growth in India and in other developing countries. The paper mainly focuses the problems of Agriculture exports in Tamilnadu.

Keywords— India, developing countries, Agriculture firm, demand, Global competition

I.INTRODUCTION

Fare advertising implies sending out merchandise to different nations of the world. It includes extensive methods and customs. In send out advertising, products are sent to another country according to the techniques encircled by the trading nation and in addition by the bringing in nation. Fare advertising is more muddled to local promoting because of worldwide confinements, worldwide rivalry, extensive strategies and customs et cetera. In addition, when a business crossed the fringes of a country, it turns out to be interminably more mind boggling. Alongside this, send out showcasing offers open doors for winning gigantic benefits and profitable remote trade.

Fare promoting has more extensive financial criticalness as it offers different points of interest to the national economy. It advances monetary/business/mechanical

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GC-MS analysis of ethanolic flower extract of *Lantana camara* Linn (Verbenaceae)

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Abstract

Objectives: To investigate the bioactive constituents of ethanolic flower extract of *Lantana camara* Linn using GC-MS. **Methods:** GC-MS Analysis of flower extract was carried out by using Perkin-Elmer GC Clarus 500 system and Gas Chromotograph interfaced to a Mass Spectrometer (GC-MS) equipped with an Elite - I, fused Silica Capillary Column(30 mm x 0.25 mm 1 D x 1 µMdf, composed of 100% Dimethyl poly siloxane). **Results:** The results of GC-MS Analysis confirmed the presence of twenty six compounds. **Conclusions:** From the results, it can be concluded that the plant extract show the presence of twenty six bioactive compounds. These compounds justify the use of flower of *Lantana camara* for various ailments by traditional practitioners.

Keywords: GC-MS, Flower extract, *Lantana camara Linn.* Bioactive compounds.

1. Introduction

Natural remedies from medicinal plants are found to be safe and effective. Many plants species have been used in folkloric medicine to treat various ailments. Even today compounds from plants continue to play a major role in primary health care as therapeutic remedies in many developing countries [1].Standardization of plant materials is the need of the day. Several pharmacopoeia containing monographs of the plant materials describe only the physicochemical parameters. Hence the modern methods describing the identification and quantification of active constituents in the plant material may be useful for proper standardization of herbals and its formulations. Also the WHO has emphasized the need to ensure the quality of medicinal plants products using modern controlled technique and applying suitable standards [2].GC-MS is the best technique to identify the bioactive constituents of long chain hydrocarbons, alcohols, acids, ester, alkaloids, steroids, amino and nitro compounds etc [3].

2. Materials and Methods

The flowers of *Lantana camara* Linn were collected from the Punalvasal Village, Thanjavur District Tamil Nadu, India. The flowers were shaded dried and pulverized to powder in a mechanical grinder. Required quantity of powder was weighed and transferred to stoppered flask, and treated with ethanol until the powder is fully immersed. The flask was shaken every hour for the first 6 hours and then it was kept aside and again shaken after 24 hours. This process was repeated for 3 days and then the extract was filtered. The extract was collected and then subjected to GCMS analysis.

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Preparation and Applications of Nano Composite Materials - A Review

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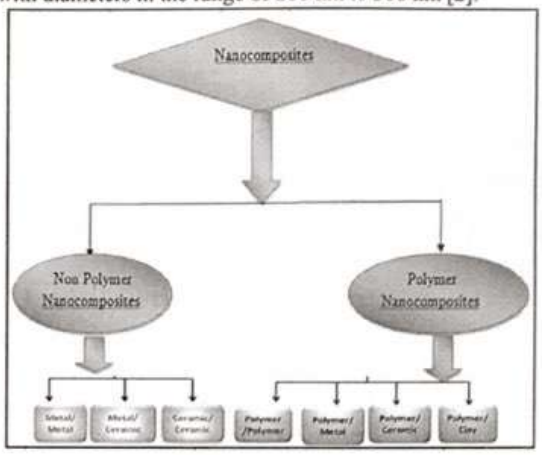
Abstract— Nano composites, a high performance material exhibit unusual property combinations and unique design possibilities. With an estimated annual growth rate of about 25% and fastest demand to be in engineering plastics and elastomers, their potential is so striking that they are useful in several areas ranging from packaging to biomedical applications. Nano composites promise new applications in many fields such as mechanically-reinforced lightweight components, non-linear optics, battery cathodes and Ionics, nanowires, sensors and other systems. This paper reviews the various preparation methods, Properties, and applications of Nano composite materials.

Key words: Nano Composites, Polymer, CNT, Nanotubes, Nanowires, SWNT

I. INTRODUCTION

Today Nano composites are currently being used in a number of fields and new applications are being continuously developed. It has been reported that changes in particle properties can be observed when the particle size is less than a particular level, called the critical size. Nano composite materials have emerged as suitable alternatives to overcome limitations of micro composites and monolithic, while posing preparation challenges related to the control of elemental composition and stoichiometry in the Nano cluster phase. Enhancement in Properties Polymer Nano composites has revealed clearly the property advantages that nanomaterial additives can provide in comparison to both their conventional filler counterparts and base polymer. In contrast to commercial available zinc oxide particles, zinc oxide nanoparticles prepared from zinc salts in alkaline medium can be solvothermally converted into one-dimensional nanostructures without any further additive. The process appears to occur via an agglomeration/ melting mechanism and leads to Nano needles of relatively large dimensions. The use of the layered hybrid Nano composite ZnO/stearic acid as zinc source instead the mixture ZnO-fatty acid as above, but using the same reaction conditions, leads to the formation of ZnO nanowires. In this case, the formation mechanism of one-dimensional nanostructures does appear to be related more to a rolling-up/surfactant-segregation process than with the characteristic ZnO crystallites growth. [1]

TiO2/ZnO composite catalysts will be applied more and more in environmental protection field and other catalytic fields. High Performance Fibre/Fabrics The first attempt to produce nanotubes resulted in very small quantities of tangled nanotubes, which however has created interest in these materials as non-oriented mats. Further developments had led to the development of techniques for spinning nanotubes into fibres in a polymer matrix, which is of special interest for mechanical and electronic fabric applications. ic fabric applications. The production of polymer fibres was until recently limited to extruding fibres of relatively large (micrometre diameter) sizes. Recently, an electro spinning technique has been shown to be effective to produce pure polymer and polymer Nano composite fibres with diameters in the range of 200 nm to 300 nm [2].



A. Nano composite Preparation Methods

Methods	Advantages	Disadvantages
Solution Casting [3]	Scalable	Impurity
Melt compounding	Flexible formulations	Agglomeration
Intercalation	Organized structure	Dispersion
Sol – gel[4]	compatibility	Costly, time consuming
Spinning	Interfacial interaction	Costly
Electrochemical synthesis	Synthesized under moderate conditions	Reaction on the surface only

II. PROPERTIES OF NANO COMPOSITES

- Mechanicals e.g. strength, modulus and dimensional stability.
- Improved solvent and heat resistance and decreased flammability.
- Decreased permeability to gases, water and hydrocarbons
- Thermal stability and heat distortion temperature
- Flame retardancy and reduced smoke emissions
- Chemical resistance
- Surface appearance
- Electrical conductivity
- Optical clarity in comparison to conventionally filled polymers.[5]
- Weight reduction
- Improved performance
- Aesthetics And recyclability

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Triple Connected Equitable Domination in Fuzzy Graphs

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Abstract— The concept of triple connected graphs with real life application was introduced in [7] by considering the existence of a path consists of any three vertices of a fuzzy graph G.In[4] G.Mahadevan et.al., was introduced the concepts of triple connected domination number of a graph. In this paper we introduce a new domination parameter called triple connected equitable domination number of a fuzzy graph. A subset S of V of a graph G is said to be fuzzy triple connected equitable dominating set. If S is equitable dominating set and the induced subgraph is triple connected. The minimum cardinality taken over all triple connected equitable dominating sets is called the fuzzy triple connected equitable domination number .We determine this number for some standard fuzzy graphs. Its relationship with other fuzzy graph theoretical parameters is also investigated.

Key words: Fuzzy Equitable dominating set, connected fuzzy equitable dominating set, fuzzy equitable domination number, connected fuzzy equitable domination number, fuzzy triple connected dominating set and fuzzy triple connected equitable domination number

I. INTRODUCTION

Fuzzy graphs were introduced by Rosenfeld [8] ten years after Zadeh's Landmark paper "fuzzy sets"[12] .Fuzzy graph theory is now finding numerous applications in modern science and technology especially in the fields of Information theory, neural networks, expert systems, Cluster analysis, control theory, etc. Fuzzy modeling is an essential tool in all branches of science, engineering and medicine.

Rosenfeld has obtained the fuzzy analogues of several basic graph-theoretic concepts like bridge, paths, cycles, trees and connectedness and established some of their properties .Bhattacharya has established some connectivity concepts regarding fuzzy cut nodes and fuzzy bridges. The author has also introduced fuzzy groups and metric notion in fuzzy graphs. The concept of domination and determines the domination number for several fuzzy graphs are discussed in [9].

In this paper, we introduce the concept of fuzzy triple connected equitable dominating set.

II. PRELIMINARIES

A fuzzy graph G=(σ,μ) is a pair of functions $\sigma: V \to [0,1]$ and $\mu: V \times V \to [0,1]$ where for all u, v $\in V$ .We have $\mu(u,v) \le \sigma(u) \wedge \sigma(v)$.

The fuzzy graph H=(τ,σ) is called a fuzzy sub graph of G =(σ,μ) if $\tau(u) \le \sigma(u)$ for all u$\in V$ and $\sigma(u,v) \le \mu(u,v)$ for all u, v $\in V$.

A fuzzy sub graph H= (τ,ρ) is said to be a spanning fuzzy sub graph of G = (σ,μ) if $\tau(u)=\sigma(u)$ for all u .The two graphs have same fuzzy node set they differ only in the arc weights.

Let G=(σ,μ) be a fuzzy graph and τ be any fuzzy subset of σ , $\tau(u) \le \sigma(u)$ for all u, then the fuzzy sub graph of G=(σ,μ) induced by τ the maximal fuzzy sub graph of G=(σ,μ) that has fuzzy node set τ .The complement of a fuzzy graph G=(σ,μ) is a fuzzy graph $\overline{G}=(\overline{\sigma},\overline{\mu})$ where $\overline{\sigma}=\sigma$ and $\overline{\mu}(u,v)=\sigma(u)\wedge\sigma(v)-\mu(u,v)$ for all u, v in V.

The strength of a path is defined to be the weight of the weakest arc of the path. If a path has length zero, then its strength is defined to be $\sigma(u_0)$.The path ρ is called a cycle if $u_0 = u_n$ *and* $n \ge 3$. Two nodes that are joined by a path are said to be connected. A strongest path joining any two nodes u,v is a path corresponding to maximum strength between u and v.

A fuzzy graph is said to be strong fuzzy graph if $\mu(u,v)=\sigma(u)\wedge\sigma(v)$ for all u,v in V.A vertex u is said to be isolated vertex $\mu(u,v)<\sigma(u)\wedge\sigma(v)$ for all v $v \in V-\{u\}$ .A fuzzy graph is said to be complete fuzzy graph if all the edges are effective between every pair of vertices and is denoted by K_{cf} . $N(u)=\{v \in V / \mu(u,v)=\sigma(u)\wedge\sigma(v)\}$ is called the open neighborhood of u and N[u] = $N(u)\cup\{u\}$ is the closed neighborhood of u.

A. Fuzzy Dominating Set

A subset S of V is called a dominating set in G if every vertex in V-S is adjacent to at least one vertex in S. The minimum cardinality taken over all dominating sets in G is called the domination number of G and is denoted by γ_f .A dominating set S of a fuzzy graph G is said to be connected dominating set of G if the induced subgraph $\langle S\rangle$ is connected. The minimum cardinality taken over all connected dominating sets is the connected domination number and is denoted by $\gamma_{fc}(G)$.

B. Fuzzy Triple Connected Domionating Set

A fuzzy graph G is said to be fuzzy triple connected if any three vertices lie on a path in G.A subset S of V of a fuzzy graph G is said to be fuzzy triple connected dominating set ,if S is a dominating set and the induced subgraph $\langle S\rangle$ is

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MORE ON THE DIOPHANTINE EQUATION $2^x + 87^y = z^2$

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Abstract:

In this paper, we show that (3, 0, 3) is a unique non-negative integer solution for the Diophantine solution $2^x + 87^y = z^2$, where x,y and z are non-negative integers.

1. Introduction:

In 2007, Acu [1] proved that (3, 0, 3) and (2, 1, 3) are only two solutions in non-negative integers of the Diophantine equation $2^x+5^y=z^2$. In 2013, Sroysang [2] proved that more on the Diophantine equation $2^x + 32^y = z^2$ has non-negative integer (3, 0, 3) is a unique non- negative integer solution. In this paper we show that (3, 0, 3) is a unique non- negative integer solution for the Diophantine equation $2^x + 87^y = z^2$ where x, y and z are non-negative integers.

2. Preliminaries:

In 1844, Catalan [3] conjectures that the Diophantine equation $a^x - b^y=1$ has a unique integer solution with min{a, b, x, y}>1. The solution (a, b, x, y) is (3, 2, 2, 3). This conjecture was proven by Mihailescu [4] in 2004

Preposition 2.1:

([5]). (3, 2, 2, 3) is a unique solution (a, b, x, y) of the Diophantine equation $a^x - b^y=1$, where a, b, x and y are integers with min{a, b, x, y}>1

Lemma 2.2:

[1] (3, 3) is a unique solution of (x, z) for the Diophantine equation $2^x + 1=z^2$, Where x and z are non-negative integers.

Lemma 2.3:

The Diophantine equation $1+87^y=z^2$ has no non-negative integer solution where y and z are non-negative integers.

Proof:

Suppose that there are non-negative integers y and z such that $1+87^y=z^2$. If y=0, then $z^2=2$ which is impossible. Then $y\geq1$. Thus, $z^2=87^y+1\geq87^1+1=88$, then z>9. Now we consider on the equation $z^2-87^y=1$. By preposition 2.1, we have y=1. Then $z^2=88$. This is a contradiction. Hence, the equation $1+87^y=z^2$ has no non negative integer solution.

3. Results:

Theorem 3.1:

(3, 0, 3) is a unique solution (x, y, z) for the Diophantine equation $2^x + 87^y = z^2$ where x, y and z non-negative integers.

Proof:

Let x, y and z be non-negative integers such that $2^x + 87^y = z^2$. By lemma 2.3, we have $x\geq1$. Thus z is odd then there is a non-negative integer t such that z=2t+1. We obtain that $2^x+87^y=4(t^2+t)+1$. Then $87^y\equiv1(\text{mod } 4)$. Thus y is even. Then there is a non-negative integer k such that y=2k. We divide the number y into two cases.

Case y=0. By lemma 2.2, we have x=3 and z=3.

Case $y\geq2$. Then $k\geq1$. Then $z^2-87^{2k}=2^x$. Then $(z-87^k)(z+87^k)=2^x$. We obtain that $z-87^k=2^\alpha$, where α is a non-negative integer. Then $z+87^k=2^{x-\alpha}$. it follows that $2(87^k)=2^{x-\alpha}-2^\alpha=2^\alpha(2^{x-2\alpha}-1)$. We divide the number α into two sub cases.

Sub case $\alpha=0$. Then $z-87^k=1$. Then z is even. This is a contradiction.

Sub case $\alpha=1$. Then $2^{x-2}-1=87^k$. It follows that $2^{x-2}=87^k+1\geq87+1=88$. Thus $x\geq8$.More over $2^{x-2}-87^k=1$. By preposition 2.1, we have k=1, then $2^{x-2}=88$. This is impossible.

Therefore, (3, 0, 3) is a unique solution (x, y, z) for the equation $2^x+87^y=z^2$

Corollary 3.2:

The Diophantine equation $2^x+87^y=w^4$ has no non-negative integer solution. Where x, y and w are non-negative integers.

Proof:

Suppose that there are non-negative integers x, y and w such that $2^x+87^y=w^4$. Let $z=w^2$. Then $2^x+87^y=z^2$. By lemma 3.1, we have (x, y, z) = (3, 0, 3). Then $w^2=z=3$. This is a contradiction.

Corollary 3.3:

(1, 0, 3) is a unique solution of (x, y, z) for the Diophantine equation $8^\alpha+87^y=z^2$, where y, α and z are non-negative integers.

Proof:

Let x, y and z are non-negative integers such that $8^\alpha+87^y=z^2$. Let $x=3\alpha$. Then $2^x+87^y=z^2$. By theorem 3.1 we have (x, y, z) = (3, 0, 3). Then $x=3\alpha=3$. Thus $\alpha=1$. Therefore, (1, 0, 3) is a unique solution (x, α, z) for the equation $8^\alpha+87^y=z^2$.

Corollary 3.4:

The Diophantine equation $32^\alpha+87^y=z^2$ has no non-negative integer solution. Where α, y and z are non-negative integers.

Proof:

Suppose that there are non-negative integers α, y and z such that $32^\alpha+87^y=z^2$. Let $x=5\alpha$. Then $2^x + 87^y = z^2$. By theorem 3.1, we have $x=5\alpha=3$. This is contradiction.

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Journal article | Open Access

MATHEMATICAL MODEL IN PREVENTION OF CANCER

N. Latha, G. Komahan

Cancer is one of the diseases which are flourishing very rapidly throughout the world due to which mortality rate is also going to increase world widely. Cancer is a leading cause of death globally. The World Health Organization estimates that 7.6 million people died of cancer in 2005 and 84 million people will die in the next 10 years if action is not taken. More than 70% of all cancer deaths occur in low- and middle-income countries, where resources available for prevention, diagnosis and treatment of cancer are limited or nonexistent. But because of the wealth of available knowledge, all countries can, at some useful level, implement the four basic components of cancer control – ***prevention, early detection, diagnosis and treatment, and palliative care*** – and thus avoid and cure many cancers, as well as palliating the suffering. Mostly cancer treatments are based on selective killing of the cancer cells but not normal cells. Chemotherapy is the most widely used treatment for a large number of cancer types. Drugs that are used to help prevent cancer are highly regulated to insure quality and safety. Most drugs that are suggested by doctors to help prevent cancer are for a specific population that is at a high risk of developing certain cancer types. These drugs are not suggested for all people because they can cause other problems that may not be worth the cost of protection. In this paper, the prevention of cancer by using renewal process is discussed.

Preview

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MANAGEMENT UPGRADATION IN LITERARY EXALTATION

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It is ascribed that both sexes, male and female, cannot move in their own different trajectories on different directions. Literature reflects that men and womenare embodied together in the natural organization. The psychological dimensions ofthe two are bound together in the form of family which allows many things to occur in the universe and also through which the universe gets meaning through theiroccurrence. The constellation of the social set up, customs, culture, tradition and family, are formed so as to bring peace in the society and fundamental rights for both sexes are prepared methodically for their well beings. Language contribution seems to be a prime concern for the social integration.

Language as well as its various genres remains as a moral code which tends to perceive mankind's attitudes, feelings and beliefs about his life runs and its various means. The brilliance of language determines and relates occupational responsibilities such as communication, goal-setting, hard-working, accountability, task completion, autonomy, reliability, support, honesty, effort, timeliness, determination, leadership, volunteerism and dedication. Stable communicative modes harness positive and productive approach in the work force.A healthy communication establishes management as well as technical promotions and rapports in between employers and the employees towards progression with ethical values. Work ethic, a complex and individualistic subject, in work spot becomes visible which isimperative that when one puts careful consideration into his or her own work philosophy so that he can best express himself through valuable language when the need arises.

A matrix of overwhelming skepticism, tardiness, antagonismgivesan impression of a massive corrosion of democracy and career integrityand they undermine human and materialistic values. An effective language played in different communicative segments as individual presentation, group discussion, board meetings and documentations stems out such corrosion and cultivates the nobility of love and promises towards promoting work ethical values. A language set up is based on a strong cultural ground and it is a string tagging life and profession together. When it loses its tenderness and strength its effects create negative patterns inall grounds of human life. The following genre of W.B.Yeats "The Second Coming" plays the readers' heart to feel bridging the social and work ethics together with its tender cadence such as:

Turning and turning in the widening gyre
The falcon cannot hear the falconer;
Things fall apart; the centre cannot hold;
Mereanarchy is loosed upon the world,
The blood-dimmed tide is loosed, and everywhere
The ceremony of innocence is drowned;

Civic virtue is a high merit or a standard underpinning of honest behavior in rapportestablishment to a citizen's involvement in society. An individual can implement civic virtue by voting, volunteering, group organization, or attendingand creating brain transforming campaign and .other life evolutionary phases. All kinds of literature witness that such evolutionary processes get growing through only stable language set up from by gone age to modern age. Literary fictions, social literature, architectural literature, medical literature and technical literature are getting a vital hotspotin the universal history.

Global organizations errands the candidates with languageparticularly English as a second language because the candidates can enhance themselvesin the linking factor between the regional offences and make certain a good communicative flow. It means as an individual can get exposure to projects that he could normally be involved in, as he may be required to translate and then adjoinauxiliarycontributions.The editor of "The HRIDS World" shares of trade and language in his' How Your Knowledge of English Can Influence Your Career Prospects'as:

> *Howlong will English be the trade language? Probably as long as all of us live, it will be. China has adapted English as their second language and is mandatory in their schools. Will it be long before there will be more English spoken by Chinese than there are in the world? Will most everyone be speaking two language? Don't know, but I do know their embracing of the English language will result in English being around for a very long time.* (http://www.thehrisworld.com/how-english-can-influence-your-career/)

Technology gets metamorphosed and overwhelmed through the hi-tech process of brain transformation from one nation to another nation.English remains mandatory if a technical explorerwishes to go abroad on assignments or for work. He is occurred to fulfillthe technical concomitant successfully through various kinds of

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STRATEGIES FOR TECHNOLOGY ENHANCED LANGUAGE LEARNING (TELL) IN LANGUAGE CLASSES

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Abstract:

The tremendous evolution of technology and learning is opening new portals to represent knowledge practices, and new global communities of learning. Technology is no longer a fringe course enhancement, of interest to only enthusiastic 'technophile' teachers, learners and managers, but rather, it has an importance for everyone concerned in language teaching. The area of technology-enhanced language learning is highly controversial; there are so many ways of looking at technology in teaching. This paper explores opportunities that English teachers have created to help students meet English language literacy goals in technology enhanced language learning (TELL) classroom environments.

