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ANGUCHETTYPALAYAM, PANRUTI – 607 106.

ACADEMIC YEAR 2018-19

S.NO	NAME OF THE FACULTY	TITLE OF THE PAPER	NAME OF THE CONFERENCE
1.	Mrs. Z. Azmathunnisa	Towards Reliable storage for cloud systems with selective data encryption and splitting strategy	International Conference on Intelligent Information Technologies ISBN: 978-1-4503-6378-5
2.	Sr. Punitha Jilt	Analysis and Importance of Software Development Process	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
3.	Mrs. D.Pauline Freeda	Securing Medical Image Using 2d Chaotic Map And C-MLCA.	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
4.	Mr. S. Rajarajan	Implementing Wan Services In Software Defined Networks With Open APIS	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
5.	Mr. S. Rajarajan	A Lightweight Encryption Algorithm For Secure Iot Based On Cryptography	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
6.	Mr. S. Rajarajan	Information Security of Applications In Internet of Things(IOT)	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
7.	Mrs. K. Poornambigai	Smart Health Care System Using Data Mining	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
8.	Mr. S. Manavalan	Virtualization In Industries	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
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11.	Ms. V .Varalakshmi	Secure password storage and authentication by encrypted negative password	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
12.	Ms. V .Varalakshmi	Smart Health care system using data mining	National Conference on Research and Development in Science Engineering and Technology,2019 ISBN: 978-93-5254-811-8
13.	Ms. F. Pramisha	Reliable and energy efficient Hybrid screen mirroring multicast system	National Conference on Research and Development in Science Engineering and Technology,2019 ISBN: 978-93-5254-811-8
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15.	Sr. A. Punitha Jilt	Automatic movable platform for railway track crossing	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
16.	Mrs. D. Pauline Freeda	Securing Medical image using 2-D Chaotic map and C-MLCA	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
17.	Ms. V .Varalakshmi	Secure PIN Confirmation for ATM Transactions using wireless plans	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
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19.	Mr. S. Balabasker		National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
20.	Mr. S. Balabasker	Design of Low Cost CNC plotter Machine using Arduino UNO	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
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23.	Mrs. D. Umamaheswari		National Conference on Research and Development in Science, Engineering and Technology, 2019 ISBN: 978-93-5254-811-8
24.	Mrs. Mary Amala Jenni	Hypervisor and Redemption – Awareness Analysis of 5G Networks	National Conference on Research and Development in Science, Engineering and Technology, 2019 ISBN: 978-93-5254-811-8
25.	Mrs. D. Umamaheswari		National Conference on Research and Development in Science, Engineering and Technology, 2019 ISBN: 978-93-5254-811-8
26.	Mr. S. Durairaj	Implementation of Image Processing Technique for Detection of Brain Tumors using MRI	National Conference on Research and Development in Science, Engineering and Technology, 2019 ISBN: 978-93-5254-811-8
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29.	Mr. V. Venkatesan	Design Of A 60 Ghz Power Amplifier Utilizing 90nm CMOS Technology	National Conference on Research and Development in Science, Engineering and Technology, 2019 ISBN: 978-93-5254-811-8
30.	Mr. S. Durairaj	Design and Comparison of Performance Characteristics of Rectangular Slot and Square Slot Patch Antenna	National Conference on Research and Development in Science, Engineering and Technology, 2019 ISBN: 978-93-5254-811-8
31.	Mr. V. Venkatesan	Design and Comparison of Performance Characteristics of Rectangular Slot and Square Slot Patch Antenna	National Conference on Research and Development in Science, Engineering and Technology, 2019 ISBN: 978-93-5254-811-8
32.	Mr. B. Arunkumar	Design of Security System for Vehicles	National Conference on Research and Development in Science, Engineering and Technology, 2019 ISBN: 978-93-5254-811-8
33.	Mr. V. Venkatesan	Design of 32 Bit Vedic & Array Multiplier	National Conference on Research and Development in Science, Engineering and Technology, 2019 ISBN: 978-93-5254-811-8



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ANGUCHETTYPALAYAM, PANRUTI – 607 106.