Key Words: CALL, TELL, CMC, Implementation, Manifestation, Evaluation & Activities of TELL

1. Introduction:

It is rare to find a language class that does not use some form of technology. In recent years, technology has been used to both assist and enhance language learning. Teachers have incorporated various forms of technology to support their teaching, engage students in the learning process, provide authentic examples of the target culture, and connect their classrooms. Further, some technology tools enable teachers to differentiate instruction and adapt classroom activities and homework assignments, thus enhancing the language learning experience. In order to meet the reading needs of students in the 21st century, educators are pressed to develop effective instructional means for teaching reading comprehension and reading strategy use. In addition, technology continues to grow in importance as a tool to assist teachers of foreign languages in facilitating and mediating language learning for their students. Technology can play a vital role in supporting and enhancing language learning, the effectiveness of any technological tool depends on the knowledge and expertise of the qualified language teacher who manages and facilitates the language learning environment.

2. Literature Review:

The difference between Computer Assisted Language Learning (CALL) and Technology-Enhanced Language Learning (TELL) is that the computer simultaneously becomes less visible yet more ubiquitous. The change in emphasis from computer to technology places direct importance on the media of communication made possible by the computer, which itself often remains unseen, rather than on the computer itself . Whereas in CALL, the computer assisted learning, it might be said that in TELL, the computer supports learning. This third phase of technology use in second- and foreign-language teaching is characterized by the use of multimedia and the Internet. It can also be characterized by a clearly delineated move away from behaviourist, drill and practice type software and a move towards more constructivist uses of the tool. Warschauer (1996a) refers to the third phase of use of computers in teaching second languages as Integrative CALL. He uses the term *integrative* to refer to efforts at developing models which would integrate various aspects of language learning for example using task- or project-based approaches. Multimedia computers can provide an accurate portrayal of the target language and provide learners with control and feedback. More importantly though they facilitate a methodological and theoretical advance that shifts the emphasis away from the traditional production of sentences common with CALL to an emphasis on "input and intake". Computer-mediated communication (CMC) using the Internet has the power to allow learners to collaborate and to construct knowledge together (Warschauer, 1997a). Online learning, explains Warschauer, breaks the pattern of teacher-centred discussion in the classroom. In his review of studies on CMC, the author notes that the social dynamics of CMC result in more equality of participation than what would be typical in face-to-face communicationHanson-Smith (1997) examines the pedagogical practices that have benefitted or will benefit from technological enhancement. The World Wide Web allows for an instantaneous exchange of information to and from sites and between individuals. Use of the Internet demands a level of student engagement in authentic language encounters that would barely be possible face-to-face.

3. Manifestations of Technology:

The pivot of technology is to direct, foster thinking and facilitate the acquisition of higher order skills. The challenge is to creatively use technologies by zeroin on their affordances. In a perfectlypatterned technology-enhanced learning environment, learners will incorporate in the process of manipulating information and critical thinking as well as expressing and sharing their knowledge to peer-learners. Several taxonomies of technologies for learning have been under discussion. The following methodologies consistently display the various ways the technology being conducive for learning.

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INTERACTION: IT'S EFFECTS IN LEARNING ENGLISH AS SECOND LANGUAGE IN CLASSROOM

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Cite This Article: K. Albert Lawrence, "Interaction: It's Effects in Learning English as Second Language in Classroom", International Journal of Engineering Research and Modern Education, Volume 2, Issue 2, Page Number 53-55, 2017.

Abstract:

In the process of acquiring a second language many suitable methods are being adopted by both learners and teachers in the classroom. It is normally acknowledged that classroom interaction is said to be fruitful for language learning. Effective cognitive developments take place among the learners in the process of interaction in the classroom. Long's (1991) psycholinguistic perspective has been used to access the effectiveness of the acquisition of language through interaction. The significant part of this theoretical structure is how the learners learn through negotiation of meaning. There are different aspects that deal with in the negotiation of meaning. But the discussion has been focused on only two; repetition and recast. The data have been collected through thorough examination and student's interrogation. They were collected on the basis of the role played by recast and repetition in the process of facilitating the language learner.

Key Words: Interaction, Psycholinguistic Perspective, Negotiation of Meaning, Recast & Repetition

Introduction:

In the recent past many research have been done in order to analyze the significance of classroom interaction when learners are acquiring a second language. These research paid attention to the role of negotiation in language learning and comparing tasks have been undertaken individually as well as cooperatively. When dealing with second language acquisition it is important to pay attention to several factors which may motivate and facilitate learner's acquisition.

Interaction is considered important word for the ESL (English as a Second Language) teachers. "In the era of communicative language teaching, interaction is, in fact, the heart of communication; it is what communication is all about (Brown, H.D. 1994)".

CLT (Communicative Language Teaching) stress on interaction as people use language to negotiate meaning in various situations. Interaction helps student to come out with what they have already learnt from classroom or from the real life situations. Relevant literature has been integrated after thorough classroom observations of active participation of the learners towards learning English in the classroom.

1. Account of the Learning Place:

The sample place, which was taken for the study, was classroom accomplished with a personal computer, a LCD Projector, a white board, a phonetics chart, a chart of pictures and furnished furniture. The stage set for the teacher and learner was visible for all the students sitting. The classroom compact enough that there was no hindrance and eco in the process of interaction. Everybody felt cozy and comfort in the classroom ambiance.

2. Target Learners:

Learner1 (L1), a boy of 19 years old was involved with learner2 (L2), a girl of 24 years old in interaction in the classroom ambiance. In the observation it was found that L1 was quiet interested than L2. L1 was quiet interested because his apprenticeship kindled his eagerness to learn the language whereas L2 was limited with words as she knows the language quiet well than the L1.

3. Views about Interaction:

Wagner (1994: pp8) defines interaction as "reciprocal events that require at least two objects and two actions. Interaction occurs when these objects and events naturally influence one another". Therefore, interactions do not occur only from one side, there must be a mutual influence through giving and receiving messages in order to achieve communication.

Thurmond & Wambach (2004: pp4) states that: "The learner's engagement with the course content, other learners, the instructor and the technological medium used in the course. True interactions with other learners, the instructor and technology result in a reciprocal exchange of information. The exchange of information intended to enhance knowledge development in the learning environment."

It is inferred from the above quotation that there are four types of interaction, learner-course content interaction, learner-learner interaction, learner-teacher interaction and learner-technology interaction. But in this study, learner-learner interaction and learner-teacher interaction were being dealt.

According to Long (1996: pp. 413) "The most valuable way input is made comprehensible is through interactional adjustments. These are the attempts of learners and their conversation partners to overcome

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Overview of Extended Theoretical Concepts of Complex Fuzzy Sets

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Abstract— The objective of this paper is to investigate and extends the innovative concept of complex fuzzy set. The novelty of the complex fuzzy set lies in the range of values its membership function may attain. In contrast to a traditional fuzzy membership function, this range is not limited to [0,1], but extended to the unit circle in the complex plane. Consequently, a major part of this work is dedicated to a discussion of the intuitive interpretation of soft complex fuzzy sets, parameterized soft complex sets, complex fuzzy soft hypergroup, complex fuzzy soft hyperring and complex fuzzy soft hyperideal. We also developing the innovative concepts of soft complex intuitionistic fuzzy sets with example.

Key words: Complex Fuzzy Sets

I. INTRODUCTION

Fuzzy set was introduced by Zadeh [13] whose basic component is only a membership function. The generalization of Zadeh's fuzzy set, called intuitionistic fuzzy set was introduced by Atanassov [3] which is characterized by a membership function and a non-membership function. In Zadeh's fuzzy set, the sum of membership degree and a non-membership degree is equal to one. In Atanassov intuitionistic fuzzy set, the sum of membership degree and a non-membership degree does not exceed one. Complex fuzzy set (CFS) [7]-[8] is a new development in the theory of fuzzy systems [13]. The concept of CFS is an extension of fuzzy set, by which the membership for each element of a complex fuzzy set is extended to complex-valued state. In 2012, Alkouri et al.[1] introduced the new concept and called it Complex intuitionistic fuzzy sets

In this paper, we extend the concept of complex fuzzy sets to the various functionality sets. This paper is organized as follows. In Section 2, we give all the basic definitions related to complex fuzzy sets, soft complex fuzzy sets and parameterized soft complex fuzzy sets with example. In Section 3, we define the concept of complex fuzzy soft hypergroup, complex fuzzy soft hyperring, complex fuzzy soft hyperideal and soft complex intuitionistic fuzzy sets derived in section 4. In Section 5, we give the conclusion.

II. PRELIMINARIES

A. Definition: 2.1

Ramot et al. [8] proposed an important extension of these ideas, the Complex Fuzzy Sets, where the membership function μ instead of being a real valued function with the range [0,1] is replaced by a complex-valued function of the form $\mu_s(x) = r_s(x)e^{j\omega_s(x)}$; $j=\sqrt{-1}$ where $r_s(x)$ and $\omega_s(x)$ are both real valued giving the range as the unit circle. As explained in Ramot et al [8], the key feature of complex fuzzy sets is the presence of phase and its membership.

B. Soft Complex Fuzzy Sets

Soft set theory is a generalization of fuzzy set theory, which was proposed by Molodtsov [6] in 1999 to deal with uncertainty in a non-parametric manner. One of the most important steps for the theory of Soft Sets was to define mappings on soft sets, this was achieved in 2009 by mathematician Athar Kharal, though the results were published in 2011. Soft sets have also been applied to the problem of medical diagnosis for use in medical expert systems. Mappings on fuzzy soft sets were defined and studied in the ground breaking work of Kharal and Ahmad. The proper definition of complex fuzzy soft set not defined anywhere. So, we concentrate to develop the definition and example of complex fuzzy soft set or soft complex fuzzy set for further developing the concept of complex fuzzy set.

C. Definition 2.2

Let U be an initial universe, E be the set of all parameters, $A \subseteq E$ and $\psi_A(x)$ be a complex fuzzy set over U for all $x \in E$. Then, an Soft complex fuzzy set χ_A over U is a set defined by a function ψ_A representing a mapping

$\psi_A : E \to C(U)$: Such that $\psi_A(x) = \phi$ if $x \notin A$.

Here, ψ_A is called complex fuzzy approximate function of the soft complex fuzzy set χ_A, and the value $\psi_A(x)$ is a complex fuzzy set called x-element of the soft complex fuzzy set for all $x \in E$. Thus, a soft complex fuzzy set χ_A over U can be represented by the set of ordered pairs

$\chi_A = \{(x, \psi_A(x)) : x \in E, \psi_A(x) \in C(U)\}$

Note that the set of all the complex fuzzy sets over U will be denoted by $C(U)$.

D. Example: 2.3

Let U= {h_1 (India),h_2(Australia),h_3(UK),h_4(USA)} be an initial set, consider E= {e_1(Inflation rate),e_2(population growth),e_3(Unemployment rate),e_4(share market index)} be an country's growth parameters set and $A \subseteq E$,A={e_1,e_3}, complex fuzzy set $\psi_A(e_1)$, $\psi_A(e_3)$ is defined as,

$$\psi_A(e_1) = \left\{ \frac{0.4e^{j0.5\pi}}{h_1}, \frac{0.8e^{j0.6\pi}}{h_2}, \frac{0.8e^{j0.8\pi}}{h_3}, \frac{1.0e^{j0.75\pi}}{h_4} \right\},$$

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A Mathematical Model for Plasma MESOTHELIN as a Diagnostic and Prognostic Biomarker in Colorectal Cancer by using Gamma Distribution

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Abstract— In this paper we introduce Gamma probability distribution model is used to obtain the survival rates of the patients [2,6,8].The Gamma distribution is extensively used in engineering, reliability and applied statistics. This distribution is a reasonable model to describe the progression of colorectal cancer and finding survivor rate estimates for the medical data. Mesothelin is a cell surface protein and over expressed in many cancers. However, the potential value of mesothelin as plasma biomarker in colorectal cancer has not been explored. The purpose of this study was to identify whether plasma mesothelin is a suitable diagnostic and prognostic biomarker for colorectal cancer. The application part is fitted with the Mathematical model and conclusion is compared with the medical report. This will be helpful for the medical professional.

Key words: Mesothelin, Colorectal Cancer, Biomarker, Gamma Distribution

I. INTRODUCTION

Colorectal cancer is the third most common malignant tumor by incidence around the world [7].About 134,490 new cases will be diagnosed with colorectal cancer in 2016, estimated by the American Cancer Society [17].However, nearly 25% patients with colorectal cancer were diagnosed advancing stage at the first time, and the 5-year survival rate of colorectal cancer was estimated to be 62%-64% [12, 14]. Due to the limitation of the screening tests in the early diagnosis of colorectal cancer, it is necessary to identify new potential biomarkers, especially in plasma or serum, for the diagnosis of colorectal cancer and prediction of therapy. Mesothelin, a 40-kDa cell glycosylphosphatidyl inositol (GPI)-linked protein, has been found in mesothelial cells lining the peritoneum, pleura and pericardium usually [4, 5]. The over expressed mesothelin has been detected in mesothelioma and pancreatic cancer [16, 13]. Mesothelin over expression has also be found in many other cancers in serum and other body fluids, including ovarian malignancies, gastric cancer and lung adeno carcinomas [9,10,15]. The biological function of mesothelin with colorectal cancer in vitro [14]. Moreover, the significantly over expressed mesothelin was identified in colon cancer serum [3]. In this study, we investigated the level of mesothelin in plasma in a two-stage case-control study and evaluated the diagnosis and prognosis value of colorectal cancer patients with high mesothelin level. Moreover, we estimated the difference of mesothelin level between preoperative plasma and postoperative plasma samples.

II. APPLICATION:

A total of 147 patients with colorectal cancer and 121 healthy controls were recruited in this study. In the first stage, 40 primary colorectal cancer cases were pathologically confirmed in the Third Affiliated Hospital. Forty cancer-free controls were recruited from those seeking medical care in local hospitals with frequency-matched to cases on age (± 5 years) and gender. In the second stage, 107 colorectal cancer cases and 81 controls were recruited from the First Affiliated Hospital. A total of 54 patients' were followed-up through telephone calls at regular intervals for up to 5 years and the median survival time (MST) was 41.3 months. There were 147 colorectal cancer cases and 121 cancer-free controls in this two-stage case-control study. The average age of cases and controls was 60.7 and 59.6 respectively, and no significant differences between patients and controls were identified in age (P = 0.500) and sex (P = 0.858). In addition, we found no notable differences in drinking and smoking status between two groups (P > 0.05). However, significantly increased frequency of family history of cancers was found in colorectal cancer group (P < 0.001).

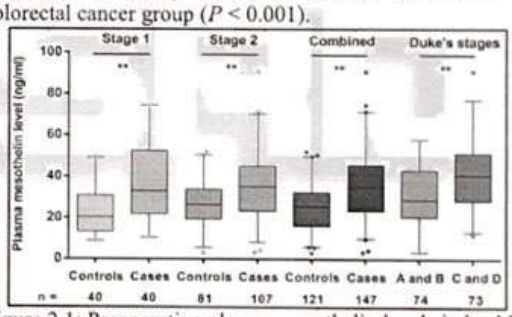

Figure 2.1: Preoperative plasma mesothelin levels in healthy controls and colorectal cancer patients under different Duke's stages.

Box plots represent plasma mesothelin levels in healthy controls (n = 121) and colorectal cancer cases (n = 147) and patients under different Duke's stages (A + B; n = 74, C+D; n = 73). Boxes indicate the interquartile range, and median values are shown by the horizontal lines across boxes. Statistically significant differences were determined using two-sided Wilcoxon test. **P < 0.001.

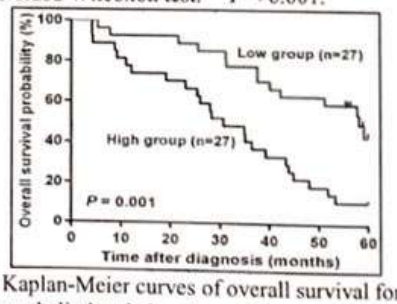

Fig. 2.2: Kaplan-Meier curves of overall survival for plasma mesothelin levels in colorectal cancer patients:

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On Homogeneous Diophantine Equation $X^2 + Y^2 - XY = 7Z^2$

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Abstract— The ternary quadratic homogeneous equation representing homogeneous cone given by $X^2 + Y^2 - XY = 7Z^2$ is analyzed for its non-zero distinct integer points on it. Six different patterns of and special number patterns namely Polygonal number, Pyramidal number, Octahedral number and Nasty number are presented. Also knowing and integer solution satisfying the given cone, two triplex of integers generated from the given solution are exhibited.

Key words: Ternary Homogeneous Quadratic, Integral Solutions

I. INTRODUCTION

The ternary quadratic Diophantine equations offer an unlimited field for research due to their variety[1, 2]. For and extensive review of various problems, one may refer [3, 4]. This communication concerns with yet another interesting ternary quadratic equation X2 + Y2 – XY = 7Z2 representing a cone for determining its infinitely many non-zero integral points. Also, a few interesting relations among the solutions are presented.

A. Notations Used

- $T_{m,n}$ - Polygonal number of rank n with size m
- P_n^m - Pyramidal number of rank n with size m
- Pr_n - Pronic number of rank n
- OH_n - Octahedral number of rank n

II. METHOD OF ANALYSIS:

The ternary quadratic equation to be solved for its non-zero integer solution is

$X^2+Y^2-XY=7Z^2$ ----------(1)

The Substitution of the linear transformations

$X=u+v, Y=u-v, (u\neq 0 v\neq 0)$ ----------(2)

In leads to

$u^2 + 3v^2 = 7Z^2$ ----------(3)

Assume $Z(a, b) = a^2 + 3b^2 = 7Z^2$ $(a, b \neq 0)$ ----------(4)

We illustrate below six different patterns of non-zero distinct integer solutions to (1).

A. Pattern 1:

Write 7 as

$$7 = (2 + i\sqrt{3})(2 - i\sqrt{3}) \quad \text{----------(5)}$$

Substitute (4) and (5) in (3) and Employing the method of factorization, define

$$(u + i\sqrt{3}v) = (2 + i\sqrt{3})(a + i\sqrt{3}b)^2$$

Equating real and imaginary parts

$u = 2a^2 - 6b^2 - 6ab$

$v = a^2 - 3b^2 + 4ab$

Substituting the above values of u and v in (2), the non-zero distinct integer values for X and Y satisfying (1) are given by

$X = X(a, b) = 3a^2 - 9b^2 - 2ab$ ----------(6)

$Y = Y(a, b) = a^2 - 3b^2 - 10ab$ ----------(7)

Thus (4), (6) and (7) represent non-zero distinct integral solutions of (1) in two parameters.

1) Properties:

1) $X(A, A(A+1)) + 36T_{3,A}^2 - 3T_{4,A} \equiv -4P_A^5$
2) $Y(A(A+1), (A+2)) - 4T_{3,A}^2 + T_{8,A} + 60P_A^3 \equiv 12 \pmod{14}$
3) $X(A, 1) - 3Y(A, 1) + Z(A,1) - T_{4,A} \equiv 3 \pmod{28}$
4) $X(A, 2) - 3T_{4,A} \equiv 9 \pmod 4$
5) $Y(1, B) + T_{8,B} \equiv 1 \pmod{12}$
6) $X(1, B) + T_{20,B} \equiv 3 \pmod{10}$
7) $Y(A, 1) - T_{4,A} \equiv 3 \pmod{10}$
8) $X(2B, 2) - T_{26,A} \equiv 0 \pmod 3$
9) $X(A+1, A+1) - T_{18,A} \equiv 8 \pmod{23}$
10) $-6X(2A, A) = 6*A^2$ a Nasty number

B. Pattern:2

Instead of (5) write 7 as

$$7 = (-2 + i\sqrt{3})(-2 - i\sqrt{3}) \quad \text{----------(8)}$$

Following the procedure presented in pattern:1, the corresponding values of X and Y obtained from (2) are

$X = X(a, b) = -a^2 + 3b^2 - 10ab$ ----------(9)

$Y = Y(a, b) = -3a^2 + 9b^2 - 2ab$ ----------(10)

Thus (4), (9) and (10) represent non-zero distinct integral solutions of (1) in two parameters.

1) Properties:

1) $X(A, A(A + 1)) + T_{4,A} + 20P_A^5 = 12T_{3,A}^2$
2) $3X(A, 1) - Y(A, 1) + Z(A, 1) - T_{4,A} \equiv 6 \pmod 8$
3) $Y(A, 1) + T_{8,A} - 4A = 9$
4) $X(1, B) - T_{8,B} \equiv -2 \pmod 8$
5) $X(2, 2A) + T_{26,A} \equiv -4 \pmod{29}$
6) $Y(2, B) - T_{20,B} \equiv 0 \pmod 4$
7) $X(A, 2) \equiv 0 \pmod 2$
8) $X(A + 1, A + 1) + T_{18,A} \equiv 8 \pmod{23}$
9) $X(A(A + 1), (A + 2)) + T_{3,A}^2 - T_{8,A} + 60P_A^3 \equiv -4 \pmod 8$
10) $3X(A, A) = 24*A^2$ a Nasty number.

C. Pattern:3

Consider 7 as

$$7 = \frac{(5 + i\sqrt{3})(5 - i\sqrt{3})}{4} \quad \text{----------(11)}$$

For this choice, the corresponding values of X and Y obtained from(2) are represented

$X = X(a, b) = 3a^2 - 9b^2 + 7ab$ ----------(12)

$Y = Y(a, b) = 2a^2 - 6b^2 - 8ab$ ----------(13)

$Z = Z(a,b) = a^2 + 3b^2$ ----------(14)

Which represent non-zero distinct integral solutions of (1) in two parameters.

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Mandatory Tests for Light Weight Aggregates

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Abstract: Light weight concretes (LWC) are use in the construction industries more than 2200 years. Light weight concretes are light in weight and provide fire and sound proofing, easy to transport and construct. Variety of LWC's are made with variable densities and strengths. But there exists a lack of systemic understanding of durability parameters associated with LWC. In this paper mandatory tests are discussed for LWC which are of most significant at the design stage of LWC for structural purposes.

Keywords: transport properties, resistivity, porosity, warping and curling.