34.	Ms. S. Devika	A Smart Contrivance for Women's Safety Security	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
35.	Ms. S. K. Suriya		National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
36.	Ms. S. Devika	Chebyshev Polynomial Approximation for Distributed Signal Processing	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
37.	Ms. S. K. Suriya		National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
38.	Dr. S. Anita	Early Diagnosis of Parkinson's Disease using Machine Learning Technique	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
39.	Dr. R. Arokiadass	Prediction of minimum surface roughness and tool wear in end milling of metal matrix composites using NAGA-II	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
40.	Dr. R. Sasikumar	Investigation on utilization of biogas & prosopisjuliflora	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
41.	Mr. K. Shanmuga Elango		National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
42.	Mr. R. Jayakumar		National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
43.	Mr. K. Shanmuga Elango	Analysis of strength in unidirectional GRPF based fiber orientations under static loading using ANSYS	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
44.	Dr. R. Sasikumar		National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
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ANGUCHETTYPALAYAM, PANRUTI – 607 106.

46.	Sr. Josephine Mary	IOT Enabled smart automated guided vehicle for manufacturing industry 4.0	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
47.	Mr .P. Murugan	Design and analysis of composite catalytic converter	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
48.	Mr. R. Jayakumar		National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
49.	Mr. K. Shanmuga Elango	Performance analysis of friction stir welding of Aa6063	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
50.	Mr. K. Shanmuga Elango	Comparison of Mechanical characterization of glass and chicken feather epoxy composite natural fiber composite	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
51.	Mr. P. Murugan	Effect of Thermal spray coating on fuel consumption and emission control on IC Engine	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
52.	Mr. R. Jayakumar		National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
53.	Mr. K. Saravanan	Design and Fabrication of elliptical bicycle and save electrical energy with the help of Piezoelectric transducer	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
54.	Mr. A. Richard Pravin	High step up DC to DC converter with active soft-switching and voltage clamping for renewable energy systems	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
55.	Mr. K. Sriram	To improve performance response of economic load dispatch by using grey wolf optimization technique	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
56.	Sr. A. Annai Theresa	21 level stair case sine wave inverter with reduced switches and THD	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8



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ANGUCHETTYPALAYAM, PANRUTI – 607 106.

57.	Sr. A. Annai Theresa	Smart Prepaid energy meter using GSM and ARDINO	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
58.	Mr. V. Balaji	Carrier level shifted based control method for the PWM 3 L-T- Type QZS with capacitor imbalance compensation	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
59.	Mr.V.C. Eugin Martin Raj	Control strategy of permanent magnet brushless DC motor with snubber circuit using fuzzy logic control	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
60.	Mr. J. Ramesh	IOT based induction motor controlling and monitoring by using RaspBerry- Pi	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
61.	Mr. A. Sundara Pandiyan	PV battery charger using an L3C resonant converter for electric applications	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
62.	Ms. M. Premalatha	Multi-objective social spider algorithm optimal location and sizing of SVC devices for VSI	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
63.	Mrs. S. Lese	Radial movement optimization (RMO) techniques for solving unit commitment problem in power systems	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
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65.	Mr. A. Richard Pravin	Dynamic power management system employing single stage power converter for standalone solar PV applications	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
66.	Mr. V. Balaji	Effect of DC ripple and communication on the line harmonics of current controlled AC-dc Converters	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8
67.	Mr. A. Harikrishnan	Quantum mechanical investigation on molecular structure, spectroscopic and molecular docking studies of Diosmetin as potential Anti-diabetic agent	National Conference on Research and Development in Science, Engineering and Technology,2019 ISBN: 978-93-5254-811-8



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68.	Dr. A. John Peter	Synthesis and characterisation of green phosphor	National Conference on Research and Development in Science, Engineering and Technology, 2019 ISBN: 978-93-5254-811-8
69.	Dr. A. John Peter	Synthesis and characterisation of materials for lighting application	National Conference on Research and Development in Science, Engineering and Technology, 2019 ISBN: 978-93-5254-811-8
70.	Dr. A. John Peter	Synthesis and characterisation of phosphor	National Conference on Research and Development in Science, Engineering and Technology, 2019 ISBN: 978-93-5254-811-8
71.	Dr. G. Gurumoorthy	Synthesis of zinc sulphide and zinc iron sulphidenanoparticles from zinc(II) dithiocarbamate complexes and their utility for photocatalytic degradation of dyes	National Conference on Research and Development in Science, Engineering and Technology, 2019 ISBN: 978-93-5254-811-8
72.	Dr. G. Gurumoorthy	Synthesis crystal growth and characterisation of (E)-3-(4(Dimethylamino)phenyl)prop-2-one: An organic crystal	National Conference on Research and Development in Science, Engineering and Technology, 2019 ISBN: 978-93-5254-811-8
73.	Mrs. J. Joaquina Arokia Mary	Enhanced dielectric behaviour of silver adorned grapheme/poly vinyl alcohol composites for high dielectric applications	National Conference on Research and Development in Science, Engineering and Technology, 2019 ISBN: 978-93-5254-811-8
74.	Mr. D. Sampathkumar	English Language teaching methodology	National Conference on Research and Development in Science, Engineering and Technology, 2019 ISBN: 978-93-5254-811-8

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Contents

Data Science Foundations

- GCRITICPA: A CRITIC and Grey Relational Analysis Based Service Ranking Approach for Cloud Service Selection. 3
Gireesha Obulaporam, Nivethitha Somu, Gauthama Raman ManiIyer Ramani, Akshya Kaveri Boopathy, and Shankar Sriram Vathula Sankaran
- Cloud Enabled Intrusion Detector and Alerter Using Improved Deep Learning Technique. 17
K. Kanagaraj, S. Swamynathan, and A. Karthikeyan
- Temporal and Stochastic Modelling of Attacker Behaviour. 30
Rahul Rade, Soham Deshmukh, Raturaj Nene, Amey S. Wadekar, and Ajay Unny
- Automatic License Plate Recognition Using Deep Learning 46
Bhavin Dhedhi, Prathamesh Datar, Anuj Chiplunkar, Kashish Jain, Amrith Rangarajan, and Jayshree Kundargi

Data Management and Processing Technologies

- Towards Reliable Storage for Cloud Systems with Selective Data Encryption and Splitting Strategy 61
Z. Asmathunnisa and P. Yogesh
- Smart Solar Energy Based Irrigation System with GSM. 75
C. Bhuvaneswari, K. Vasanth, S. M. Shyni, and S. Saravanan

Data Analytics and its Applications

- Understanding the Role of Visual Features in Emoji Similarity 89
Sunny Rai, Apar Garg, and Shampa Chakraverty
- Semantic Network Based Cognitive, NLP Powered Question Answering System for Teaching Electrical Motor Concepts 98
Atul Prakash Prajapati, Ashish Chandio, and D. K. Chaturvedi
- Novel Wrapper-Based Feature Selection for Efficient Clinical Decision Support System 113
R. Vanaja and Saswati Mukherjee

Towards Reliable Storage for Cloud Systems with Selective Data Encryption and Splitting Strategy

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Abstract. Nowadays, reliability and security have become serious issues in Information and Communication Technology (ICT) since more and more data and services are accessed from computational cloud. Since cloud is an open platform and accessed through public networks like the Internet, user's data become vulnerable for security attacks. Foul play of cloud operators to reach sensitive data of users is one of the serious issues that need wide consideration as it vividly reduces the adoptability of cloud computing. Many practical security challenges are arising due to the abundant volume of data. Time used up in data encryption heavily hinders the performance of cloud based systems since data transmission and data communication are slowed down due to the large amount of data to be encrypted and decrypted. To attain an adoptive performance altitude many applications reject data encryption. In this paper, we focus on privacy leakage issues, and promote security levels under predefined time and resource constraints. To this end, we propose a Selective Data Encryption and Splitting Strategy (SDE2S), a compact encrypting method to selectively encrypt data according to the privacy weight and execution time of data packages being sent. Also it randomly splits data into n parts and then performs XOR operations using different cipher keys in different cloud storage servers to protect users' private information from possible untrusted cloud operators. Here, we put forward an overview of the problem and describe the algorithms used in the proposed solution. At the end, we present our simulation results, which reveal the advantages and improvements of our scheme over other schemes.

Keywords: Reliability · Selective Data Encryption · Data security
Splitting · Untrusted cloud operators

1 Introduction

Voluminous data like big data and multimedia data have forced the users of ICT to migrate towards cloud computing since it is not possible for an individual to own the required resources and the cloud based systems are based on pay as you go model. Cloud computing has stretched into many fields and many new service deployment models have been provided to the public [1, 2], like mobile parallel computing [3–7] and

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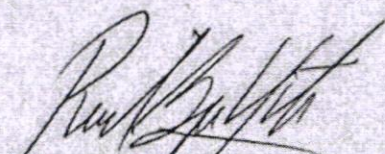
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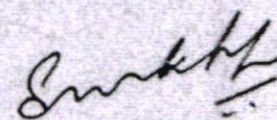
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TABLE OF CONTENT