"1. INTRODUCTION"

The first light weight concrete (LWC) has been used for construction of the Port of Cosa built around 273 BC and natural volcanic materials were used to produce light weight concrete. There are several LEC structures in the Mediterranean region, but most notable structures were built during the early Roman Empire and include Pantheon Dome and the Coliseum. The Pantheon, finished in 27 BC, incorporated concrete varying in densities from the bottom to the top of the dome. Roman engineers had sufficient confidence in LWC to build a dome whose span of 43.3 m was not exceeded for almost two millenniums. The structure is in excellent condition and is still being used to this day for spiritual purposes [1]. The excellent cast surfaces that are visible to the observer slow clearly that these early builders had successfully mastered the art of casting concrete made with light weight aggregates.

Since World War I, the application of light weight concrete for structural applications in rapidly spread. Besides the weight savings, LWC has substantially better fire resistance qualities than normal weight concrete, and significantly lower heat transmission.

It has become a greater requirement and need to reduce the weight of structural element than increasing the strength of LWC, particularly in cases of heavy structures

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ENERGY AND ENRICHING THE FACULTIES EFFECTIVENESS THROUGH MEETINGS AND THEIR ACCOUNTABILITY IN TECHNICAL EDUCATION

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ABSTRACT

Stable growth of higher science and technology demands the establishment of large number of technical institutions in both governmental and self- financing patterns. Hence, quality of education, mainly in Technical Education has become an important factor for any type of institution. The faculty effectiveness and their responsibilities are inevitable apart from their main task of teaching. Teacher effectiveness is finally responsible for the success of Technical Education. The key to enriching the faculty effectiveness is who are interested and involved. The faculty enjoy themselves at their work may tend to be more productive. This paper briefing about the energy and enriching the faculties effectiveness through meetings and their accountability.

KEYWORDS: Energy, Enriching, Effectiveness, Accoutability, Meeting.

I. INTRODUCTION

Faculty effectiveness plays a vital role in moulding and shaping the students. But faculty accountability has become a very controversial issue. Points in favor and against faculty accountability are explained. To make them accountable for everything the characteristics of effective teaching, measurement of teacher effectiveness, ascertain the disinterest in teaching, teaching skills. It may be initiated initially thro meetings at various levels. Now a days conduct of more meetings at working places in the name of counseling and motivation for developments. A survey conducted has revealed that an executive spends about 21 of the 40 hour work per week in meetings. Another survey has revealed that an average worker spends 3 years of his or her life time in meetings. The meeting conducted without agenda involves time consuming, waste of money and efficiency in the scheduled time.

If considering the institutional energy exchange systems, if the energy flows properly and is channeled into the activities that will have the best pay off. Meetings are major logic of energy expenditure, because they consume so much personnel effort in preparing, conducting and following-up. The factors responsible for the failure of meetings may be:

1. Poor preparation in both planners and participants.
2. Participants not properly involving in meetings and its analysis.
3. Participant diverting the agendas thro questioning and unconnected discussions.
4. Lack in participation and observation.
5. Emotional outbursts and conflicts.
6. Ineffectiveness of methods.
7. Too much length.
8. Lack in accountability and effectiveness of faculty.

II. ENHANCEMENT OF EFFECTIVENESS OF FACULTY ACCOUUTABILITY

The faculty effectiveness can be enhanced if the following is observed:

Enriching faculty effectiveness thro meetings

- Team leader motivate every participant responsible of group effectiveness and team solutions ensuring the maximum use of time and human resources available (e.g., invite silent ones to speak up and dominators to shut up).
- Telephone call interruptions should be banned except for emergencies.

5/8/17

230

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Energy Efficient And Interference Aware Multihop In Underwater Acoustic Networks

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ABSTRACT-We study maximum multi-flow scheduling in an underwater acoustic sensor network. The network consists of underwater sensor nodes and surface gateways. The objective is to maximize the sum of the flows that can be finished within a fixed time duration. To address challenges posed by large sound propagation latency, we convert the original network to a time-expanded network, and develop a linear programming (LP) formulation for the maximum multi-flow scheduling. The solution to the LP formulation provides an upper bound of the maximal achievable flow. Through introducing a stronger constraint into the LP formulation, a feasible multi-flow transmission schedule is proposed, which guarantees a small approximation factor. Simulations are conducted to verify the theoretical results. Due to the battery resource constraint, it is a critical issue to save energy in wireless sensor networks, particularly in large sensor networks. One possible solution is to deploy multiple sink nodes simultaneously. In this paper, we propose a protocol called MRMS (Multipath Routing in large scale sensor networks with Multiple Sink nodes) which incorporates multiple sink nodes, a new path cost metric for improving path selection, dynamic cluster maintenance and path switching to improve energy efficiency. MRMS is shown to increase the lifetime of sensor nodes substantially compared to other algorithms based on a series of simulation experiments.

1 INTRODUCTION

Underwater acoustic sensor networks (UWSNs) have been commonly regarded as the enabling techniques for real-time and in situ data collection in a wide range of aquatic applications. The underwater nodes and gateways are acoustically connected under water, while the gateways can be also connected via high-rate radio links above water surface. A fundamental operation for UWSNs is to deliver large amount of data from underwater sensor nodes to surface gateways Relative to terrestrial radio networks, grand challenges are possessed by the large sound propagation latency in underwater acoustic networking. Recently, a series of works have been developed to take advantage of the long propagation delay of acoustic transmissions to boost the network throughput.

A wireless sensor network (WSN) consists of hundreds to thousands of low-power multifunctional sensor nodes, operating in an unattended environment, and having sensing, computation and communication capabilities. The basic components of a node are a sensor unit, an ADC (Analog to Digital Converter), a CPU (Central processing unit), a power unit and communication unit. Sensor nodes are micro-electro-mechanical systems (MEMS) that produce a measurable response to a change in some physical condition like temperature and pressure. Sensor nodes sense or measure physical data of the area to be monitored. The continual analog signal sensed by the sensors is digitized by an analog-to-digital converter and sent to controllers for further processing. Sensor nodes are of very small size, consume extremely low energy, are operated in high volumetric densities, and can be autonomous and adaptive to the environment. The spatial density of sensor nodes in the field may be as high as 20 nodes/m3.As wireless sensor nodes are

6/6/17
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A Survey of Various Algorithms to Achieve Fault Tolerance in Wireless Sensor Networks

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Abstract: We survey various algorithms for tolerating permanent and transient failures in Wireless Sensor Networks. These algorithms attempt to provide low-cost solutions to fault tolerance, graceful performance degradation, and load shedding in such systems by exploiting tradeoffs between space and/or time redundancy, timing accuracy, and quality of service. Here we describe various algorithms which are used to achieve fault-tolerant and increase the performance of a system. The algorithms are dynamic scheduling, off-line or static scheduling, and scheduling, a technique which is used the concepts of mathematical optimization to allocate tasks on the processors and derive fault tolerant and fault aware feasibility and diskless check pointing approach.

Keywords: Fault tolerance, Wireless Sensor Networks

1. INTRODUCTION

The correctness of real-time safety-critical systems depends not only on the results of computations, but also on the time instants at which these results become available. Examples of such systems include fly- and drive-by-wire, industrial process control, nuclear reactor management, and medical electronics. Real-time tasks have to be mapped to processors such that deadlines, response times, and similar performance requirements are met, a process called *task scheduling*. Furthermore, many real-time systems function in a hostile, unpredictable environment and have to guarantee functional and timing correctness even in the presence of hardware and software faults.

Faults can be classified according to their duration: Permanent faults remain in existence indefinitely if no corrective action is taken. These faults can be caused by catastrophic system failures such as processor failures, communication medium cutoff, and so on. Intermittent faults appear, disappear, and reappear repeatedly. They are difficult to predict, but their effects are highly correlated. Most intermittent faults are due to marginal design or manufacturing. Transient faults appear and disappear quickly, and are not correlated with each other.

In real-time systems, fault tolerance is typically provided by physical and/or temporal redundancy. Physical redundancy in the form of replicated hardware and software components is used to tolerate both permanent and transient system failures. To reduce the overhead associated with replicated hardware, some approaches treat the set of processors as a pooled resource. When a processor fails, other members in the pool provide the functionality of the failed processor. Though this approach lowers the hardware overhead needed to tolerate failures, it typically causes some performance degradation and non-zero recovery latency. A common recovery technique is re-executing the failed task. Another is the primary/backup approach wherein if incorrect results are provided by the primary version of a task, the backup (alternate) is executed.

2. DYNAMIC & STATIC SCHEDULING

A mapping of tasks to processors such that all tasks meet their time constraints is called a *feasible* schedule. A schedule is *optimal* if it minimizes a cost function defined for the task set. If no cost function is defined and the only concern is to obtain a feasible schedule, then scheduling is optimal only if it fails to meet a task deadline when no other algorithms in its class can meet it.

A *dynamic* scheduler makes its scheduling decisions at run time based on requests for system services. After the occurrence of a significant event such as a service request, the algorithm determines which of the set of ready tasks should be executed next based on some task priority which is statically or dynamically assigned.

A *static* or *off-line* scheduling algorithm considers the resource, precedence, and synchronization requirements of all tasks in the system and attempts to generate a feasible schedule that is guaranteed to meet the timing constraints of all tasks. The schedule is calculated off-line and is fixed for the life of the system. Typically, a scheduling or dispatch table identifies the start and finish times of each task, and tasks are executed on the processor according to this

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Compressing Video using Asymmetric Algorithm and implementing Blind Video Watermarking Techniques

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Abstract— Compression is to reduce the file size of image , audio and video files. All the web images you get on the site are compressed, typically in the JPEG or GIF formats, most modems use compression, HDTV will be compressed using MPEG-2, and several file systems automatically compress files when stored, and the rest of us do it by hand. The neat thing about compression, as with the other topics we will cover in this course, is that the algorithms used in the real world make heavy use of a wide set of algorithmic tools, including sorting, hash tables, tries, and FFTsthe capacity and speed of storage devices have been tremendously improving. Today, new kinds of cheaper and more efficient memory devices are constantly emerging . In my paper the Discrete Cosine Transform (DCT) based blind video watermarking algorithm is proposed, which is perceptually invisible and robust against rotation and collusion attacks and pixels will not be broken so that after compression of video we can get the quality as orginal. To make the scheme resistant against rotation, watermark is embedded within the square blocks, placed on the middle position of every luminance channel. Then Zernike moments of those square blocks are calculated.

Index Terms— DCT, DAS, LZW, WMT, Zernike

I. INTRODUCTION

Video compression is the process of encoding a video file in such a way that it consumes less space than the original file and is easier to transmit over the network/Internet. It is a type of compression technique that reduces the size of video file formats by eliminating redundant and non-functional data from the original video file. Video compression techniques were started in 1984 when the images and audio files where gone through wide range of focussing level by the people. Lossy audio compression is used in a wide range of applications. In addition to the direct applications (MP3 players or computers), digitally compressed audio streams are used in most video DVDs, digital television, streaming media on the internet, satellite and cable radio, and increasingly in terrestrial radio broadcasts. storage media like diskettes, hard disks, CDs, USB Flash Disks, and tapes. Most data that we store in our computer devices are digital each unit of information packed in binary form. This binary nature of the source is how much information it really contains, and which better way to represent that information in a smaller number of binary digits, or bits. The compressed file is ultimately a concatenation of thousands or even millions of bit strings. Clearly, the cost of sending data over communications networks is minimized if the files are highly compressed. Digital watermarking is the method of embedding data into digital multimedia content. This is used to verify the credibility of the content or to recognize the identity of the digital content's owner. Using Watermarking techniques The rotation invariance property of the Complex Zernike moments [2] is exploited to predict the rotation angle of the video at the time of extraction of watermark bits. To make the scheme robust against collusion, design of the scheme is done in such a way that the embedding blocks will vary for the successive frames of the video.

Visible Digital Watermarking: Visible data is embedded as the watermark. This can be a logo or a text that denotes a digital medium's owner. Invisible Digital Watermarking: The data embedded is invisible or, in case of audio content, inaudible. Robust watermarks involve blending signal amplitude with large bandwidth sizes and a short message length. Frequency domain capabilities and mixed-domain techniques, when added to signals, are believed to provide the right amount of robustness in order to guard against watermark attacks.

The publisher Playboy has used an invisible form of digital watermarking to detect where its copyrighted material has been illegally posted on other websites.

A Pseudo Random Number (PRN) generator and a permutation vector are used to achieve the goal. The experimental results show that the scheme is robust against conventional video attacks, rotation attack and collusion attacks. A PRNG suitable for cryptographic applications is called a cryptographically secure PRNG (CSPRNG). A requirement for a CSPRNG is that an adversary not knowing the seed has only negligible advantage in distinguishing the generator's output sequence from a random sequence. In other words, while a PRNG is only required to pass certain statistical tests, a CSPRNG must pass all statistical tests that are restricted to polynomial time in the size of the seed.

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Swarm Based Novel Energy Aware Clustering Algorithm for WSN in Realtime Applications

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Abstract: Wireless Sensor Networks (WSN) are infrastructures containing sensing, computing and communication elements that aim to give its controllers the ability to measure, collect and react to occurrences in the monitored environment. The network performance is still an issue in the WSN and an efficient protocol is introduced such as LEACH. To improve the stability, LEACH with fuzzy descriptors is used in preceding research. However the existing has drawback with effective cluster formation in heterogeneous WSN and also it is not achieved the Super Cluster Head (SCH). To overcome the above mentioned issues, the proposed system enhanced the approach which is used for increasing the energy consumption, packet delivery ratio, and bandwidth and network lifetime. The proposed research contains three phases such as clustering formation, Cluster Head (CH) selection, SCH selection. The clustering formation is done by Energy-Efficient Prediction Clustering Algorithm (EEPCA) in heterogeneous WSN. It is used to calculate the sensor nodes which have shortest distance between each node. Then CH selection performed by using Low Energy Adaptive Clustering Hierarchy- Expected Residual Energy (LEACH-ERE) protocol efficiently. It improves the energy consumption and reduced the delay rates between nodes. Apply Particle Swarm Optimization (PSO) based fuzzy approach to optimize the SCH in given network. PSO based fuzzy approach generates membership functions along with best particles (nodes) to select optimal node. It provides significant information and act as SCH which is focused to reduce the number of retransmissions unnecessarily. Thus it is used to increase the network lifetime, bandwidth, packet delivery ratio rather than previous approach and reduce the energy consumption, end to end delay, distance using PSO based fuzzy rules effectively. Hence the experimental result proves that the anticipated system LEACH-ERE with PSO fuzzy approach has higher network performance than the existing system.

1. INTRODUCTION

A wireless sensor network is distinct as a gathering of a huge amount of small low power, low cost and multifunctional sensor nodes which are haphazardly and extremely distributed either privileged the scheme or very adjacent to it [1]. Sensor nodes which are actually small in size comprise of a sensing unit, data processing unit, and geographic positioning scheme, power supply unit like battery or solar cell and communicating constituents such as radio organizations. It establishes the basis of a wide range of applications associated to national security, surveillance, military, health care, and environmental monitoring.

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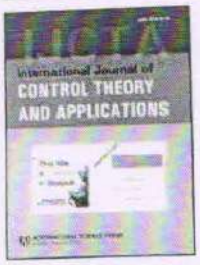

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Cuckoo Search Based Reliable Energy and Trust Aware Routing Protocol (CRETRP) for Wirless Sensor Network

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Abstract: Varying deployment usage of wireless sensor networks leads to an increased problems such as security threat, lacks of the resource availability and so on. These issues need to be resolved in order to gain an improved focus of researchers and users to deploy the features of WSN often. The most critical task in the WSN is data transmission which cannot be done securely and reliably due to improper route existence. Thus the focus on the better route discovery can resolve these issues in the optimized way. In the existing work, Trust and Energy aware Routing Protocol (TERP) is introduced for achieving the secured and energy concerned packet transmission which attempts to select the route in terms trust, energy and hop count of nearest nodes. However this lacks in its performance in terms of reliability due to not considering the reliability factor of nodes. And also existing work focus on only the status details of the current node and not considering the other nodes misbehavior attacks which might lead to the security violation data corruption. These issues are resolved in this work by introducing the novel framework for the route establishment namely Reliability aware energy and trust based routing protocol (RETRP). This method focus improving the network performance in terms of clustering the group of similar nodes for which optimized cluster head would be selected using the modified genetic algorithm. So that data transmission can be optimized. At the time of route establishment, reliability of the nodes also considered with the trust and energy consumption factor. In the proposed research work, cuckoo search Algorithm is used for trust and reliability aware route establishment. After route establishment, worm whole attacks are discovered using expected packet transmission count value. The experimental evaluation of this research work is conducted in the NS2 simulation environment from which it is proved that the proposed research work can provide an improved security.

I. INTRODUCTION

The name of Wireless Sensor Networks (WSN) is Wireless Sensor and Actuator Networks (WSAN). In this network are circulated to the independent sensor to observe corporal or ecological conditions like sound, pressure and temperature and so on. And also it is used to transfer the data to the corresponding destination by using the network. In present, the networks following the bi-directional model and also manage the sensor movement. The improvement of Wireless Sensor Network is provoked by armed applications for example combat zone

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Accessing Multiple Social Networks Android Application

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Abstarct - In this android application is based on application manager to manage the sensitive private application like (Facebook, whatsapp, twitter, etc.). This application is a collection of applications for manage the security and privacy of that sensitive application. This application has one password to sign all the application, after sign out from this application then other signed application automatically logout from the network. We use touch screen based password to access this application. We can provide the authenticated person to identify the person if any one try to unlock application in the smart phone. We add if any one try wrong pattern then our app capture that third party image and store it in the SD card. In this android application is developed for applications security for authenticated user mobile. However this process is not give full security to the user. It provide only proper authentication but not detect the unauthorized user. The android application is to manage the other sensitive application but only it lock and unlock the application. This application show in menu of the android mobile, but it lock the application if any one open the application get master password or pin to unlock. They used the password, pin and pattern for unlock authentication.

KEYWORDS: Smart Phone, Pin, Pattern

I. INTRODUCTION

Android is a mobile operating system developed by Google, based on the Linux kernel and designed primarily for touch screen mobile devices such as smart phones and tablets. Android's user interface is mainly based on direct manipulation, using touch gestures that loosely correspond to real-world actions, such as swiping, tapping and pinching, to manipulate on-screen objects, along with a virtual keyboard for text input. In addition to touch screen devices, Google has further developed Android TV for televisions, Android Auto for cars, and Android Wear for wrist watches, each with a specialized user interface.

Variants of Android are also used on notebooks, game consoles, digital cameras, and other electronics. Android has the largest installed base of all operating systems of any kind. Android has been the bestselling OS on tablets since 2013, and on smart phones it is dominant by any metric. Initially developed by Android, Inc., which Google bought in 2005, Android was unveiled in 2007 along with the founding of the Open Handset Alliance – a consortium of hardware, software, and telecommunication companies devoted to advancing open standards for mobile devices. Google releases the Nexus phones and tablets to act as their flagship Android devices, demonstrating Android's latest software and hardware features. From 2013 until 2015, Google offered several Google Play Edition devices over Google Play. While not carrying the Google Nexus branding, these were Google-customized Android phones and tablets that also ran the latest version of Android, free from manufacturer or carrier modifications. From 2010 to 2013, Hugo Barra served as product spokesperson, representing Android at press conferences and Google I/O, Google"s annual developer-focused conference. Barra's product involvement included the entire Android ecosystem of software and hardware, including Honeycomb, Ice Cream Sandwich, Jelly Bean and Kit Kat operating system launches, the Nexus 4 and Nexus 5 smart phones, the Nexus 7 and Nexus 10 tablets, and other related products such as Google Now and Google Voice Search. Google"s speech recognition product comparable to Apple"s Siri. In 2013, Barra left the Android team for Chinese smart phone maker Xiaomi. The same year, 5

Larry Page announced in a blog post that Andy Rubin had moved from the Android division to take on new projects at Google. He was replaced by Sundar Pichai who became the new head of Android and Chrome OS, and, later, by Hiroshi Lockheimer when Pichai became CEO of Google. In 2014, Google launched Android One, a line of smart phones mainly targeting customers in the developing world. In May 2015, Google announced Project Brillo as a cut-down version of Android that uses its lower levels (excluding the user interface), intended for the "Internet of Things" (IoT) embedded systems

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A Study on: Wireless Routing Protocols

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Abstract— **In recent trends Wireless Sensor Network is used in large number of applications. WSN is used to monitor and collect environmental information through variety of sensors nodes. The collections of sensor nodes are fixed in different places and these nodes are sending the monitored information to the centralized node called as a sink. Where the data is analyzed and initiate the action according the value of monitored information. The monitored information can be shared between the various sensor nodes by using the routing protocols. The WSN uses many kinds of routing protocols. In this paper, we have discussed various types of protocols functions and also discussed the energy efficient of the protocols. Finally we have discussed the NS2 simulator to simulate the function of routing protocols with the Network Animator.**

Keywords— **sensor, routing, protocols**

I. INTRODUCTION

Recent advances in micro-electro-mechanical systems (MEMS) technology, wireless communications, and digital electronics have enabled the development of low-cost, low-power, multifunctional sensor nodes that are small in size and communicate unmetered in short distances. These tiny sensor nodes, which consist of sensing, data processing, and communicating components, leverage the idea of sensor networks based on collaborative effort of a large number of nodes. Sensor networks represent a significant improvement over traditional sensors, which are deployed in the following two ways: • Sensors can be positioned far from the actual phenomenon, i.e., something known by sense perception. In this approach, large sensors that use some complex techniques to distinguish the targets from environmental noise are required. • Several sensors that perform only sensing can be deployed. The positions of the sensors and communications topology are carefully engineered. They transmit time series of the sensed phenomenon to the central nodes where computations are performed and data are fused. A sensor network is composed of a large number of sensor nodes, which are densely deployed either inside the phenomenon or very close to it. The position of sensor nodes need not be engineered or pre-determined. This allows random deployment in inaccessible terrains or disaster relief operations. On the other hand, this also means that sensor network protocols and algorithms must possess self-organizing capabilities. Another unique feature of sensor networks is the cooperative effort of sensor nodes. Sensor nodes are fitted with an on-board processor. Instead of sending the raw data to the nodes responsible for the fusion, sensor nodes use their processing abilities to locally carry out simple computations and transmit only the required and partially processed data. The above described features ensure a wide range of applications for sensor networks. Some of the application areas are health, military, and security. For example, the physiological data about a patient can be monitored remotely by a doctor. While this is more convenient for the patient, it also allows the doctor to better understand the patient's current condition. Sensor networks can also be used to detect foreign chemical agents in the air and the water. They can help to identify the type, concentration, and location of pollutants. In essence, sensor networks will provide the end user with intelligence and a better understanding of the environment. We envision that, in future, wireless sensor networks will be an integral part of our lives, more so than the present-day personal computers.

II. CLASSIFICATION OF ROUTING PROTOCOLS

Routing techniques are required for sending data between sensor nodes and the base stations for communication. Different routing protocols are proposed for wireless sensor network. These protocols can be classified according to different parameters. Routing Protocols can be classified as Proactive, Reactive and Hybrid, based on their Mode of Functioning and Type of Target Applications. Routing protocols can be classified as Direct Communication, Flat and Clustering Protocols, according to the Participation style of the Nodes. Routing Protocols can be classified as Hierarchical, Data Centric and location based, depending on the Network Structure. These protocols require each node to maintain one or more tables to store routing information, and they respond to changes in network topology by propagating updates throughout the network in order to maintain a consistent network view. The areas in which they differ are

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RESEARCH ARTICLE

Formulation of atmospheric optical attenuation model in terms of weather data

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Abstract Developing models to get an accurate prediction of optical attenuation according to meteorological parameters becomes significant to understand the behavior of channel in different seasons and to apply suitable adaptive technique to permit data transmission through the atmosphere. A dedicated Free Space Optical (FSO) link for the range of 0.5 km at an altitude of 15.25 m is established and explained. The power levels of the received signal with meteorological parameters at the same time are continuously measured using the opto-electronic assembly and developed weather station respectively and stored in a data logging computer. The existing models selected, based on exhibiting relatively less prediction error, for comparative analysis are briefed. Measured meteorological parameters (as input factors) and optical attenuation (as response factor) of size [2000×4] are used for linear regression analysis and to design the mathematical models more suitable at the test field. Along with the model formulation methodologies, contribution of input factors' individual & combined effects on the response surface and coefficient of determination (R^2) estimated using Analysis Of Variable (ANOVA) tools are presented. Cubic equation (R^2=98.76 %) is finalized for predicting optical attenuation. In addition, the prediction accuracy of the proposed and selected models for different seasons: monsoon, rainy, winter, pre-summer and summer in 1 year period are investigated and validated in terms of Root Mean Square Error (RMSE). The average RMSE of 0.041 dB/km for optical attenuation is achieved in longer range dynamic of meteorological parameters in different local seasons.

Keywords Meteorological data · Regressive model · Cubic equation · Visibility · Atmospheric attenuation and prediction error

Introduction

Free Space Optical Communication (FSOC) is a potentially high capacity and cost effective technique that receives growing attention and commercial interest [1–5]. Free Space Optics (FSO) is an age long technology that entails the transmission of information laden optical radiation through the atmosphere from one point to other. The limiting factor in FSOC is intensity noise due to the fluctuations of the atmospheric parameters, so called capacity limiting factors, which depends on the local meteorological conditions that cause the propagating laser beam to be deflected and/or scattered [6, 7]. The scattering coefficient is defined as the ratio of original light intensity (scene irradiahce) to attenuated scene intensity (irradiance) [8]. While these deviations are small locally, the effects accumulate over the propagation path and can lead to scintillation, beam wandering and wavefront distortion that varies on timescales typically on the order of a millisecond or longer, which reduce the overall system reliability. Hence, it is reasonable that in a real FSOC environment, optical channels will appear to have randomly time varying characteristics which are difficult to predict/simulate. Different weather conditions including dust, eddies of air of various size & velocity, fog and smoke are the sources that could potentially disrupt the FSOC by attenuating the input optical signal to the receiving side [9]. The optical attenuation varies from 0.2 to 480 dB/Km in a very clear to moderate to high weather conditions. Rain can cause attenuation up to 20–30 dB/km at a rain rate of 150 mm/h and snow can cause > 45 dB/km of loss [4, 6].

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Energy Proficient Reliable Rim Routing Technique for Wireless Heterogeneous Sensor Networks Lifespan Fortification

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Abstract

Sensor nodes are mainly shielded in the field with limited power supply. In Wireless Sensor Networks, there must be a requirement of an efficient power management, because sensor nodes are deployed in unman attended area with non-rechargeable batteries. Power management can be done by different methods of routing protocols. The proposed Reliable Rim Routing (3R) technique is based on hybrid routing protocol for homogeneous and heterogeneous system for WSNs to ameliorate the performance of the overall system. In 3R, total node deployment area can be multipart in terms of rim and in each rim, and some of the sensor nodes transmit their sensed data directly to base station, and meanwhile remaining sensor nodes send the data through clustering technique to base station like SEP. Proposed 3R technique implementation proves its enhanced WSNs lifetime of 70% energy consumption and 40% throughput compared with existing protocols. Simulation and evaluation results outperformed in terms of energy consumption with increased throughput and network lifetime.

Keywords

Cluster, Cluster Head, Heterogeneous, Rim Layer Node Deployment Technique, Wireless Sensor Network

1. Introduction

In topical times, many pursuing researchers have shown great concentration in WSNs due to their extensive

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M. Malathy[1] and J. Arputha Vijaya Selvi[2]

2-DWT and AES: Secure Authentication Management for Polar Iris Templates Using Visual Cryptography

Reference

Malathy, M. and Arputha Vijaya Selvi, J., "2-DWT and AES: Secure Authentication Management for Polar Iris Templates Using Visual Cryptography," *Journal of Testing and Evaluation* doi:10.1520/JTE20140528. ISSN 0090-3973

ABSTRACT

Biometrics deals with authenticating a person's identity based on the physiological or behavioral characteristics. Visual cryptography (VC) is a promising information security technique that allows the secret sharing of images without any cryptographic computations. Various existing schemes were introduced for securing the raw biometric data and template in the database using the VC technique. The complexity of encryption plays a vital role in security improvement. In order to overwhelm the above limitations, a secure authentication management for polar iris templates is presented using VC technique. The collaborative splitting of pixels in all directions presented in this paper was done in order to improve security. At first, the input image was segmented using the Canny edge detection and Hough transform. Subsequently, the normalization module transformed the iris texture from the Cartesian to polar-coordinates. The polar iris image was further separated into two shares, namely, share 1 and share 2, using VC technique. To accomplish more security than the existing methods, both 2-discrete wavelet transform (DWT) and advanced encryption standard (AES) shifting techniques were introduced in VC, termed as transform based AES (TAES). After receiving the encrypted image, the feature extraction is carried out by multi-scale local binary pattern (MLBP). The share 1 images are stored in the user database, whereas the share 2 images are stored in the server database. K-NN classifier is employed to recognize and retrieve the share 2 from the user database on the basis of features. Finally, reconstruction was performed from recognized share 1 and share 2 images by using the inverse process of TAES. The experimental results exhibit better peak signal to noise ratio (PSNR), mean square error (MSE) and normalized correlation (NC), false acceptance rate (FAR), false rejection rate (FRR), and equal error rate (EER) than the other existing methods.

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Analyzing the Real Photo Images with the Scanned Photo Images using Histogram Equalizer

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ABSTRACT- In the biometric world, image analysis places the important role. The real acquired images are forged by the scanned photo images. Unauthorized malicious user may try to use the authorized person's scanned photo images for the access process. An authentication system should analysis difference between the real images and the scanned photo images. This paper is mainly focused on analyzing the real acquiring images with scanned photo images using histogram equalizer.

Keywords: Real acquired images, Scanned photo images, Histogram Equalizer.

I. INTRODUCTION

Recent security world, Biometric authentication system is facing the treats, vulnerabilities by the attackers. In generic biometric system has attacked by the attacker in the acquiring level, preprocessing level, feature level, database storage level, matching level and communication level. Figure 1.1 describes the basic concept of biometric attacks in various levels. Spoofing the images using synthesized images is one point of view. Synthesizing images is the reverse process of the recognition or authentication system. Analyzing the images is the forward process of the recognizing or authentication system. Sometime printed images are used to forge the authentication system. Analyzing the image in the acquiring level is place the important role to detect the unauthorized access in the access level itself. Acquiring devices like camera, sensors are not detecting the forge images. Hardware level attacking may be done in the acquiring level itself. So this image analysis is mainly focused on the acquired image is real or forged image.

The biometric authentication process compares a registered or enrolled biometric sample i.e. biometric template or identifier against newly captured biometric images.

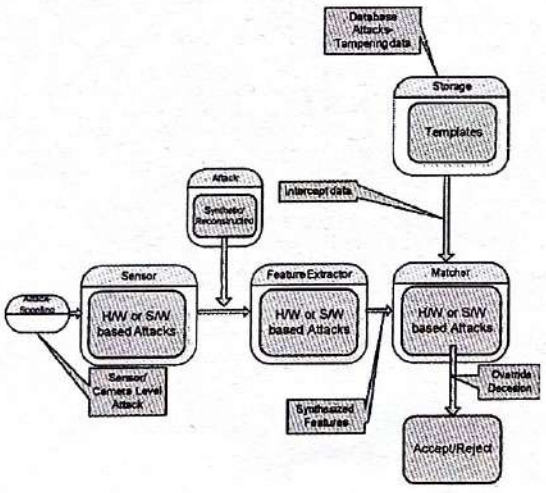

Figure 1.1 Biometric Attacks

Here, the user enters their identity to the biometric system. While entering the individual biometric traits like face, the vulnerabilities such as spoofing, collusion and coercion are occurred. The biometric system contains sensor/matcher limitations and the individuality of the biometric traits as intrinsic failure. The entered biometric traits are stored in the biometric database to provide better application/ services. The individual biometric traits are affected by the enrollment of fraud steal and made modification in the biometric images. Different types of vulnerabilities are occurred while performing this type of modification done in the enrollment.

II. RELATED WORKS

Malathy M & Arputha V.Selvi [1] have proposed, the Spoofed Iris Recognition: Synthesis of Gabor and LBP descriptor using SPPC, from this paper, the robustness of iris recognition system with spoofing attack is explained. This algorithm is a combination of Gabor wavelet followed by local binary pattern description (LBP) where the magnitude coefficient from Gabor wavelets takes as its input. Both dataset iris images and spoofed iris images are assessed by the algorithm in order to rise a genuine acceptance ratio (GAR)[1].Malathy M & Arputha V.Selvi [2] have proposed, 2-DWT and AES: Secure Authentication Management for Polar Iris Templates Using Visual Cryptography, from this paper, to protect the iris template against the spoofing attacks in the database storage level. Two shares were stored separately and merging the shares then only authentication system accessed the genuine user. Malathy M & Arputha V.Selvi [3] have proposed, the liviness face detection based on the binary image of the eye images. These eye images are cropped from the face images and photo face images, the gray scale value of the photo eye image had converted in to binary images and found the liviness. Akhtar, et al [4] have investigated, a real spoof attack samples that verify the multimodal biometric systems. Spoofed face and iris samples were replicated with a photo attack method. The photo of each individual was put in front of the capture device. While spoofed fingerprint samples was created by the same method. For each individual, 10 spoofed face, fingerprint and iris samples were created. The biometric systems were not intrinsically robust against spoof attacks contrary to the common belief. It can be cracked by spoofing only one biometric trait. Schwartz, et al[5] have presented a

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BER PERFORMANCE IMPROVEMENT FOR 4 X 4 MIMO SINGLE CARRIER FDMA SYSTEM USING MMSE EQUALIZATION

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Abstract - ***The main objective of this project is to design a soft decoding scheme to improve the Bit Error Rate (BER) in the MIMO SC-FDMA uplink transmission. The Long Term Evolution Advanced (LTE-A) uplink transmission is covered as the main topic in this report.*** **This project mainly focuses on the uplink transmission i.e., from Mobile to base station transmission.** ***The main focus is on the single-carrier frequency division multiple access (SC-FDMA) scheme which has been selected as the multiple-access scheme of the LTE uplink. It also employs Multiple-Input Multiple-Output (MIMO) because wireless communication using MIMO links has emerged as one of the most significant breakthroughs in modern communications because of the huge capacity and reliability gains promised even in worst fading environment. The proposed system describes the basic ideas of the MIMO SC-FDMA transmission systems and focused and investigated the BER performance of the Rayleigh wireless channel under 16 QAM (Quadrature amplitude modulation) modulation. Minimum Mean Square Error (MMSE) equalization is performed in the receiver side for better MIMO data detection. All analysis was performed under ideal fading conditions by the use of MATLAB which relates the SNR and the error performance of MIMO SC-FDMA systems. All the results obtained are simulated by using the MATLAB, under Rayleigh channel conditions. The BER performance of the proposed system is compared with the Orthogonal Frequency Division Multiple Access (OFDMA) MIMO systems which shows better results for SC-FDMA. Thus the software implementation of this MIMO SC-FDMA detector results in decreasing BER with increasing SNR.***

Key Words: SC-FDMA, MIMO, LTE-A, MMSE.

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1. INTRODUCTION

LTE-A is a 4th generation mobile telecommunication technology- 4G (International Mobile Telecommunications Advanced (IMT Advanced) project. LTE-A was finalized by the 3rd Generation Partnership Project (3GPP) in March 2011. LTE-A is not a completely new technology, rather it is an enhancement to LTE. The main objectives of LTE-A is to increase the peak data rate to 1 Gbps on the downlink and 500 Mbps on the uplink, improve spectral efficiency from a maximum of 16 bps/Hz in R8 to 30 bps/Hz in R10, increase the number of simultaneously active subscribers, and improve performance at cell edges. Many technologies employed in LTE continue to be used in LTE-A, such as orthogonal frequency division multiplexing (OFDM), OFDMA, MIMO, and SC–FDMA. Some of the difficulties encounter in the uplink of LTE-A are: 1) A problem encountered in the design of receivers for LTE-A communication systems is the detection of data from noisy measurements of the transmitted signals. 2) Because of OFDM's high PAPR (peak to Average Power Ratio) and related loss of efficiency, an alternative to OFDM was desirable for the LTE uplink. 3) High rate of errors per bit. 4) Inefficient performance of modulation schemes such as BPSK, QPSK, and 8-PSK.

The main goal of this project is to deliver data with less BER for SC-FDMA LTE-A system. The bit error ratio (BER) is the number of bit errors divided by the total number of transferred bits during specified time interval. Some solutions for the above problem are: 1) Instead of OFDMA, SC-FDMA becomes a suitable scheme for the LTE uplink because of its low PARP. Also MIMO technology gains attention in wireless communications, because it offers significant increases in data throughput and link range without additional bandwidth or transmit power. 2) 16 QAM modulation scheme transmits 4 bits per symbol efficiently. 3) The FDE equalization technique i.e., MMSE decreases BER.

2. ARCHITECTURE OF MIMO SC-FDMA SYSTEM

2.1 TRANSMITTER

SC-FDMA transmitter will convert binary data into a sequence of modulated subcarriers which is to be

Conference Paper

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September 2016

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Niranjan Samuel
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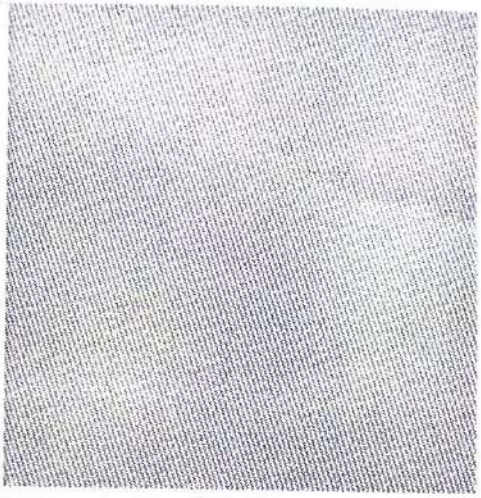

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Low Complexity Design for WSN Based Plant Monitoring System

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Abstract - *Wireless Sensor Networks (WSNs) consist of multiple unassisted embedded devices which process and transmit data collected from different on-board physical sensors. There are several applications in WSN such as agriculture, industrial monitoring, etc.,. In agriculture, an efficient wireless monitoring system design the sensor and camera based wireless network for regularly monitoring of the plant conditions. Plant monitoring system provides environmental and controlling services for field which leads to plant growth in an optimal status. Diseases are readily recognized by their symptoms. Image processing and computer vision technology are very beneficial to the agricultural industry. Sensor networks collect data from different physical sensors like temperature, humidity, and water level. They are more potential and more important to many areas in agricultural technology. An integration of plant monitoring with image processing sensor networks using Field Programmable Gate Array (FPGA) based control is the new method. The results show the advantages of new technology in terms of reduced power consumption and area reduction. It can help the farmer to detect the plant conditions faster. The wireless system also improves the farmer-field-expert relationship.*

Key Words: Wireless Sensor Network, Wireless Camera, Plant Monitoring, Image Processing, Field Programmable Gate Array.

1. INTRODUCTION

Plant disease detection and field monitoring plays an important key role in successful cultivation. Plant diseases cause significant reduction in both quality and quantity of agricultural products. The technology utilization would be allowed for remote measurement of factors such as plant growth condition including temperature, humidity, atmospheric pressure, soil moisture, water level. The wireless system also improves the conveniences of monitoring services.

Sensor Networks have been deployed for a wide variety of applications and awareness has increased with regards to implement technology into an agricultural environment. Monitoring crops for detecting environmental conditions and disease detection is an important role in successful cultivation. Manual collection of data results in variations when compared to the incorrect measurement taken from the field. This can cause complications in controlling any important factor. The visual analysis of experts is the major practical approach. So we have to look for fast, automatic and less expensive accurate method for continuous monitoring of agricultural field. Wireless sensor network can reduce this effort and time required for monitoring an agricultural environment. Absence of the farmer-field-expert integration results in reduction of plant growth. Hence to meet these challenges, integrated real time plant investigation is proposed. Plant monitoring system using WSN represents a set of network applications with huge possible benefits for the farmers and society as a whole.

2. PROPOSED PLANT MONITORING SYSTEM DESIGN

The new architecture involves integration of sensor network and high definition camera in the field to effectively connect farmers-field-experts instead of farmers or experts directly accessing the field is shown in figure 1. The need to process the field information in real time monitoring leads to this implementation in hardware level. FPGAs are used in modern agriculture application. Field conditions are continuously monitored by the wireless sensor and camera equipment. Sensors are used to provide the current status of environmental conditions. Plant leafs are observed by image feature extraction and processing algorithm.

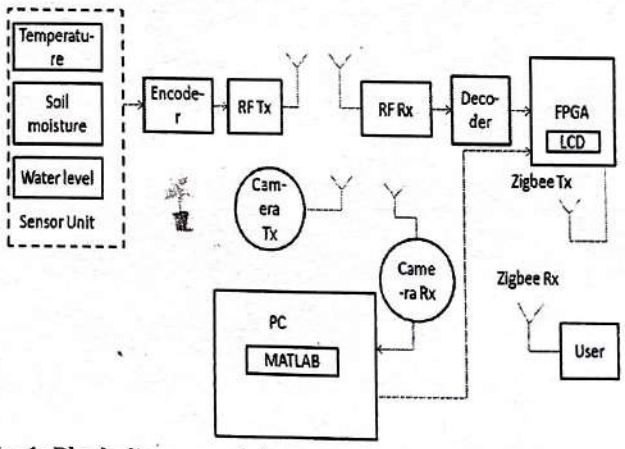

Fig-1: Block diagram of plant monitoring system design

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Research Paper

IMPLEMENTATION OF ULTRAFAST IMAGING SYSTEM FOR DETECTING THYROID NODULES

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A complete solution to estimate the volume of the thyroid gland directly from ultrasound (US) images is proposed in this paper. Physicians usually diagnose the pathology of the thyroid gland by its volume. However, even if the thyroid glands are found and the shapes are hand-marked from ultrasound images, most physicians still depend on computed tomography (CT) images, which are expensive to obtain, for precise measurements of the volume of the thyroid gland. This approach relies heavily on the experience of the physicians and is very time consuming. Patients are exposed to high radiation when obtaining CT images. In contrast, Ultrasound imaging does not require ionizing radiation and is relatively inexpensive. Ultrasound imaging is thus one of the most commonly used auxiliary tools in clinical diagnosis. The radial basis function neural network is used to classify blocks of the thyroid gland. The integral region is acquired by applying a specific-region-growing method to potential points of interest. The parameters for evaluating the thyroid volume are estimated using a particle swarm optimization algorithm. Simulation results of the thyroid show that the region segmentation can be automatically achieved and the volume of thyroid nodule can be precisely measured.

Keywords: Ultrasound imaging, thyroid, thyroid nodule, RBF neural network, PSO algorithm

INTRODUCTION

This paper deals with the concept of medical imaging. Ultra Sonic images are a widely used tool for clinical diagnosis, although it is time consuming for physicians to manually segment the thyroid gland region. The alternative to estimate the volume of a thyroid gland using Computed tomography (CT) imaging is expensive and involves hazardous radiation. Thus, a convenient system for thyroid segmentation and volume estimation in Ultrasound (US) images is of interest. The proposed method includes image enhancement processing to remove speckle noise, which greatly affects the segmentation results of the thyroid gland region obtained from US images.

THYROID GLAND

The thyroid gland is a butterfly shaped organ belonging to the endocrine system and is

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DESIGN OF ULTRAFAST IMAGING SYSTEM FOR THYROID NODULE DETECTION

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Abstract - *A complete solution to estimate the volume of the thyroid gland directly from ultrasound (US) images is proposed in this paper. Physicians usually diagnose the pathology of the thyroid gland by its volume. However, even if the thyroid glands are found and the shapes are hand-marked from ultrasound images, most physicians still depend on computed tomography (CT) images, which are expensive to obtain, for precise measurements of the volume of the thyroid gland. This approach relies heavily on the experience of the physicians and is very time consuming. Patients are exposed to high radiation when obtaining CT images. In contrast, Ultrasound imaging does not require ionizing radiation and is relatively inexpensive. Ultrasound imaging is thus one of the most commonly used auxiliary tools in clinical diagnosis. The radial basis function neural network is used to classify blocks of the thyroid gland. The integral region is acquired by applying a specific-region-growing method to potential points of interest. The parameters for evaluating the thyroid volume are estimated using a particle swarm optimization algorithm. Simulation results of the thyroid show that the region segmentation can be automatically achieved and the volume of thyroid nodule can be precisely measured.*

***Key Words*: Ultrasound imaging, Thyroid, Thyroid nodule, RBF neural network, PSO algorithm.**

1.INTRODUCTION

This paper deals with the concept of medical imaging. Ultra Sonic images are a widely used tool for clinical diagnosis, although it is time consuming for physicians to manually segment the thyroid gland region. The alternative to estimate the volume of a thyroid gland using Computed tomography (CT) imaging is expensive and involves hazardous radiation. Thus, a convenient system for thyroid segmentation and volume estimation in Ultrasound (US) images is of interest. The proposed method includes image enhancement processing to remove speckle noise, which greatly affects the segmentation results of the thyroid gland region obtained from US images.