Sl. No.	Paper Id	Title of the Paper	Author Name	Page No.
1	NCRDSET 1003	Live Health Care Monitoring System using Arduino	Mr. B. Sarathkumar Mr. D. Periyaaazhagar	1
2	NCRDSET 1004	Embedded Modelling and Control of Asymmetric Cascaded Multilevel Inverter	Mr. V. Bharathiraja Mr. S. Siva Sakthi	8
3	NCRDSET 1010	Automatic Winder to Prevent Excess Coil Loss	Mr. K. Thangaraj Mr. M. Haridoss Mr. V. Balakrishnan Mr. V. Gowtham	18
4	NCRDSET 1032	Dual Axis Solar Tracking System using LDR Sensors	Mr. S. Sivabalan Mr. K. Sharan Mr. S. Sudhakar Mr. S. Sivasakthi	22
5	NCRDSET 1034	Radial Movement Optimization (RMO) Technique for Solving Unit Commitment Problem in Power Systems	Mrs. S. Lese Ms. K. Kalpana Ms. B. Subishya	28
6	NCRDSET 1042	Dynamic Power Management System Employing Single Stage Power Converter for Standalone Solar PV Applications	Mr. A. Richard Pravin Mr. J. Albert Wilson Mr. M. Anastraj Mr. V. Arulraj Mr. K. Mark Vilfar Kennady	35
7	NCRDSET 1043	High Step-Up DC-DC Converter with Active Soft-Switching and Voltage-Clamping for Renewable Energy Systems	Mr. A. Richard Pravin Mr. S. Dinesh Mr. S. Praveen Kumar Mr. U. Prakash	42
8	NCRDSET 1064	Speed Control of Single Phase Induction Motor Using Firefly Algorithm	Mrs. S. Lese Mr. A. Arivazhagan Mr. R. Ramkumar Mr. K. Selvam Mr. R. Yuvaraj	47
9	NCRDSET 1097	Effect of DC Ripple and Commutation on the Line Harmonics of Current-Controlled AC-DC Converters	Mr. V. Balaji	53
10	NCRDSET 1098	Multi Objective Social Spider Algorithm Based Optimal Location and Sizing of Svc Devices for Voltage Stability Improvement	Ms. M. Premalatha Ms. R. Santhiya Ms. A. Soundharya Ms. B. Prithivi bala	62

11	NCRDSET 1099	To Improve Performance Response of Economic Load Dispatch by using Grey Wolf Optimization Technique	Mr. K. Sriram Mr. R. Rajkumar Mr. P. Pasupathi Mr. R. Elumalai Mr. Y. Magimai Xavi Thomas	71
12	NCRDSET 1101	PV Battery Charger Using an L3C Resonant Converter for Electric Applications	Mr. A. Sundara pandiyan Mr. R. Manikandan	79
13	NCRDSET 1106	IoT Based Induction Motor Controlling and Monitoring by Using Raspberry-Pi	Mr. J. Ramesh Mr. A. Prakashraj Mr. M. Sindhan Mr. P. Jayavel Mr. P. Sivapushnam	88
14	NCRDSET 1110	Dragon Fly Algorithm Based Forecasting of Substation Demands	Ms. J. Arul Martinal Ms. D. Dhatchayani Ms. R. Keerthana Ms. Y. Monica Ms. P. Banupriya	92
15	NCRDSET 1114	Solar Optiverter – A Novel Hybrid Approach to the Photovoltaic Module Level Power Electronics	Ms. R. Janani Ms. D. Akalya	100
16	NCRDSET 1119	21 Level Staircase Sine Wave Inverter with Reduced Switches and THD	Sr. A. Annai Theresa Mr. Sinu Cleetus Mr. A. Abinesh Mr. C. Thamizharasan Mr. S. Shanmuganatham	106
17	NCRDSET 1121	Smart Prepaid Energy Meter using GSM and Arduino	Sr. A. Annai Theresa Ms. M. Nirmala Ms. J. Santhini Ms. V. Dhivya Ms. M. Suvedha	113
18	NCRDSET 1145	Control strategy of Permanent Magnet Brushless DC Motor with Snubber circuit using Fuzzy Logic Control	Mr. V. C. Eugin Martin Raj Mr. P. Harish Mr. M. Praveen Kumar Mr. S. Anbumathi Mr. S. Selvaraj	120
19	NCRDSET 1156	Carrier level shifted based control method for the PWM 3L-T-type qZS with capacitor imbalance compensation	Mr. V. Balaji Mr. C. Vignesh Mr. M. Vignesh Mr. G. Ragul Mr. Mohamed Shaffiullah	131