1.1 Thyroid gland

The thyroid gland is a butterfly shaped organ belonging to the endocrine system and is composed of two cone-like lobes. It controls the secretion of the thyroid hormone, which regulates the temperature of the human body, and greatly affects childhood intelligence, growth, and adult metabolism. Thyroid gland produces hormones that are helpful for the body to control metabolism. Too much or too little thyroid hormone secretion (due to a thyroid that is too large or two small, respectively) causes pathological changes and results in thyroid abnormalities. Therefore, physicians often diagnose abnormal symptoms of the thyroid gland by its volume. The thyroid gland is shown in the figure 1.

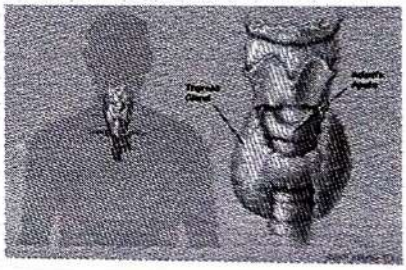

Fig -1: Thyroid Gland

Abnormalities of thyroid function are usually related to production of thyroid hormone. There are four main types of thyroid diseases - hyperthyroidism (too much thyroid hormone), hypothyroidism (too little thyroid hormone), benign (noncancerous) thyroid disease and thyroid cancer (malignant). The thyroid cancerous tissues are cystic or fluid filled when compared to the normal thyroid tissues and they differ in the textural characteristics. The thyroid nodules can be diagnosed by ultrasound imaging

Ultrasound (US) imaging is currently the most popular diagnostic tool. It is inexpensive and easy to use; it can follow anatomical deformations in real time during biopsy and treatment; and it is non-invasive and does not require ionizing radiation.

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FPGA IMPLEMENTATION OF BIST IN OFDM TRANSCEIVERS

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Abstract - *Testing of VLSI circuits is an essential one to ensure the high quality and proper functionality of the system. Due to the circuit complexity, it is very difficult to test it. For this issue the concept of Built-in Self-Test (BIST) is introduced. BIST is a mechanism that permits a circuit to test itself. Small additional circuitry, power or envelope detectors can be used for BIST purpose. BIST in wireless communication system measure the imbalance parameters and non linear characteristics. Here the BIST is used in Orthogonal Frequency Division Multiplexing (OFDM) transceivers for the detection of Bit Error Rate (BER) and also reduce it. BER can be demarcated as the number of received bits of a data stream over a communication channel that can be affected due to noise, interference and distortion or bit synchronization errors. This system mainly focuses the performance of OFDM – PSK, BPSK and QPSK system by using Reed-Solomon codes. These codes are used to encode the data stream that can be passed through communication channels resembling AWGN (Additive White Gaussian Noise) channel. Various simulations are performed for different modulation schemes in MATLAB to find best BER performance.*

Key Words: Built-in Self-Test (BIST), Orthogonal Frequency Division Multiplexing (OFDM), Bit Error Rate (BER), Additive White Gaussian Noise(AWGN), Reed-Solomon codes.

1.INTRODUCTION

Test cost becomes a significant contributor to the production cost. Efforts to reduce the manufacturing cost require the need of BIST implementation in contrast to Automatic Test Equipment (ATE) which results in higher capital and operational cost. It helps reduction of test time as it reduces the switching time of ATE instruments and measurement of complex circuitry using low cost testing solutions. In most Built-in-Self-Test (BIST) techniques, a small piece of circuit is added to the design in order to convert the system response to a simpler form with lower frequency that makes on-chip analysis feasible. The Radio Frequency (RF) to low frequency conversion in BIST can be enabled using peak, power, or envelope detectors.

Such BIST techniques have been proposed to characterize RF blocks, such as low noise amplifiers (LNAs), or power amplifiers (PAs), or the entire transmitter chain. The BIST circuit detects amplitude alterations at the outputs of the differential LNA due to parametric or catastrophic faults, and provides a single digital Pass/Fail indication signal. Most of the prior work on BIST for transceivers focuses on the characterization of noise figure, gain and nonlinearity of the devices. However, the Bit Error Rate (BER) is also detrimental and need to be characterized. So the BIST circuit is used in Orthogonal Frequency Division Multiplexing (OFDM) system for the measure of BER. In wireless communication the system performance is determined by the BER performance. It is increasingly believed that OFDM results in an improved downlink multimedia service require high data rate communications, but this condition is significantly limited by inter-symbol interference (ISI) due to the existence of the multiple paths. There are many multicarrier modulation techniques.

During digital data transmission and storage operations, performance criterion is commonly determined by BER. It is the ratio of the number of error bits to the number of total bits. Noise in transmission medium disrupts the signal and causes data corruptions. Relation between signal and noise power is described with SNR (Signal-to-Noise Ratio). Generally, SNR is explained with signal power/BER. It means, the less the BER result is the higher the SNR and the better communication quality. To meet the requirements discussed above, BIST circuit is used in OFDM based wireless communication system.

2. CONCEPT OF BIST IN TRANSCEIVERS

The increasing functional complexity of electronic components and system makes testing a demanding task, particularly under the constraints of high quality and low cost. The different test approaches have been developed to describe the circuit at different levels based on the existing variety of models. They are Functional testing, IDDQ test, Scan test etc. But compare to other testing methods BIST is more efficient and also consist of many advantages over testing. The basic architecture of BIST is shown in Figure 1 which consist of Input, CUT and Output

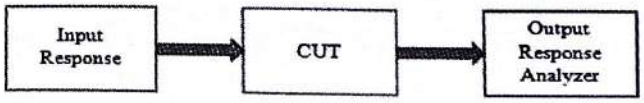

Fig-1: Basic BIST architecture

The above BIST architecture consist of three steps: The

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An Implementation of FPGA Based smart meter for Home Energy Management

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Abstract- ***Home Energy Management (HEM) for Smart Grid focuses on the power management on consumer side, where home appliances can be monitored and controlled to balance and optimize the power supply and consumption. Among various applications of Smart Grid technologies, Home Energy Management is probably the most important one to be addressed. HEM basically consists of smart meters, smart appliances and advanced control systems. The fundamental task of the HEM system is improving energy efficiency, data measurement, and transmission. The real-time consumption data gathered from each appliance of home are measured and transferred to a data concentrator and back to the utility and view of power consumption data and electricity pricing can be enabled in smart meter. Smart meter initiatives seek to enable energy providers and consumers to intelligently manage their energy needs through real time monitoring, analysis, and control. The energy efficiency communication needs of HEM systems on customer premises can be handled with ZigBee protocol. In this paper the new architecture of FPGA implementation of Home Energy Management for Smart Grid is developed. It estimates the energy consumption of appliances by measuring the voltage, current drawn by the appliances. The other function such as price predictor, communication to the consumer can also be performed in this architecture.***

Keywords: Home Energy Management (HEM), Smart Grid (SG), Field Programmable Gate Array (FPGA), Analog to Digital Converter (ADC), Smart meter.

1. INTRODUCTION

The electricity delivery systems of most countries were built almost 100 years ago, where electricity travels hundreds of thousands of kilometers from central power plants to consumers with major energy losses. The structure of the current power grid is not well suited to meet the future energy demand. Hence, the SG has become one of the most important items on the agenda of many governments and utilities, since it is the key to increasing the recognition of the current problems and meets the electricity demand.

Traditional power grids are being transformed into Smart Grids (SG) using advanced information control and communication technologies to offer higher reliability, security and efficiency in power systems. Smart Grid consists of smart meter for Home Energy Management via energy efficient communication technology. To support both dynamic pricing and a two-way flow of electricity between homes (or micro grids) and smart meters are being widely deployed. In Compared to conventional analog meters, smart meters measure power consumption at a much finer granularity.

Currently, the electricity meters are installed on consumer's premises and the consumption information is collected by meter-readers on their fortnightly or monthly visits to the premises. Meters in the past, and today in a few countries are electromechanical devices with poor accuracy and lack of configurability. Theft detection is also a challenge. This method of billing is also not suitable for the electricity supply company because it gives inaccurate account of the overall electricity consumption in Manuscript received Recent developments in this direction seem to provide opportunities in implementing energy efficient metering technologies that are more precise accurate and error free.

The proposed methodology overcomes the overcomes of the existing technology by developing efficient home energy management using smart meter architecture. In this method to design energy efficiency, and low complexity of smart meter for home energy management using smart grid communication based FPGA. The new architecture of FPGA implementation of smart meter is one method reading and processing consumed energy data of each home appliance automatically with computer and communication and also gives the accurate account of the overall electricity consumption through main wireless communication protocol, ZigBee is chosen as lower layer communication protocol. With these applications, the standard is optimized for low data rate, low power consumption, security and reliability.

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A New Architecture Using Polynomial Matrix Multiplication for Advanced Wireless Communication

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Abstract - *In this proposed system, a novel reconfigurable architecture for computing the Polynomial Matrix Multiplication (PMM) of polynomial matrices and/or polynomial vectors for application in Advanced Wireless Communication and an algorithm for computing the approximate polynomial matrix Eigen Value Decomposition (EVD) is introduced. The proposed algorithm exploits an extension of the fast convolution technique to multiple-input multiple-output systems. The proposed architecture is the first one devoted to the hardware implementation of PMM. The architecture, which is scalable in terms of the order of the input polynomial matrices, has been designed using the Xilinx system generator tool for advanced wireless communication. The application to sensor array signal processing is highlighted, in terms of strong de-correlation. The results are presented to demonstrate the accuracy and capability of the architecture. The performance results prove that the proposed solution gives low execution times while limiting the number of required resources. The parameters of the architecture are proved to be the best outcomes, when compared to the conventional approach in terms of Area, Power and Speed.*

Key Words: *PMM, EVD, SVD, etc...*

1. INTRODUCTION

Polynomial matrix techniques equivalent to the singular value decomposition and Eigen Value Decomposition (EVD) for scalar matrices have received growing interest in recent years. They have been successfully applied to broadband extensions of narrowband problems, which traditionally have been addressed by the EVD. Applications include broadband Sensor Array Signal Processing (SASP), biomedical engineering, Multiple-Input Multiple-Output (MIMO) communications and coding, and sub-band coding. The EVD of a para-Hermitian system, or Polynomial Matrix EVD (PEVD), yields a factorization of a para-Hermitian polynomial matrix into a product consisting of a diagonal polynomial matrix that is pre and post multiplied by Para Unitary (PU) polynomial matrices. A PU polynomial matrix preserves the total signal power at every frequency, and so can be viewed as a lossless (stable, all-pass) filter bank. McWhirter *et al.* propose an extension of the EVD to para-Hermitian polynomial matrices, called the second order Sequential Best Rotation (SBR2) algorithm. It was originally developed for the purpose of generating a Finite Impulse Response (FIR) PU matrix to diagonalize the paraHermitian polynomial matrix of signals received by a broadband sensor array.

2. ARCHITECTURE FOR POLYNOMIAL MATRIX MULTIPLICATION

The two fast MIMO convolution techniques described in this section are fundamental to the aim of applying hardware implemented PEVD algorithms, particularly SBR2P, to high-speed or real-time problems.

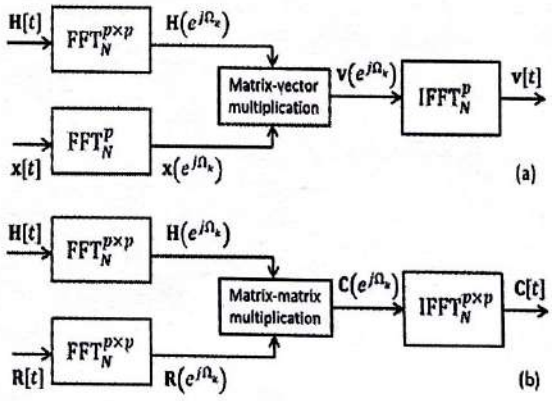

Fig 1: (a) matrix-vector PMM and (b) matrix-matrix PMM.

2.1 Parallel Algorithm for PMM

Introduce an algorithm for multiplication of polynomial matrices using the fast MIMO convolution technique. The algorithm starts by taking the FFT of the input polynomial matrices (or vectors), and proceeds with the conventional matrix multiplication of FFT-transformed matrices (or vectors), as in Fig. 1(b) [or Fig. 1(a)]. The parallel matrix-multiplication architecture was used as a

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FPGA implementation of an adaptive neuro fuzzy inference system for controller driven insulin injection system

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Abstract - *Diabetes is one of the pandemic diseases and causes 4 million deaths per year and ranks fifth by causing specific mortality in the most high-income countries. One should maintain the glucose concentration in blood, within the normal range (70-120 mg/dl or 3.6-6.9 mmol/L). Lower glucose levels (<50mg/dl) are said to be hypoglycemia, which is characteristized by excessive thirst, sweating, seizures and coma. Higher glucose levels (>200 mg/DL) are known as hyperglycemia, which leads to long term vascular complications, diabetic retinopathy, neuropathy, and nephropathy. The Diabetes Control and Complications Trail (DCCT), has stated that, strict glycemic control significantly reduces the short term and long term complications of diabetes. Self tuned insulin injection system becomes necessary to inject required amount of either insulin or glycogen based on the present condition of the diabetic patient. Developing and testing an intelligent control System is required to achieve the above task. An Adaptive Neuro Fuzzy Inference System (ANFIS) is proposed to read the glucose level of the diabetic patient to decide the displacement range of the injection pump and to generate the required control signal. The proposed ANFIS controlled System will be deployed in an experimental test bed (to be developed) as a closed loop controller to maintain the glucose level at the patient. Due to the nature of the control system. i.e low power, portable pipelined parallel computation, obviously FPGA(Field Programmable Gate Array)is the optimal choice. Therefore building a digital architecture inside the FPGA to implement ANFIS Suitable for this task and testing/validating its entire control action is the primary objective of the project*

Key words: Diabetes, Insulin pump, ANFIS, FPGA

1. INTRODUCTION

Diabetes is a metabolic disorder resulting from the permanent lack of insulin production from the pancreas (type 1 diabetes) or the chronic degradation of the functionality of endogenous insulin (type 2 diabetes), which results in raising the glucose concentration in blood because without insulin, the cellular system cannot properly convert carbohydrates such as sugars, starches, or other foods into energy usable by the body. These factors eventually result in several complications, such as cardiovascular disease, chronic renal failure, retinal damage, nerve damage, and micro vascular damage. People with type 1 diabetes cannot make insulin because the beta cells in their pancreas are damaged or destroyed. Therefore, these people will need insulin injections to allow their body to process glucose and avoid complications from hyperglycemia. Type 1 diabetes is a chronic life-threatening disease that is characterized by a total failure of the pancreas to deliver insulin, thereby rendering the body incapable of regulating blood glucose. An insulin pump is an alternative to multiple daily injections of insulin by insulin syringes. Insulin delivery is described as continuous; in reality the pump infuses a small bolus every few minutes to provide the cumulative hourly dose. Insulin pumps allow continuous subcutaneous infusion of insulin 24 hours a day at present levels, and the ability to program bolus doses of insulin as needed at meal times.

2. PROPOSED METHODOLOGY

An adaptive Neuro Fuzzy Inference System (ANFIS) is proposed to read the glucose level of the diabetic patient. It decides the displacement range of the injection pump and to generate the required control signal. The proposed ANFIS controlled System will be deployed in an experimental test bed (to be developed) as a closed loop controller to maintain the glucose level at the patient. The control system uses low power, portable pipelined parallel computation. Therefore building a digital architecture inside the FPGA to implement

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Data Gathering and Low Power Consumption in Sensor Nodes with Wireless Energy Transfer

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ABSTRACT

Wireless sensor networks provide a bridge between the real physical and virtual worlds .These devices are being used a lot in various applications in which there is a need for data gathering and it should be relayed to the mobile base station. The rapid progress of sensor networks in many applications is constantly fueling the quest for extending the lifetime of battery operated wireless sensor nodes. To overcome this problem a Wireless Charging Vehicle is used which will act as both a wireless charger and a mobile base station for wireless charging and data gathering. Wireless Energy Transfer (WET) technology helps to charge the batteries of sensor nodes without the use of wires. So that the power consumption is minimized so that the sensor node lifetime is enhanced. By predefined path planning the robots to collect the data from all sensors in the least amount of time. At last all collected information from various node transmitted to server from Robot.

Keywords— Wireless Energy Transfer, Data gathering, Wireless Sensor Networks, Wireless Charging Vehicle.

1. INTRODUCTION

In Recent years wireless sensor networks have been utilized in various automation process. The lifetime of sensor networks are limited due to the continues power consumption of the sensor nodes. Recent studies concentrate on reducing the amount of power it consumes without affecting the data gathering process. To overcome the energy constraint problem Wireless Energy Transfer (WET) technology have been widely used, It gives rise to electromagnetic radiation and magnetic resonant coupling. The magnetic resonant has some significant advantages such as no need of Line of Sight(LOS),immune to the environment, energy transfer efficiency is increased. Even though wireless, Wireless Energy Transfer need a mobile charging station that to be brought near the sensor nodes so that both charging and data gathering takes place. For his purpose a mobile robotic system that is wireless charging vehicle is designed. On the other hand data collection from sensor nodes should be considered. The mobile robot is equipped with wireless transfer coil and mobile robot with wireless receiver coil. When these both comes into a range an

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Fuzzy Control Based Renewable Energy Sources for DC Microgrid Applications using FPGA Platform with EMS

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ABSTRACT

The main objective of this proposed system is to provide uninterruptible power supply to the load. This proposed system mainly deals with the Energy Management System (EMS) of the DC microgrid systems, using the fuzzy logic control. This proposed system consists of the power sources, which obtains its power from the PV panels, Wind turbine, and fuel cells stack. The EMS incorporates the fuzzy control that is responsible for the Energy Management and Battery Management. The fuzzy maintains the State of Charge (SoC) parameters of the battery. The fuzzy logic implementation of this system was done by using the Field Programmable Gate Array (FPGA) .

Indexing terms/Keywords

Keywords: SoC, Fuzzy Logic Control, EMS, FPGA, Microgrid, Renewable Energy Sources.

Academic Discipline And Sub-Disciplines

Environmental Engineering or Environmental Chemistry, Electrochemistry.

SUBJECT CLASSIFICATION

Renewable Energy Sources

TYPE (METHOD/APPROACH)

Experimental analysis using FPGA platform and simulated in Fuzzy.

1. INTRODUCTION

The microgrid system consists of the power sources, storage system and regulator systems. The microgrid system consists of the intelligent controllers responsible for the energy management, and has the interconnected and grid connected loads. The architecture of the microgrid system are discussed [1]. The microgrid system exists in many countries and in university campuses. The microgrid research organization such as Electrical Power Research Institute (EPRI) in india, has done many research in microgrid as well as in the smart grid systems. The microgrid acts as a platform for the implementation of the distributed energy sources [2]. In Maldives, the microgrid system consists of the power sources, storage systems, intelligent controllers, and load systems, its architecture of the microgrid system in Maldives are discussed [3]. In Chicago, the microgrid system was installed in the university campus of Illanos; the architecture of the entire system was discussed [4].

The block diagram of the proposed system is shown in the fig.1. This proposed system consists of three major blocks: generation block, storage block, and regulator block. The generation block comprised of the generating system that obtains its power from the PV panel, Wind turbine, and fuel cells stack. The storage block consists of batteries, and regulator block consists of EB system: 3 phase, 440 volts, and 50Hz. These generating systems, storage systems, and the regulator systems are connected to DC grid through DC-DC converter, Bidirectional DC-DC converter (BDC), and Bidirectional AC-DC converter respectively. The Maximum Power Point Trackers (MPPT) are associated with PV, and Wind energy conversion system. The power generation by PV and wind are equally distributed to the load, battery, and to the EB system. When PV and wind fails to generate power, the battery delivers power to the load, and EB systems. The entire operation of this grid system are governed and coordinated by the EMS. The EMS commands the generation systems to operate in accordance with the demand of load, and SoC of the battery. The EMS is provided with RS 485 and ZigBee communication protocol, to know the generation status, and SoC of the battery. The hardware implementation of the EMS is done by the FPGA platform.

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Implementation and Control of Multiple Input Single Converter Battery Charger for DC NANOGRID Applications

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***Abstract*- In this paper a Multi input single converter battery charger is presented. Nowadays due to power failure, there is a great usage of UPS systems in our homes or in industries which leads to a great problem to the consumers. The amount of DC loads used in our buildings such as computers, televisions, mobile phones, induction based appliances and other electronics are increasing day by day. To meet out the concern renewable power and storage have made DC based distribution an attractive alternative solution. By using dc sources it is necessary to use converters. If using multiple sources it need separate converters for each stage. This multi input single converter reduce the system size and cost by reducing the number of components. In addition some other advantages are the system is reliable and its dynamic performance due to centralized control. The system is suitable for applications such as hybrid automobile charging and in residential buildings. The design circuit, performance of different operating modes, simulation results using Proteus software is presented here.**

***Index Terms*- Renewable energy sources, DC-DC converter and PI controller.**

I. INTRODUCTION

Energy is a fundamental aspect to people's life, and is essential not only for individuals but also the fact for various sectors. It can be supplied from various resources which can be divided into two categories; renewable and non-renewable sources. Typical examples of non-renewable energy sources are petroleum, coal, and natural gas. As for renewable sources, these include energy generated from wind, solar, wave, fuel cell, geothermal, biomass and hydro. Both renewable and non-renewable energy sources can be used to produce energy sources including electricity and hydrogen. Solar and wind energy which are non-pollution, free in their availability and renewable are considered as a promising power sources. In recent days, the number of applications which require more than one power source is increasing. Distributed generating systems or micro-grid systems normally use more than one power source or more than one kind of energy source. Also, to increase the utilization of renewable energy sources, diversified energy source combination is recommended. The combination of more power sources and diversified power sources make it possible to obtain higher availability in a power system. Nowadays power electronics is covering a wide range of industrial and commercial applications, including computers, mobiles, and telecommunication, aircraft, and transportation, information processing and power utilities. Renewable energy usage has been increasing day by day scenario. And by the parallel connection of converters has been used to integrate more than one input energy source in a power system. However this converter can generally have the following advantages compare to a combination of several individual converters like cost reduction, compactness, more expandability and greater manageability. Consumption of electricity has been rising at fastest rates in the world owing to growing population and economic development. Our economy has been put forth to increasing

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Implementation of Hybrid Bi-Directional Dc/Dc Converter in MICROGRID

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***Abstract*- High efficiency power is attained using hybrid bidirectional DC-DC converter in micro-grid system Hybrid bidirectional dc/dc converter is based on photovoltaic (PV) and wind system that are driven by permanent magnet synchronous generator are fed to the grid through common single boost converter. A battery that connected to the bidirectional dc/dc converter charges from grid and discharges through grid to the load. Model of the proposed scheme in d-q axes reference frame is developed. Steady-state performance of the system and transient response of the controllers are also presented to demonstrate the successful operation of the new hybrid system. Simulation results are given to validate the simulation model.**

Keywords: Bidirectional dc/dc converter, boost converter, micro grid, Photovoltaic, wind system.

I. INTRODUCTION

The electricity requirements of the world including our nation are ever-increasing at frightening speed and the power demand has been running at the forefront of supply. It is also now widely known that the renewable and non- renewable energy resources, presently being used for generation of electrical energy, are not sufficient to bare the demand of electrical energy of future needs. We need to solve this problem by developing a new kind of hybrid system to generate electricity which provides energy for 24X7 hours with power quality and pollution free. With increasing concern of global warming and the depletion of fossil fuel reserves, many are looking at sustainable energy solutions to preserve the earth for the future generations. Wind and photovoltaic energy holds the most potential to meet our energy demands. Wind energy is capable of supplying large amounts of power but it is predictable by turbine only at 12m/sec. Similarly, solar energy radiation throughout the day vary due to sun intensity and unpredictable shadows cast by clouds, birds, trees, etc. As the wind and photo voltaic system depends on meteorological conditions, we cannot fully depend on them, because of their reliability. However, by combining these two intermittent energy sources and by incorporating Maximum Power Point Tracking (MPPT) algorithms, the systems power transfer efficiency and reliability can be improved significantly. The rest of the paper is organized as follows: section II describes the background and related works; section III describes about the proposed hybrid system.

II. BACKGROUND AND RELATED WORK

Corresponding to developing technology, demand of energy makes us seek new energy sources. Wind and solar energy have being popular ones due to its availability and convertibility to the electric energy. Prior work covers under a microcontroller to utilize the solar and wind power and implemented in accordance with available line-electricity. Batteries are charged by either wind power or solar power. The whole System control confide mainly on microcontroller. Separate boost converter is connected to solar and winds to step up the voltage. Large number of power converters is used to

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Simulation of Three Phase Five-Level Neutral Clamped Inverter (NPC) for Induction Motor

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***Abstract*-This paper presents a control for a three phase five-level neutral clamped inverter (NPC) for induction motor connected. The maximum power point tracking (MPPT) is capable of extracting maximum power from the each DC link voltage level. The MPPT algorithm is solved by fuzzy logic controller. The fuzzy MPPT is integrated with the inverter so that a DC–DC converter is not needed and the output shows accurate and fast response. A digital PI current control algorithm is used to remain the current injected into the induction motor sinusoidal and to achieve high dynamic performance with low total harmonic distortion (THD). The validity of the system is verified through MATLAB/Simulink and the results are compared with three phase three-level grid connected NPC inverter in terms of THD.**

***Index Terms*- Three phase five-level neutral clamped inverter; Maximum power point tracking (MPPT); Total harmonic distortion (THD)**

I. INTRODUCTION

In recent years, the use of direct current energy resources instead of pollutant fossil fuels and other forms has increased. Any generation is becoming increasingly important as a direct current resource since it does not cause in fuel costs, pollution, maintenance, and emitting noise compared with other alternatives used in power applications. Higher power equipment's require higher voltages, which limit the maximum DC voltage level.

Therefore a new family of multilevel inverters has emerged as the solution for solar applications, as the DC is directly connected to each level of the DC link. Different types of topologies are presented in the literature (Rodriguez et al., 2002; Cloak et al., 2011). This paper uses the NPC topology since. Capacitance (Hussein et al., 1995), constant voltage (Hsiao and Chen, 2002), neural network (Hisami and Kitabayashi, 1997), it has the advantages such as:

(i) DC-link capacitors are common to three phases.
(ii) Switching frequency can be low and
(iii) Reactive current and negative phase sequence current can be controlled.

Several methods of modulation techniques such as selective harmonic elimination PWM, sinusoidal PWM, space vector modulation, sigma delta PWM, closed loop modulation techniques exist to control the inverter (Cloak et al., 2011).

The amount of power generated by a PV generator depends on the operating voltage of the PV array. The maximum power operating point changes with insolation level and temperature. The PV system operates at its highest efficiency at the maximum power point (Villella et al., 2009a). In

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A STUDY ON SELF-MONITORING GLUCOSE SENSING WITH MULTI-PARAMETRIC SURFACE PLASMON RESONANCE

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***Abstract*- Diabetes is a metabolic disease and in an ideal diabetic diet, a number of factors must be taken into consideration, including the amount and type of carbohydrates consumed as well as the amount of fiber, fat, and protein contained in foods. Glycemic index and glycemic load are further considerations. Foods with low glycemic index and load raise blood sugar more slowly than high glycemic index / load foods. In turn the glycemic index refers to a standardized measurement, while glycemic load takes a typical portion size into account. The total daily calories are evenly divided into three meals. By the Electrochemical Glucose Measurement electrically coupling glucose oxidase to nanoscale carbon structures modulates the electrical resistance of the structures. Many researches do their work on all add-on devices that could allow the smart phone to take pregnancy tests or monitor diabetes. A smart phone can be combined with a tiny sensor and wearable insulin pump, for pancreas to monitor the blood-sugar levels and to deliver insulin as needed. So this can be the future to monitor the diabetes foe evaluating the treatment. One among the technique is Multi-Parametric Surface Plasmon resonance (MP- SPR) binding analysis methodology is used to study molecular interactions The Biosensor can determines the presence and concentration of a specific substance in any test solution. Biosensors can be incorporated with the add-on devices and it can be monitored according to the necessary period of time .With this usage we can have the better sensitivity, reproducibility, and easy maintenance as well as their low cost.**

***Index Terms*- Blood glucose, Diabetes mellitus, Electrochemical Glucose Measurement, Self-monitoring of blood glucose, MP-SPR Biosensor**

I. INTRODUCTION

A biosensor is a device that combines a biological recognition element together with a transduction system for the detection of a specific analytic. The biological component can comprise species such as a redox protein or enzyme, an antibody, a whole cell or a DNA strand and serves the purpose of imparting specificity to the sensor. The first biosensor, for the measurement of glucose was developed by Clark in 1962 and subsequently developed commercially with the first product released in 1973. Later then there have been an enormous number of reports on biosensors [3].

Biosensors are analytical tools for the analysis of bio-material samples to gain an understanding of their bio-composition, structure and function by converting a biological response into an electrical signal. The biological response of the biosensor is determined by the bio catalytic membrane which accomplishes the conversion of reactant to product. Immobilized enzymes possess a number of advantageous features which makes them particularly applicable for use in such systems. They may be re-used, which ensures that the same catalytic activity is present for a series of analyses. In an electrochemical cell, the oxidation can take place at the surface of an electrode, releasing electrons into an electrical circuit, which can be measured as a current [1].

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Smart Tracking Systems for Domestic Consumers

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Abstract – **The inspiration to oversee vitality use at private home in India is impacted by financial matters condition and specialized reasons. Monetarily, it offers diminishment of government appropriations and power charge. The earth condition perspective empowers lessening of CO2 level. We can restrain the power supply to the home by pre-default setting the incentive to be expended, so vitality can be overseen by restricting. The power administration framework is comprises of Digital Power meters introduced in each buyer unit and an Electricity e-Billing framework at the vitality supplier side. Remote sensor system to send its energy use perusing utilizing data back to the vitality supplier remotely. At the power supplier side, they have the control to change need of the gadgets when power circulated in low range. Human administrator charging or inclined to perusing mistake as at some point the houses electric power meter is place in an area where it is not effortlessly open. The idea of element task of needs to hinders is talked about which lessens the time delay for a lower need errand which under a few conditions turns into a higher need undertaking. Cutting of interfere with timings is additionally talked about which can be utilized to enhance the execution. The most elevated need assignment is adjusted more number of times and with lesser day and age. Subsequently it require not sit tight for the slack time of other already higher need intrudes. In the event that power will be less in framework, naturally power will be oversee. Our proposed framework when low power era consequently goes to power administration. Every one of the gadgets controlled relies on the need based and timing based control the gadgets when low power era.**

I. OVERVIEW OF EMBEDDED SYSTEMS

An inserted framework is an extraordinary reason PC framework intended to perform one or a couple devoted capacities, frequently with ongoing registering imperatives. It is typically inserted as a feature of an entire gadget including equipment and mechanical parts. Conversely, a broadly useful PC, for example, a PC, can do a wide range of assignments relying upon programming.

Inserted frameworks have turned out to be essential today as they control huge numbers of the basic gadgets we utilize. Since the inserted framework is committed to particular errands, outline architects can upgrade it, lessening the size and cost of the item, or expanding the unwavering quality and execution. Some implanted frameworks are mass-delivered, profiting by economies of scale. Implanted frameworks go from compact gadgets, for example, computerized watches and MP3 players, to substantial stationary establishments like activity lights, processing plant controllers, or the frameworks controlling atomic power plants. Multifaceted nature differs from low, with a solitary microcontroller chip, to high with various units, peripherals and systems mounted inside a huge frame or fenced in area.

As a rule, "implanted framework" is not a precisely characterized term, the same number of frameworks have some component of programmability. For instance, Handheld PCs impart a few components to installed frameworks, for example, the working frameworks and chip which control them however are not really inserted frameworks, since they permit distinctive applications to be stacked and peripherals to be associated.

FPGA based Interleaved Bidirectional Converter for Electric Vehicle

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Abstract — **This paper explores about the implementation of a hybrid energy storage system (HESS) utilizing ultra capacitors (UCs) to secure the batteries of an electrical vehicle (EV) from high-peak currents , also elongate their lifetime. An interleaved bidirectional buck–boost converter working in a discontinuous conduction mode(DCM), which is designed to transfer the energy between the batteries and the UCs. The interleaved converter is designed and developed in MATLAB® Simulink platform and results are obtained. The frame work prototype is developed and implemented using FPGA Spartan – 3. The FPGA is responsible for engendering all the converter gate signals and implements the control needed to inhibit the battery current within a safe value. The control strategy is predicated on dividing the current demand of the motor into two parts (high-frequency current and low-frequency current), the batteries supply the low frequency part and the UCs supply the high-frequency part. This balancing of energy transfer reduces the high current demand and increases the life time of the battery.**

Keywords—Interleaved Converter, Field Programmable Gate Array, Buck Converter, Boost Converter, Hybrid Energy Storage System, Ultra Capacitor.

I. INTRODUCTION

Due to the increasing concern for environment protection and the uncertainty about oil reserves, now a day's electricity is playing a key role as an alternative energy source in the automotive sector. Using an Electric Vehicle (EV) reduces significantly the daily travelling costs because the maintenance and operation costs of these vehicles are lower than the conventional ones. Electric vehicles are propelled by one or more electric motor using electrical energy stored either in batteries or from other energy storage device. Electric motors give instant torque, developing strong and smooth acceleration. During Acceleration, Start-Stop driving cycles and some overheating or corrosion will leads to the Battery peak currents in Electric Vehicle. Reducing the high peak currents leads to the battery life extension. Ultra Capacitors are connected in parallel with the batteries act as a low pass filter, limits the battery current within a safe value in turn extending the battery life span. On Combining high energy density batteries and high power density UCs in hybrid electric vehicles (HEVs) results in an efficient performance with reduced volume [1]. Ultra capacitors that uses pseudo capacitive or battery-like materials in one of the electrodes with micro porous carbon in the other electrode to increase the energy density of the devices. The UCs are connected to the ZEBRA battery and to the traction inverter through a buck–boost type DC–DC converter, manages the energy flow allowing an excellent performance during acceleration and regenerative braking period in an Electric Vehicle [2]. HESS is designed with a combination of batteries and UCs; protect the batteries from high peak currents, combined with Vehicular technology is the recent trend in automotive field. In this paper, FPGA controller based interleaved bidirectional buck–boost converter working in discontinuous conduction mode for electric vehicles, is designed to transfer energy from batteries and UCs. The FPGA algorithm engenders control signal for the converter solid state switches and implements the control stage needed to smooth the battery current peaks. [5] discussed about an eye blinking sensor. Nowadays heart attack patients are increasing day by day."Though it is tough to save the heart attack patients, we can increase the statistics of saving the life of patients & the life of others whom they are responsible for.

II. PROPOSED SYSTEM

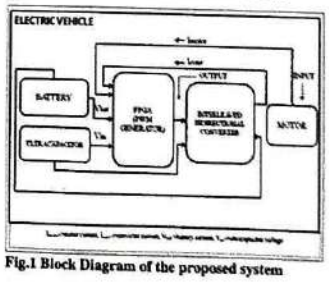

Fig.1 Block Diagram of the proposed system

An Interleaved DC-DC converter is adopted to transfer the energy between batteries and UCs, as a good

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Arduino Based Sun Positioning for Linear Fresnel Solar Concentrating System with Horizontal Absorber and Varying Width Reflectors

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ABSTRACT

Recently, solar energy is one of key renewable energy resources and is gaining prominence rapidly. Solar energy can be made more viable by maximizing the efficiency of solar thermal systems. Solar tracking can be incorporated into the existing solar systems to yield a realistic solution and to maximize the energy efficiency. The solar thermal system can gain optimal energy during the day when the Sun's rays hit the system perpendicularly, since it receives maximum sunlight. The objective of this paper is to position the solar thermal system with respect to the Sun's movement. In this paper, an embedded system based design is proposed for the one-axis solar-tracking mechanism for the linear Fresnel reflector solar concentrating (LFRSC) system. A geared stepper motor controlled by an Arduino micro-controller is utilized to track the current position of the Sun using sensors. The LFRSC system is connected to the Arduino controller, which positions the solar tracker. The position of the solar tracker is adjusted using the input from two photo-resistors. Due to environmental conditions, sunlight may not fall on both the sensors. Under this circumstance the solar tracker is positioned accurately using the sun positioning algorithm (SPA). The accuracy of the tracking system is verified with the help of a control system. The proposed automatic tracker can be implemented with minimized cost and can yield a reliable structure for LFRSC system.

Keywords: solar energy, LFRSC system, sensors, one-axis tracking, arduino controller, stepper motor, tracking accuracy.

1. INTRODUCTION

Renewable solar energy can be proficiently used uniquely for obtaining concentrated solar power. Commercially accessible concentrated solar power innovations include solar tower, parabolic trough, dish-stirling engine, and linear Fresnel solar system. Among these liner Fresnel solar system is a pervasive technology for solar thermal power systems of larger scale due to its low implementation cost.

Line focusing, linear Fresnel reflector (LFR), utilizes modular and flat mirrors that focusses the Sun's radiation onto the tubular absorber. The absorber through which water flows is long and elevated. Hot water is produced by the focusing sunlight on to the tubular absorber. The heated water is saturated or is heated more to generate steam for utilization in industrial applications or the steam Rankin cycle.

The Earth revolves around the polar axis and its rotation is depicted by the celestial sphere's revolution with respect to the polar axis. The position of the Sun at any given time is specified using hour angle, which is defined as the angle between the meridian that passes through the Sun and that of the site. At solar noon, the value of the hour angle is zero and it increases as we move towards East. A more convenient coordinate

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Theoretical Comparative Study of Mirror Width on the Performance of Horizontal Receiver LFRSC

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Abstract- A Linear Fresnel reflector Solar concentrating (LFRSC) system consists of number of flat mirrors kept on a horizontal base at a certain tilted angles, which reflects the sun's rays into a central receiver held above them. In this paper, we have made a comparative study between two different LFRSC systems with tubular absorber. The first LFRSC system has reflector plates of same width and the second system has reflector plates of varying width. The objective of this paper is to find the optimum design parameters for each case and to find the best between the two the systems. By varying various design parameters like width of the reflector plates, shift between the plates, the height of the receiver tube from the reflector plane and diameter of the receiver tube, calculations were done. The solar flux is considered to be a constant of 0.6 kW/m^2 and the reflector plates are assumed to be made of glass (ρ=0.98). Concentration ratio and concentrated flux are determined for each case and graphs are plotted for comparison. Results show that the LFRSC system with same width plates has better efficiency (C.P = 3.15 kW and C.R= 103.3) than those with varying width plates, while considering optimum design parameters of height from reflector plane, width of the plates and diameter of the receiver tube as 1.5 m, 0.03 m and 0.015 m respectively for a certain range considered.

1. INTRODUCTION

Dissertation Idea:

With the decrease in fossil fuel supply and increase in population and global warming threats people are now looking for ways to harness non-conventional sources of energy. Considerable attention has been paid of late to develop linear Fresnel reflecting concentrators for thermal and photovoltaic conversion of the solar energy. Solar energy is a renewable energy which can be efficiently utilized, specially the concentrated solar power; the commercially available concentrated solar power technologies are solar tower, parabolic trough, dish-stirling engine and linear Fresnel solar system. Liner Fresnel solar system is currently low cost and widely spread technology for large scale solar thermal power.

Linear Fresnel Reflector (LFR) is a line-focusing system. A typical LFR uses modular, flat mirrors that track the sun to focus the sun's heat onto long, elevated tubular receiver (absorber) through which water flows. The concentrated sunlight boils the water in the tubes, generating hot water, saturated or superheated steam for use in power generation in steam Rankin cycle for instance or for process heat in industrial applications.

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Image Retrieval using Generalized Gaussian Distribution and Score based Support Vector Machine

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Abstract

Objectives: Retrieving images from huge volumes of image database has its application in broad areas like medicine, agriculture, military etc. Annotation based approaches have become obsolete because they are time consuming and cannot describe the image effectively. The rich content in the images can overcome the limitations of annotation based techniques. Texture is the most vital visual cue used to analyze images. **Methods:** In the proposed technique, the image texture features are statistically represented using Generalized Gaussian Distribution in the wavelet domain. A linear score based Support Vector Machine is incorporated to identify analogous patterns to the query image from the database. **Findings:** The efficacy of the proposed algorithm is ascertained by conducting extensive experiments. Two texture image database of size 1400 and 1920 is used for our experiment. The proposed algorithm is verified in terms of average recall performance against the standard benchmark algorithms. It is observed that the proposed score based SVM yields higher precision and flexibility in separating the similarity within the classes and dissimilarity across different classes. **Improvements/Applications:** Compared to the traditional approaches, the retrieval rate of this method is improved by 30% at a considerably low computational complexity.

Keywords: Generalized Gaussian Distribution, Support Vector Machine, Texture Retrieval

1. Introduction

Spatial variation in pixel intensity and orientation called as image texture is often valuable for a variety of applications like classification and recognition of image regions. Textural information is chiefly utilized for texture classification, segmentation and texture synthesis. Texture classification produces a classification map in which textured regions in the input image are recognized with the appropriate category it belongs to. Segmentation of texture is the second category of issue that texture analysis tries to find the solution. Segmentation of textures is used to obtain a boundary map when classification of textured surfaces cannot be carried out. Synthesis of texture is often used for compressing images as well as in graphics to render object surfaces as genuine as possible. The texture features are often distorted by imaging process and the perspective projection. Object's surface texture is dependent on several factors, like the spatial dependence between the vital textural components, orientation and scale. Spatial and as well as scale texture properties are vital attributes in analyzing remote sensing images, here differences like rock surface, sea-ice surface, sea water surface, foliage, urban areas, etc. can be categorized by distinctive textural features[1]. Texture analysis of images may be considered either from statistical point of view solely or from traditional computer-vision approach[2]. Spatial information can be precisely modeled using computer-vision based approaches. In[3], the remotely sensed images are analyzed by extracting features using gray level

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Influence of Polythiophene - Anthraquinone Sulphonic Acid (PTh-AQSA) Nanopowder on Corrosion Inhibition of Mild Steel in HCl Solution

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Abstract-**A new and effective polymeric corrosion inhibitor, Polythiophene-Anthraquinone sulphonic acid PTh-AQSA has been prepared and characterized by UV-Visible and FTIR spectroscopy studies. Its influence on corrosion inhibition of mild steel in 1N HCl solution was studied using chemical and electrochemical techniques. It was found that the inhibition efficiency increased with the increase of PTh-AQSA upto 700ppm and beyond this concentration, its inhibition efficiency was decreased from 95.2 to 93.1%. It indicates that 700ppm is the optimum concentration to get maximum corrosion protection for mild steel 1N HCl solution. The results obtained from chemical and electrochemical measurements are in reasonably good agreement. The potentiodynamic polarization studies revealed that PTh-AQSA act as mixed type inhibitor. Adsorption of PTh-AQSA on mild steel surface follows Langmuir adsorption isotherm. The surface characteristics of the inhibited and uninhibited mild steel were investigated by scanning electron microscope studies.**

Keywords: Corrosion inhibitors, Mild steel corrosion, Polythiophene-Anthraquinone sulphonic acid, Langmuir adsorption isotherm, mixed type inhibitors.

I. INTRODUCTION

Acid solutions are widely used in industries for picking, acid cleaning of boilers, descaling and oil-well acidizing etc. to control the rate of undesirable base metal corrosion, corrosion inhibitors are employed [1]. Research activities over a century have brought tremendous advances in the field of corrosion inhibitors. To minimize the percentage metal loss during this process, various compounds such as acetylenic alcohols, indoles, thiourea derivatives, dithiazones etc. are widely used [2-5]. Among these, thiourea and its derivatives are found in commercial formulations, but because of their toxic nature their use is not safe. There is a great need to find a non-toxic replacement that is compatible with current industrial technologies. In the last two decades, there has been an increase in the use of polymeric compounds as corrosion inhibitors. Intrinsically, conducting polymers were tried as corrosion inhibitors [6].Conducting polymers should offer better corrosion inhibition efficiency than simple organic compounds due to their inherent polar nature. The conducting polymers are rich in electrons due to the presence of long π-electron conjugations and hence, can effectively adsorb on the metallic surfaces [7]. The literature reveals that a wide range of polymeric compounds have been successfully investigated as potential inhibitors for the corrosion of metals in aggressive media [8]. In continuation of our guest for development of corrosion inhibitors with high inhibition efficiency, the present investigation aims at the utilization of PTh-AQSA as corrosion inhibitor for carbon steel in 1N HCl solution and its corrosion inhibition performance has been studied using chemical and electrochemical methods and their results are discussed.

II. EXPERIMENTAL

2.1 Material Preparation

Carbon steel strips of size 4.5cm × 2cm× 0.2 cm containing 0.14% C, 0.35% Mn, 0.17% Si, 0.025% S, 0.03% P and the remainder Fe were used for weight loss and gasometric methods. For electrochemical studies, carbon steel strips of the same composition coated with lacquer with an exposed area of 1 cm^2 were used. Mild steel strips were polished mechanically with emery papers of 1/0 to 4/0 grades. They were subsequently degreased with trichloroethylene before use. Analytical reagent grade HCl (Merck) and double distilled water were used for preparing test solutions for all experiments.

2.2 Synthesis of PTh-AQSA Nanopowder

Polythiophene-Cittic acid acid (PTh- AQSA) nanopowder was prepared by cationic surfactant assisted dilute polymerization method. In this method, thiophene monomer (0.1mol) was added drop by drop into 20 mL of chloroform containing 0.014 mol of surfactant (CTAB) and 0.4 mol of anhydrous $FeCl_3$ and 0.1 mol of anthraquinone sulphonic acid under stirred condition under stirred condition. The ratio of [monomer]/[surfactant] was kept about 7/1 [9].The polymerization process was identified by changing the colour of reaction mixture into brown. The polymerization was allowed to continuous stirring for 24 hr at 30°C. The dark-brown PTh-AQSA nanopowder was collected by filtration of reaction mixture using distilled water with methanol until colourless filtrate was obtained. The PTh-AQSA powder was dried under a vacuum oven at 80°C for 6 hr. The synthesis of PTh-AQSA as shown in Fig. 1.

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270

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271

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Mathematical Model of P53 Gene in Gene Therapy Treatment for Lung Cancer

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Abstract— The TP53 gene, which encodes p53, is one of the most frequently mutated genes in human cancers. It is reported that approximately half of all cancers have inactivated p53 [1]. The p53 protein has broad range of biological functions, including regulation of the cell cycle, apoptosis, senescence, DNA metabolism, angiogenesis, cellular differentiation, and the immune response. Gene therapy is the insertion of a functional gene into the cells of a patient to correct an inborn error of metabolism, to alter or repair an acquired genetic abnormality, and to provide a new function to a cell. Gene therapy for the treatment of cancer has a wide variety of potential uses. Gene therapy is an experimental treatment currently being tested in clinical trials that involves introducing additional genetic material (either DNA or RNA) into cells to fight cancer in a few different ways.

Key words: Metabolism, Chromosomes, DNA, Apoptosis

I. INTRODUCTION

Chromosomes contain the recipe for making a living thing. They are found in almost every cell's nucleus and are made from strands of DNA. Segments of DNA called "genes" are the ingredients, and chromosomes are the structures that contain all the genes. Genes are located on chromosomes inside all of our cells and are made of DNA. Each gene adds a specific protein to the recipe. Proteins build, regulate and maintain your body. For instance, they build bones, they enable muscles to move, they control digestion, and they keep your heart beating. It is thought that we have about 20,000 genes in our cells that code for all of our traits. Your genes make you what are, they decide virtually everything about you. Your genes are passed from one generation to the next via your children. We have 46 chromosomes in total; each child receives 23 chromosomes from its mother and 23 from its father. Unfortunately, genes can become damaged, we can suffer illness or even pass this illness to the next generation.

Cancer is a major cause of death worldwide, resulting from the uncontrolled growth of abnormal cells in the body. Cells are the body's building blocks, and cancer starts from normal cells. Normal cells divide to grow in order to maintain cell population equilibrium, balancing cell death. Cancer occurs when unbounded growth of cells in the body happens fast. It can also occur when cells lose their ability to die. There are many different kinds of cancers, which can develop in almost any organ or tissue, such as lung, colon, breast, skin, bones, or nerve tissue. There are many known causes of cancers that have been documented to date including exposure to chemicals, drinking excess alcohol, excessive sunlight exposure, and genetic differences. However, the cause of many cancers still remains unknown. The most common cause of cancer-related death is lung cancer[1]. Cellular cancer therapy currently largely involve the infusion of immune cells designed to either (i) replace most of the patient's own immune system to enhance the immune response to cancer cells, (ii) activate the patient's own immune system (T cells or Natural Killer cells) to kill cancer cells, or (iii) to directly find and kill the cancer cells. Moreover, genetic approaches to modify cellular activity further alter endogenous immune responsiveness against cancer.

II. GENE THERAPY FOR CANCER

Humans have approximately 35,000 genes. The first p53-based gene therapy was reported in 1996. A retroviral vector containing the wild-type p53 gene under the control of an actin promoter was injected directly into tumors of non-small cell lung cancer patients. After development of a replication-defective recombinant p53 virus (Ad5CMV-p53), many clinical trials have been performed, including one in esophageal cancer patients. The science of genetic manipulation has opened the possibility for doctors to treat and prevent cancer by altering a patient's genes. This experimental treatment is known as "Gene therapy" [4].

First, scientists are attempting to use gene therapy to replace missing or mutated genes with healthy genes (for example, p53). Second, scientists are attempting to put genes into tumors that act like suicide bombs once they are turned on by drugs that are administered to the patient. Similar to the suicide genes, a third approach is to insert genes that make tumors more susceptible to treatments such as chemotherapy and radiotherapy. And finally, gene therapy is being used to improve the immune response to cancers by enhancing the ability of immune cells, such as T cells, to fight cancer cells[1]. Several methods such as surgery, radiation, and chemotherapy have been used to treat cancers. The cancer patients who are not helped by these therapies may be treated by gene therapy. Gene therapy is the insertion of a functional gene into the cells of a patient to correct an inborn error of metabolism, to alter or repair an acquired genetic abnormality, and to provide a new function to a cell[4].

Gene therapy for the treatment of cancer has a wide variety of potential uses. There are several potential strategies for gene therapy in the treatment of cancer. Strategies of gene therapy for cancer enhancing the immunogenicity of the tumor, for example by introducing genes that encode foreign antigens[2].

1) Enhancing immune cells to increase anti-tumor activity, for example by introducing genes that encode cytokines.
2) Inserting a "sensitivity" or suicide' gene into the tumor, for example by introducing the gene that encodes HSVtk.

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Review of Different Method to Synthesis Graphene/Metal Hydroxide Used in Super capacitors

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Abstract– The increase in energy demand, due to rapid industrial development and growing human population, along with, the global energy consumption has been accelerating at alarming rate. At current consumption rate, global energy exhaustion will become in evitable. To prevent disaster caused by energy exhaustion, the need for renewable energy sources has attracted tremendous attention around the world. In order to make the effective use of renewable energy, it is important to develop high-performance, low cost, and environmental-friendly energy conversion and storage systems. Super capacitors are the systems required for promising electrochemical energy conversion and storage.

Super capacitor has been recognized as a very promising new energy storage device due to its high power density and long cycle life. Carbon materials, metal hydroxides and conductive polymers are three more commonly utilized electrode materials for supercapacitors. The combination of the cycling stability of graphene and high capacity of metal hydroxide provides the graphene/metal hydroxide composite superiors performance. Consequently, significant research interest has been directed into the research of the graphene/metal hydroxide composite. Graphene has a good base material for energy conversion and storage applications, good electrical conductivity and high surface area. Graphene could provide conductive pathway in graphene/metal hydroxide composites. The interaction between graphene and metal hydroxide is prone to improve supercapacitor performance. Metal oxides/Metal hydroxide palys as not only spacer to expand the surface area of graphene but also its redox reaction to add more capacitance. The expanded surface of graphene makes ions easy to diffuse and provides conductive channel for efficient electron transfer by reducing the resistance. The proposed Graphene/Metal hydroxides will enhance the electrochemical performance of supercapacitors which would be a next-generation low cost, high-performance energy storage device.

Keywords– *Metal hydroxide, Graphene, conducting polymer, supercapacitor*

I. INTRODUCTION

The increasing demand for energy and growing concerns about air pollution and global warming has stimulated intense research on energy storage and conversion from alternative energy sources[1-3]. Supercapacitors are considered as a promising candidate for energy storage due to high power performance, long cycle life, and low maintenance cost[4-6]. Super capacitors has a ideal for applications that require short-term power boosts, such as emergency power supplies and peak power assistance for batteries in electric vehicles, it is highly desirable to increase the energy density of supercapacitors to approach that of batteries, which could enable their use as primary power sources.

Pseudocapacitive materials such as hydroxides[7-10], oxides[11-20] and polymers[21-23] are being explored for producing supercapacitors with increased specific capacitances and a high energy density. However, such "pseudocapacitors" often result in compromises of rate capability and reversibility because they rely on faradic redox reactions and the active materials are typically too insulating to support fast electron transport required by high rates. Graphene is a two-dimensional material with high surface area and electrical conductivity, high flexibility, and mechanical strength and is light weight. Graphene is an ideal single-atom thick substrate for growth of functional nanomaterials to render them electrochemically active and electrically conductive to the outside current collectors. Recent works have shown Li ion battery and supercapacitor applications of oxides[24, 25] and polymers coupled with reduced graphite oxide (GO). However, graphite oxide remains highly resistive even after reduction, which is not optimal for energy storage applications. Boosting the performance of graphene based energy storage by growing nanomaterials with well-defined morphology and crystallinity on highly pristine and electrically conducting graphene remains a major topic of interest.

In this review, different method to synthesis Graphene/Metal hydroxides will enhance the electrochemical performance of super capacitors which would be a next-generation low cost, high-performance energy storage device.

II. DIFFERENT METHOD TO SYNTHESIS OF METAL HYDROXIDE

A. Precipitation method

A certain amount of rare earth oxides (99.99%) was completely dissolved in concentrated HNO_3, and evaporated to dryness, to remove the excess HNO_3. The rare earth nitrates obtained were dried by a desiccator pumped for 4 h and then dissolved in alcohol, forming an alcoholic solution of 0.2 mol/L. This solution was added drop wise into an alcoholic solution of 2 mol/L ammonium hydroxide at the rate of 4 mol/min, which was vigorously stirred at 50±^{O}C. The final pH value of the solution was greater than 9. The precipitates were filtered and washed with acetone for three times, dried in a vacuum desiccator for 10 h, and further dried in an oven at 100±^{O}C for 12 h. The rare earth hydroxides nanoparticles were obtained. The rare earth oxides nanoparticles could be obtained when the relevant rare earth hydroxides were calcined at different temperatures [26]. Wang et al., reported a two-step method to grow $Ni(OH)_2$ nanocrystals on graphene with various degrees of oxidation including lightly oxidized, highly conducting graphene sheets (GS)[27]. The morphology, size, and crystallinity of the nanocrystals can be tuned by the surface chemistry of the underlying graphene substrates. $Ni(OH)_2$ has been a primary electrode material in alkaline batteries. It is also an attractive candidate in supercapacitor applications due to its high theoretical specific capacitance, well-defined redox behavior, and low cost. Patil reported that Nanostructured pseudocapacitive materials decorated 3D graphene foam electrodes for next generation supercapacitors[28].

More on the Diophantine Equation $27^x + 2^y = Z^2$

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Abstract— In this paper, we show that (0, 3, 3) is a unique non-negative integer solution for the Diophantine equation, $27^x+2^y=z^2$, where x, y and z are non-negative integers.
Key words: Catalan Conjectures, Diophantine Equation

I. Introduction

In 2007, Acu [1] proved that (3, 0, 3) and (2, 1, 3) are only two solutions in non-negative integers of the Diophantine equation $2^x+5^y=z^2$. In 2013, Sroysang [2] proved that more on the Diophantine equation $2^x + 32^y = z^2$ has non-negative integer (3, 0, 3) is a unique non- negative integer solution. In this paper we will show that the Diophantine equation $27^x + 2^y = z^2$ has non-negative integer (0, 3, 3) is a unique non-negative integer solution.

II. Preliminaries

In 1844, Catalan [3] conjectures that the Diophantine equation $a^x - b^y=1$ has a unique integer solution with min{a, b, x, y}>1. The solution (a, b, x, y) is (3, 2, 2, 3). This conjecture was proven by Mihailescu [4] in 2004

A. Preposition 2.1

([5]). (3, 2, 2, 3) is a unique solution (a, b, x, y) of the Diophantine equation $a^x - b^y=1$, where a, b, x and y are integers with min{a, b, x, y}>1

B. Lemma 2.2

[1] (3, 3) is a unique solution of (y, z) for the Diophantine equation $1+2^y=z^2$. Where y and z are non-negative integers.

C. Lemma 2.3

The Diophantine equation $27^x+1=z^2$ has no non-negative integer solution where x and z are non-negative integers.

1) Proof

Suppose that there are non-negative integers x and z such that $27^x+1=z^2$. If x=0, then $z^2=2$ which is impossible. Then $x \geq 1$. Thus, $z^2=27^x+1\geq 27^1+1=28$, then z>5. Now we consider on the equation $z^2-27^x=1$. By preposition 2.1, we have x=1. Then $z^2=28$. This is a contradiction. Hence, the equation $27^x+1=z^2$ has no non negative integer solution.

III. Results

A. Theorem 3.1

(0, 3, 3) is a unique solution (x, y, z) for the Diophantine equation $27^x+2^y=z^2$ where x, y and z non-negative integers.

1) Proof

Let x, y and z be non-negative integers such that $27^x+2^y=z^2$. By lemma 2.3, we have $y\geq 1$. Thus z is odd then there is a non-negative integer t such that z=2t+1. We obtain that $27^x+2^y=4(t^2+t)+1$. Then $27^x\equiv 1 (\text{mod } 4)$. Thus x is even. Then there is a non-negative integer k such that x=2k. We divide the number x into two cases.

- Case x=0. By lemma 2.2, we have y=3 and z=3.
- Case $x\geq 2$. Then $k\geq 1$. Then $z^2-27^{2k}=2^y$. Then $(z-27^k)(z+27^k)=2^y$. We obtain that $z-27^k=2^u$, where u is a non-negative integer. Then $z+27^k=2^{y-u}$. It follows that $2(27^k)=2^{y-u}-2^u=2^u(2^{y-2u}-1)$. We divide the number u into two subcases.
- Subcase u=0. Then $z-27^k=1$. Then z is even. This is a contradiction.
- Subcase u=1. Then $2^{y-2}-1=27^k$. It follows that $2^{y-2}=27^k+1\geq 27+1=28$. Thus $y\geq 6$. More over $2^{y-2}-27^k=1$. By preposition 2.1, we have k=1, then $2^{y-2}=28$. This is impossible.

Therefore, (0,3,3) is a unique solution (x,y,z) for the equation $27^x+2^y=z^2$

B. Corollary 3.2

The Diophantine equation $27^x+2^y=w^4$ has no non-negative integer solution. Where x,y and w are non-negative integers.

1) Proof

Suppose that there are non-negative integers x,y and w such that $27^x+2^y=w^4$. Let $z=w^2$. Then $27^x+2^y=z^2$. By lemma 3.1, we have (x,y,z)=(0,3,3). Then $w=z^2=3$. This is a contradiction.

C. Corollary 3.3

(0, 1, 3) is a unique solution of (x, y, z) for the Diophantine equation $27^x+8^u=z^2$, where x,u and z are non-negative integers.

1) Proof

Let x,y and z are non-negative integers such that $27^x+8^u=z^2$. Let y=3u. Then $27^x+2^y=z^2$. By theorem 3.1 we have (x, y, z)=(0,3,3). Then y=3u=3. Thus u=1. Therefore, (0, 3, 3) is a unique solution (x, u, z) for the equation $27x+8^u=z^2$.

D. Corollary 3.4

The Diophantine equation $27^x+32^y=z^2$ has no non-negative integer solution. Where x,u and z are non-negative integers.

1) Proof

Suppose that there are non-negative integers x,u and z such that $27^x+32^y=z^2$. Let y=5u. Then $27^x+2^y=z^2$. By theorem 3.1, we have y=5u=3. This is contradiction.

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On the Diophantine Equation $128^x + 961^y = Z^2$

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Abstract

By applying Catalan conjectures given Diophantine equation $128^x + 961^y = z^2$ gives a unique non-negative integer solution, that is (1, 1, 33). And the given Diophantine equation can be reduced in the form of $2^x+31^y=z^2$, where x, y and z are non-negative integer. Which gives the solution (7, 2, 18).

Keywords: Catalan Conjectures, Diophantine Equation

I. Introduction

In 2007, Acu [1] proved that (3, 0, 3) and (2, 1, 3) are only two solutions in non-negative integers of the Diophantine equation $2^x+5^y=z^2$. In 2012, Sroysang [2] proved that the Diophantine equation $32^x + 49^y = z^2$ has non-negative integer (1, 1, 9) is a unique solution. In this paper we will show that the Diophantine equation $128^x + 961^y = z^2$ has non-negative integer (1, 1, 33) is a unique solution.

II. Preliminaries

In 1844, Catalan [3] conjectures that the Diophantine equation $a^x-b^y=1$ has a unique integer solution with min{a, b, x, y}>1. The solution (a, b, x, y) is (3, 2, 2, 3). This conjecture was proven by Mihailescu [4] in 2004

A. *Preposition 2.1 ([5])*

(3, 2, 2, 3) is a unique solution (a, b, x, y) of the Diophantine equation $a^x+b^y=1$, where a, b, x and y are integers with min{a, b, x, y}>1

B. *Preposition 2.2 ([6])*

(3, 0, 3) is a solution (x, y, z) of the Diophantine equation $2^x+31^y=z^2$, where x, y and z are non-negative integer.

III. Results

In this section, we prove that the Diophantine equation $128^x + 961^y = z^2$ has a unique non-negative integer solution. The solution (x, y, z) is (1, 1, 33). This result implies that (7, 2, 33) is solution (x, y, z) of the Diophantine equation $2^x+31^y=z^2$, where x, y and z are non-negative integer.

A. *Theorem 3.1*

(1, 1, 33) is a unique solution (x, y, z) of the Diophantine equation $128^x + 961^y = z^2$, where x, y and z are non-negative integers

1) Proof

We will divide the number x into two cases.

- Case (i) x=0. We focus on the equation $1+961^y=z^2$, then $(z-1)(z+1)=31^{2y}$. Thus $z-1=31^u$, where u is non-negative integer. Then $z+1=31^{2y-u}$. It follows that $31^{2y-u}-31^u=2$. Then$31^u(31^{2y-2u}-1)=2$. This implies that u=0. Then $31^{2y}-1=2$ thus $31^{2y}=3$. This is impossible.
- Case (ii) x≥1, in this case z is odd, we consider the equation $128^x + 961^y = z^2$ as the equation $2^{7x}+31^{2y}=z^2$. Then $(z-31^y)(z+31^y)=2^{7x}$. Then $(z-31^y)=2^w$, where w is non-negative integer. Note that 31^y is odd. We have w≠0. Moreover, $z+31^y=2^{7x-w}$. it follows that $2^{7x-w}-2^w=2(31^y)$. Then $2^w(2^{7x-2w}-1)=2(31^y)$. Then w=1. It follows that $2^{7x-2}-1=31^y$. If y=0. Then x=0.43. Thus, y≥1. By preposition we obtain that x=1 or y=1. Now we note that x=1 if and only if y=1. Thus x=1 and y=1. Then $z^2=128+961=1089$. Hence z=33.

Therefore, (x,y,z)=(1,1,33)

B. *Corollary 3.2*

(7, 2, 33) is a solution of (x, y, z) of the Diophantine equation $2^x+31^y=z^2$, where x, y and z are non-negative integers

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Theory of Complex Fuzzy Soft Set and its Applications

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Abstract

The objective of this paper is to investigate the further development of theory of soft complex fuzzy set. Consequently, a major part of this work is dedicated to a discussion of the intuitive interpretation of aggregation operation in soft complex fuzzy set. We give an example of possible applications, which demonstrate the applications of aggregation operations that the method can be successfully applied to many problems that contains uncertainties and periodicities.

Keywords: complex fuzzy set, soft fuzzy set, soft complex fuzzy set, aggregations of soft complex fuzzy set

I. INTRODUCTION

Complex fuzzy set (CFS) [11]-[12] is a new development in the theory of fuzzy systems [14]. The concept of CFS is an extension of fuzzy set, by which the membership for each element of a complex fuzzy set is extended to complex-valued state.

Soft set theory is a generalization of fuzzy set theory, which was proposed by Molodtsov [8] in 1999 to deal with uncertainty in a non-parametric manner. One of the most important steps for the theory of soft sets was to define mappings on soft sets; this was achieved in 2009 by mathematician Athar Kharal, though the results were published in 2011. Soft sets have also been applied to the problem of medical diagnosis for use in medical expert systems. Fuzzy soft sets have also been introduced in [10]. Mappings on fuzzy soft sets were defined and studied in the ground breaking work of Kharal and Ahmad.

Soft complex fuzzy sets , which is defined by [13], This paper written for inspired from [9,10], whereas all the concepts in soft sets were replaced by soft complex fuzzy sets.

The paper is organized as follows: Section 2 reviews the notions of soft sets; complex fuzzy set and relevant definitions used in the proposed work and also discussed the innovative concept of soft complex fuzzy sets with examples. In section 3, we introduce the aggregation operation on soft complex fuzzy set and its properties. In section 4, Applications of soft complex fuzzy set with example provided. We also demonstrate successful application of soft complex fuzzy set using aggregation operation. Finally we conclude the paper in section 5.

II. PRELIMINARIES

A. *Definition 2.1.*

Let U be an initial universe, P(U) be the power set of U, E be the set of all parameters and $A \subseteq E$. Then, a soft set as defined in [8] F_A over U is a set defined by a function f_A representing a mapping

$$f_A: E \rightarrow P(U) \text{ such that } f_A(x) = \phi \text{ if } x \notin A.$$

Here, f_A is called approximate function of the soft set F_A, and the value $f_A(x)$ is a set called x-element of the soft set for all $x \in E$. It is worth noting that the sets $f_A(x)$ may be arbitrary. Some of them may be empty, some may have nonempty intersection. Thus, a soft set F_A over U can be represented by the set of ordered pairs

$$F_A = \{(x, f_A(x)) : x \in E, f_A(x) \in P(U)\}$$

Note that the set of all soft sets over U will be denoted by S (U).

B. *Definition 2.2. [8]*

A pair (F, E) is called a soft set over U if and only if F is a mapping of E into the set of all subsets of the set U.

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A Mathematical Model for Nibrin Expression in Oral Squamous Cell Carcinoma by using Log Normal Distribution

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Abstract

In this paper, we introduce the lognormal distribution. Log-normal distributions are usually characterized in terms of the log-transformed variable, using as parameters the expected value, or mean of its distribution, and the standard deviation [7]. Two parameters are needed to specify a log-normal distribution. Traditionally, the mean μ and the standard deviation σ are used. This paper study sought to discover the role of Nibrin protein in 100 patients with oral squamous cell carcinoma (OSCC) and its potential relationship with clinic pathological parameters. The present study included 20% of patients with stage I disease, 22% of patients with stage II disease, 18% of patients with stage III disease, and 40% of patients with stage IV disease. Nibrin showed a significant positive correlation with moderately/poorly differentiated tumor tissues (P = 0.028), while significant inverse correlation of Nibrin expression was observed with tumor size (P = 0.018) and tumor stage (P = 0.039). Further, using univariate survival analysis it was observed that strong Nibrin expression was significantly associated with disease relapse in early stage OSCC patients (P = 0.049). Thus, the present study revealed that Nibrin could be used as a prognostic marker in patients with early stage OSCC. The application part is fitted with the Mathematical model and conclusion is compared with the medical report this will be helpful for the medical professional.

Keywords: Nibrin protein, oral squamous cell carcinoma, lognormal distribution

I. Introduction

Carcinomas of the oral cavity, including cancer originating from the buccal mucosa and tongue are of 10 most common cancers in the world with an increasing trend of incidence [2, 10]. Squamous cell carcinoma (SCC) is the most common type of oral cancer which accounts for more than 90% of oral malignancies which is characterized by an aggressive growth pattern, high-degree of local invasiveness, and cervical lymph node spread [2,14] . In India, oral squamous cell carcinoma (OSCC) is the leading cause of death which stands for 35-40% of all malignancies which is owed to the increased prevalence of lifestyle habits like chewing areca-nut/betel nut quid/tobacco and smoking with heavy alcohol consumption serving as a potent cofactor [5,6,12]. The survival of patients with oral cancer has remained unchanged even with the improved therapeutic modalities, over the last 3 decades [12]. The resultant poor prognosis is owed to a late stage diagnosis, low response rate to current therapeutic strategies, high risk of primary site recurrence and aggressive metastases to loco-regional lymph nodes, strongly suggestive of an urge to improve the treatment efficacy and diagnostic capabilities. Over the last decade, scientific research related to the specific pathways which are relevant to the development and progression of this disease has been performed to investigate biological, diagnostic and prognostic parameters [3,9,11,13,]. On the basis of this information, the aim of this study was to assess whether the Nibrin expression would relate to clincopathological variables and if it could predict.

II. Application

A total of 100 untreated patients with histolpathologically confirmed OSCC of tongue and buccal mucosa. Out of total 100 OSCC patients, for overall survival analysis, only 90 patients could be followed for a period of 24 months or until death within that period. On the other hand, for relapse-free survival study, 78 of 100 patients with or without recurrence within that period were considered. The remaining 12 patients could not be included for relapse-free survival study due to presence of persistent disease. Of the tongue and buccal mucosa cancer tissue, Nibrin protein expression was evaluated with nuclear location of the immunoreactions, Nibrin was expressed in 99% of tumors and 92% of the adjacent normal squamous epithelium [Figure 2.1]. Although we were unable to obtain any significant findings in total patients, we further sub grouped patients into early and advanced stage disease and surprisingly, we observed that in patients with early stage disease, a significant high incidence of disease relapse was observed in patients with strong Nibrin expression (43%, 10/23, log-rank = 3.884, df = 1, P = 0.049) as compared to patients with weak Nibrin expression (8%, 1/12) [Figure 2.2].

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More on the Diophantine Equation $47^x + 2^y = z^2$

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Abstract

By using Catalan conjectures on the Diophantine equation $47^x + 2^y = z^2$ gives a unique non-negative integer solution (x, y, z) ϵ (0, 3, 3).

Keywords: Catalan conjectures, Diophantine equation

I. Introduction

In 2007, Acu [1] proved that (3, 0, 3) and (2, 1, 3) are only two solutions in non-negative integers of the Diophantine equation $2^x + 5^y = z^2$. In 2013, Sroysang [2] proved that more on the Diophantine equation $2^x + 32^y = z^2$ has non-negative integer (3, 0, 3) is a unique non- negative integer solution. In this paper we will show that the Diophantine equation $47^x + 2^y = z^2$ has non-negative integer (0, 3, 3) is a unique non- negative integer solution.

II. Preliminaries

In 1844, Catalan [3] conjectures that the Diophantine equation $a^x - b^y = 1$ has a unique integer solution with min{a, b, x, y}>1. The solution (a, b, x, y) is (3, 2, 2, 3). This conjecture was proven by Mihailescu [4] in 2004

Preposition 2.1 ([5]). (3, 2, 2, 3) is a unique solution (a, b, x, y) of the Diophantine equation $a^x - b^y = 1$, where a, b, x and y are integers with min{a, b, x, y}>1

Lemma 2.2. [1] (3, 3) is a unique solution of (y, z) for the Diophantine equation $1 + 2^y = z^2$. Where y and z are non-negative integers.

Lemma 2.3. The Diophantine equation $47^x + 1 = z^2$ has no non-negative integer solution where x and z are non-negative integers.

Proof. Suppose that there are non-negative integers x and z such that $47^x + 1 = z^2$. If x = 0, then $z^2 = 2$ which is impossible. Then $x \geq 1$. Thus, $z^2 = 47^x + 1 \geq 47^1 + 1 = 48$, then $z > 6$. Now we consider on the equation $z^2 - 47^x = 1$. By preposition 2.1, we have x = Then

$z^2 = 48$. This is a contradiction. Hence, the equation $47^x + 1 = z^2$ has no non negative integer solution.

III. Results

Theorem 3.1 (0,3,3) is a unique solution (x,y,z) for the Diophantine equation $47^x + 2^y = z^2$ where x, y and z non-negative integers.

Proof. Let x, y and z be non-negative integers such that $47^x + 2^y = z^2$. By lemma 2.3, we have $y \geq 1$. Thus z is odd then there is a non-negative integer t such that $z = 2t+1$. We obtain that $47^x + 2^y = 4(t^2+t)+1$. Then $47^x \equiv 1 \pmod 4$. Thus x is even. Then there is a non-negative integer k such that $x=2k$. We divide the number x into two cases.

Case x = 0. By lemma 2.2, we have y=3 and z=3.

Case $x \geq 2$. Then $k \geq 1$. Then $z^2 - 47^{2k} = 2^y$. Then $(z - 47^k)(z + 47^k) = 2^y$. We obtain that $Z - 47^k = 2^u$, where u is a non-negative integer. Then $z + 47^k = 2^{y-u}$. It follows that $2(47^k) = 2^{y-u} - 2^u = 2^u(2^{y-2u} - 1)$. We divide the number u into two subcases.

Subcase u = 0. Then $z - 47^k = 1$. Then z is even. This is a contradiction.

Subcase u = 1. Then $2^{y-2} - 1 = 47^k$. It follows that $2^{y-2} = 47^k + 1 \geq 47 + 1 = 48$. Thus $y \geq 7$ More over $2^{y-2} - 47^k = 1$. By preposition 2.1, we have k = 1, then $2^{y-2} = 48$. This is impossible.

Therefore, (0, 3, 3) is a unique solution (x, y, z) for the equation $47^x + 2^y = z^2$

Corollary 3.2.The Diophantine equation $47^x + 2^y = w^4$ has no non-negative integer solution. Where x, y and w are non-negative integers.

Proof. Suppose that there are non-negative integers x, y and w such that $47^x + 2^y = w^4$. Let $z = w^2$. Then $47^x + 2^y = z^2$. By lemma 3.1, we have (x, y, z) = (0, 3, 3). Then $w = z^2 = 3$. This is a contradiction.

Corollary 3.3. (0, 1, 3) is a unique solution of (x, u, z) for the Diophantine equation $47^x + 8^u = z^2$, where x, u and z are non-negative integers.

Proof. Let x, y and z are non-negative integers such that $47^x + 8^u = z^2$. Let y = 3u. Then $47^x + 2^y = z^2$. By theorem 3.1 we have (x, y, z) = (0, 3, 3). Then y = 3u = 3. Thus u = 1. Therefore, (0, 3, 3) is a unique solution (x, u, z) for the equation $47^x + 8^u = z^2$.

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Mathematical Model in Side Effects of Chemotherapy Treatment for Lung Cancer

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Abstract

Cancer is one of the most flourishing diseases of all over the world. Cancer incidences and death rates are rapidly increasing world widely. The cancer occurrence could be associated with various environmental, social, cultural, life-style, hormonal and genetic factors [4]. In addition smoking, reduced physical activity and consumption of highly processed and calorie-rich food are the major causes of cancer. There are many types of cancer treatments available now, but all of them have some associated side effects. Chemotherapy is the most effective and widely used treatment in most types of malignancies [1]. It was thought that chemotherapy drugs specifically kill the cancer cells only but now it is well known that it also damages to the normal cells resulting the chemotherapy dose dependent side effects such as fatigue, nausea, hair loss vomiting, etc. and even death may also occur in severe cases [4]. The main strategy of chemotherapy drugs based on the phenomenon that these drugs selectively target the tumor cells, largely by the means of genotoxicity partially caused by the production of reactive oxygen species, which does not specifically damages the cancer cells but also the normal cells. In this study, the method and side effects of chemotherapy treatment for cancer is discussed. In particular the side effects of chemotherapy treatment for lung cancer.

Keywords: Chemotherapy, Immunotherapy, CVD, Apoptosis

I. Introduction

The treatment of cancer is the early detection of the disease. Often, cancer is detected in its later stages, when it has compromised the function of one or more vital organ systems and is widespread throughout the body. Methods for the early detection of cancer are of utmost importance and are an active area of current research. After the initial detection of a cancerous growth, accurate diagnosis and staging of the disease are essential for the design of a treatment plan [4]. This process is dependent on clinical testing and the observations of physicians. It is important for cancer patients and their families to understand the results given to them so that they can take an active role in the planning of the treatment protocol to be used. Anticancer agents induce apoptosis in normal tissues as well as in tumors. In fact, many of the pathologists who identified apoptosis in tumors realized that apoptotic cell death was induced in a subset of normal tissues (e.g. bone marrow and intestine), and it was suggested that the process might contribute to the `toxicity' associated with chemotherapy [[3]. Moderate doses of radiation and chemotherapy induce apoptosis in the murine thymus, spleen, bone marrow and intestine, the same tissues that account for the deleterious side-effects of chemotherapy. Total 132 cancer chemotherapy drugs are approved by the US Food and Drug Administration, of which 56 drugs have been reported to cause oxidative stress.

A. Side Effects of Chemotherapy Treatment

Earlier these chemotherapeutic drugs were considered to be quite targeted and selective for tumor cells, but now it is a well-known that normal cells are also damaged by chemotherapeutic drugs, which leads to various side effects and in some cases even death. These side effects include headache, fatigue, weakness, hair loss, nausea, vomiting, diarrhea, abdominal cramps, mouth sores, dry mouth, memory impairment and Numbness. Chemotherapy given to treat cancer patients is powerful medication – used to kill cancer cells and it's impossible to avoid causing some damage to other cells and tissues in the body[3]. So when we give the medication to kill the cancer cells patients get sick - sometimes very sick - and some may die. Getting the balance right on which patients to treat aggressively and which not to treat, can sometimes be hard. The most frequently reported side effects were weakness (95%), fatigue (90%), nausea (77%), hair loss (76%) and vomiting (75%). Each of these side effects was experienced by more than 70% of the patients. Prominent side effects include mouth sores, dry mouth and numbness whereas diarrhea, abdominal cramps and memory impairment were less commonly occurring side effects. Some other side-effects which were also reported by some patients *i.e.* temperature, constipation, mood swings and weight loss [4]. We see that most of the people who died within one month were in the palliative treatment group – 7.5% (569/7,602) of women with breast cancer and 10% (720/7,673) of people with non-small cell lung cancer. These are patients who could not be cured of their disease and between 8-9% of this group died within a month of starting therapy. There were also deaths in those patients given treatment with the intention to try and achieve cure [3]. These were much fewer; 0.3% (41/15,626) of breast cancer patients and 2.7% (53/1,961) of non-small cell lung cancer patients [7].

These side effects were subjected to statistical test to determine their relation with different variables, but these results are less reliable due to the absence of common factor in the patients. As this survey included a great variety in cancer types, disease time,

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STRATEGIES FOR TECHNOLOGY ENHANCED LANGUAGE LEARNING (TELL) IN LANGUAGE CLASSES

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Abstract:

The tremendous evolution of technology and learning is opening new portals to represent knowledge practices, and new global communities of learning. Technology is no longer a fringe course enhancement, of interest to only enthusiastic 'technophile' teachers, learners and managers, but rather, it has an importance for everyone concerned in language teaching. The area of technology-enhanced language learning is highly controversial; there are so many ways of looking at technology in teaching. This paper explores opportunities that English teachers have created to help students meet English language literacy goals in technology enhanced language learning (TELL) classroom environments.

Key Words: CALL, TELL, CMC, Implementation, Manifestation, Evaluation & Activities of TELL

1. Introduction:

It is rare to find a language class that does not use some form of technology. In recent years, technology has been used to both assist and enhance language learning. Teachers have incorporated various forms of technology to support their teaching, engage students in the learning process, provide authentic examples of the target culture, and connect their classrooms. Further, some technology tools enable teachers to differentiate instruction and adapt classroom activities and homework assignments, thus enhancing the language learning experience. In order to meet the reading needs of students in the 21st century, educators are pressed to develop effective instructional means for teaching reading comprehension and reading strategy use. In addition, technology continues to grow in importance as a tool to assist teachers of foreign languages in facilitating and mediating language learning for their students. Technology can play a vital role in supporting and enhancing language learning, the effectiveness of any technological tool depends on the knowledge and expertise of the qualified language teacher who manages and facilitates the language learning environment.

2. Literature Review:

The difference between Computer Assisted Language Learning (CALL) and Technology-Enhanced Language Learning (TELL) is that the computer simultaneously becomes less visible yet more ubiquitous. The change in emphasis from computer to technology places direct importance on the media of communication made possible by the computer, which itself often remains unseen, rather than on the computer itself . Whereas in CALL, the computer assisted learning, it might be said that in TELL, the computer supports learning. This third phase of technology use in second- and foreign-language teaching is characterized by the use of multimedia and the Internet. It can also be characterized by a clearly delineated move away from behaviourist, drill and practice type software and a move towards more constructivist uses of the tool. Warschauer (1996a) refers to the third phase of use of computers in teaching second languages as Integrative CALL. He uses the term *integrative* to refer to efforts at developing models which would integrate various aspects of language learning for example using task- or project-based approaches. Multimedia computers can provide an accurate portrayal of the target language and provide learners with control and feedback. More importantly though they facilitate a methodological and theoretical advance that shifts the emphasis away from the traditional production of sentences common with CALL to an emphasis on "input and intake". Computer-mediated communication (CMC) using the Internet has the power to allow learners to collaborate and to construct knowledge together (Warschauer, 1997a). Online learning, explains Warschauer, breaks the pattern of teacher-centred discussion in the classroom. In his review of studies on CMC, the author notes that the social dynamics of CMC result in more equality of participation than what would be typical in face-to-face communicationHanson-Smith (1997) examines the pedagogical practices that have benefitted or will benefit from technological enhancement. The World Wide Web allows for an instantaneous exchange of information to and from sites and between individuals. Use of the Internet demands a level of student engagement in authentic language encounters that would barely be possible face-to-face.

3. Manifestations of Technology:

The pivot of technology is to direct, foster thinking and facilitate the acquisition of higher order skills. The challenge is to creatively use technologies by zeroin on their affordances. In a perfectlypatterned technology-enhanced learning environment, learners will incorporate in the process of manipulating information and critical thinking as well as expressing and sharing their knowledge to peer-learners. Several taxonomies of technologies for learning have been under discussion. The following methodologies consistently display the various ways the technology being conducive for learning.

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Low Cost of Chitosan Composite Carbon Paste Modified Electrode Using Glucose Biosensor

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Abstract | References | Citations | Supplementary Data | Suggestions

To develop reusable Gamma iron oxide-chitosan composite containing carbon paste electrode for biosensor application. Glucose oxidase (GOx) enzyme was used to prepare Gamma iron oxidechitosan nanocomposite containing carbon paste electrode for sensitive detection of glucose. The immobilized enzyme retained its bioactivity, exhibited a surface confined reversible electron transfer reaction, and had good stability. The surface parameters like surface coverage, Diffusion coefficient (D_0), and rate constant (k_S) were studied. The excellent performance of the biosensor is attributed to large surface-to-volume ratio, high conductivity and good biocompatibility of chitosan, which enhances the enzyme absorption and promotes electron transfer between redox enzymes and the surface of electrode. The shelf life of the developed electrode system is about 12 weeks under refrigerated conditions. We report for the low cost of carbon paste bioelectrode containing Gamma iron oxide-chitosan-GOx.

Keywords: CHITOSAN; COMPOSITE; GLUCOSE BIOSENSOR; GLUCOSE OXIDASE; IRON OXIDE
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An Overview of Export Performance of Agricultural Products in India

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Abstract: *Exports are the basis of the overall growth performance of any country. By increasing the rate of exports, any developing country can pave a way for the development by earning international liquidity thereby; sort out the problem of reserves to start up of any project to come out the circle of poverty. So, it becomes a paramount importance for the country like India to start export promotion measures to boost up the pace of its exports and India has already taken many steps to increase the level of its exports. It is concluded from the results of the study that Cotton raw including waste, iron ore, plastic and linoleum and transport equipment has been observed as the products in which exports have been increased at the maximum rate, whereas exports of Tea, Iron and steel, Mica and Leather and Manufacturing have been identified as the area in which satisfied results have not been achieved. So, it is suggested by the results of study that government should promote exports of different sectors by providing different incentives to different sectors to avail the opportunity and fill up the gaps as well. Indian agricultural export has undergone significant changes during recent times. In this context, the present study has analysed the trend in exports of agricultural commodities from India, the changes in the comparative advantage, the Indian agricultural export scenario has witnessed during the past decade and the prospects for further boosting the agricultural export. The study has also analysed the comparative advantage of India's exports, through revealed comparative advantage (RCA). The RCA was improving in case of cotton, maize, and certain fruits and vegetables over time, but declining in case of some spices, rice and wheat. In case of plantation based spices and other commodities, India is gradually losing its comparative edge, mainly to Asian countries. The study has so identified yield improvement through growth in total factor productivity (TFP) as a potential factor that would result in generation of exportable surpluses and boosting India's export.*

I. Introduction

Performance of agricultural export has always attracted policy makers' attention, as it is an important source of foreign exchange earnings, driver of crop diversification and farm income improvements. The coming into force of the World Trade Organisation (WTO) has brought a qualitative change in the deliberations on the topic. The domestic preparedness to deal with a globalised and interconnected world, with increased concern on intellectual properties, food safety and quality aspects and international movements of finances and services on the one hand, and domestic livelihood and food security concerns on the other hand, has generated substantial debate. One concern that ran through all the arguments was the ability of the domestic agriculture to cope up with demands of the new paradigm of international monitoring and regulations. Two decades have passed since the WTO came into existence. During this span of time, some of the initial apprehensions have dissipated. However, a different set of problems, notably faster transmission of international price volatility to domestic markets, higher rates of rejection on account of sanitary and phyto-sanitary (SPS) measures, and restriction in providing subsidy supports have emerged. During the past two decades, the domestic agricultural sector has also witnessed several changes, including the composition of public and private investments in agricultural research with greater participation of private sector, emergence of new institutional innovations like contract farming and farmer producer companies, change in the composition of the demand for agricultural commodities in the domestic market, and diversification towards high value crops which has led to differential growth experience for different commodity groups. Accordingly, the focus of agricultural output is also undergoing a paradigm shift.

The competition that a country offers in the international markets for its export depends on a number of factors. A country whose domestic consumption is low and volume of exports is high in terms of share in world exports would be able to provide stiff competition in international markets (Bhattacharya 2002). One major factor that affects the export prospects is the ability of the country to generate exportable surpluses (Singh and Sain 2003) which is dynamic during a period of time and bound to undergo shifts, depending on the macro-economic changes

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The Split and Non Split Majority Domonation in Fuzzy Graphs

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Abstract

A majority dominating set D of a fuzzy graph G is a split majority dominating set if the induced fuzzy sub graph $\langle V - D \rangle$ is disconnected. A majority dominating set D of a fuzzy graph G is a non- split majority dominating set if induced fuzzy sub graph $\langle V - D \rangle$ is connected. In this paper we study split and non-split majority domination in fuzzy graphs and its domination numbers $\gamma_{SM}(G)$ *and* $\gamma_{NSM}(G)$ .Also bounds $\gamma_{SM}(G)$ *and* $\gamma_{NSM}(G)$ with other known parameters are discussed.

Keywords: Dominating set, Majority dominating set, split majority dominating set, non-split majority dominating set

I. Introduction

A subset $D \subseteq V$ in a fuzzy graph G is called a majority dominating set if atleast half of the vertices of of G are either in D or adjacent to the vertices of D. More clearly $|N(D)| \geq \left\lceil \frac{p}{2} \right\rceil$

A majority dominating set D is minimal if no proper subset of D is a majority dominating set . The minimum fuzzy cardinality of a minimal majority dominating set is called the majority domination number and it is denoted by $\gamma_M(G)$

The split majority domination number $\gamma_{SM}(G)$ of G is the minimum fuzzy cardinality of a minimal split majority dominating set.

A set D of vertices in a fuzzy graph G is dominating set if every vertex $v \in V$ is either an element of D or adjacent to an element of D. A dominating set is called minimal dominating set if no proper subset of D is a dominating set. The minimum fuzzy cardinality of a minimal dominating set is called the domination number of a fuzzy graph G and it is denoted by $\gamma(G)$

A set D of vertices of a fuzzy graph G is said to be majority independent set if it induces a totally disconnected sub graph with $|N(D)| \geq \left\lceil \frac{p}{2} \right\rceil \forall v \in D$.

If any vertex D' properly containing D is not majority independent set, then D is called maximal majority independent set. The maximum fuzzy cardinality of a maximal majority independent set is called majority independent number and it is denoted by $\beta_M(G)$

Example:

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