TABLE OF CONTENT

Sl. No.	Paper Id	Title of the Paper	Author Name	Page No.
1	NCRDSET 1018	Investigation on Utilization of Biogas & Prosopis Juliflora Biodiesel in Dual Fuel Mode in a Single Cylinder DI Diesel Engine	Mr. R.Sasikumar Mr.K.Shanmuga Elango Mr.R.Jayakumar	1
2	NCRDSET 1035	A review on the development of nanotechnology and nanomaterials in civil engineering	Ms.Annie John	10
3	NCRDSET 1050	Analysis of strength in unidirectional grpf based fiber orientations under static loading using ansys	Mr. K.Shanmuga Elango Mr.P.Murugan Mr. R.Sasikumar	16
4	NCRDSET 1104	Design and fabrication of elliptical bicycle and save electrical energy with help of piezoelectric transducers	Mr. K. Saravanan Mr. M.Balamurali Mr V.Balamurugan	21
5	NCRDSET 1120	Comparison of mechanical characterization of glass and chicken feather epoxy composite natural fiber composite	Mr.K.Shanmuga Elango Mr. J.Manikandan Mr .B.Prasanth	25
6	NCRDSET 1134	Observe the Calorific Value of Distinct Biomass Production From The Waste of Bio gas Production Plant	Mr. T.Elangovan Ms. D.Shaliya	30
7	NCRDSET 1132	Effect of Thermal Spray Coating (sic) on Fuel Consumption and Emission Control on IC Engine	Mr. P.Murugan Mr. R.Jayakumar	34
8	NCRDSET 1142	Processing, Microstructure and Mechanical Properties of Graphite and fly ash Reinforced Magnesium AZ91 Metal Matrix Hybrid Composites	Mr.R.Jaganraj Mr. T.Elangovan	39
9	NCRDSET 1144	IIOT Enabled Smart Automated Guided Vehicle for Manufacturing Industry 4.0	Sr. Josephine Mary Mr. T. Alan Arputharaj S. Naveen kumar	46
10	NCRDSET 1146	Performance analysis of friction stir welding of aa6063	Mr.K.Shanmuga Elango Mr. D.padmanathan Mr.a.sujin,	53
11	NCRDSET 1162	Prediction of minimum surface roughness and tool wear in end milling of metal matrix composites using NSGA-II	Dr. R. Arokiadass,	59
12	NCRDSET 1163	Fabrication Of Solar Powered Bi-Cycle	Mr. Rajaraman	64
13	NCRDSET 1148	Design and analysis of composite catalytic converter	Mr. R.Jayakumar Mr. P.Murugan	68

TABLE OF CONTENT

Sl. No.	Paper Id	Title of the Paper	Author Name	Page No.
1	NRDSET-1005	WSNO In Smart Cities Using M2m Protocol	Ms.T.Hemalatha, Mr.K.Ganesh, Ms.A. Anitha	1
2	NCRDSET-1027	IoT Automation For Waste Collection In Smart City	Mr. N.Kumar, Ms. N.Akila, Ms.M.Dhanalakshmi, Ms. M.Priya Dharshini, Ms. S.Priya	9
3	NCRDSET-1103	Information Security Of Applications In Internet Of Things(IOT)	Mr.S. Rajarajan, Ms. S.Dhivya, Ms. S. Malarvizhi	12
4	NCRDSET-1143	Automatic Movable Platform For Railway Track Crossing	Sr.Punitha Jilt, Ms. M.Priyadharshini, Ms. S. Priya	19
5	NCRDSET-1158	Effusion Resilient Leveled Of Vertical Server On Suppressed Bit Of Data In Online Transactions	Mr.R.Vijayabharathi, Ms. E.Indhumathi, Ms.R.Sathiya, Ms. K.Viji, Ms. G.Gayathri.	23
6	NCRDSET-1171	Preventing From E-Phishing Network Using SVM Classifiers	Mr. Periyasamy.T, Ms. S.Aishwarya, Ms. K.Monisha, Ms.J.Nasrinbanu	33
7	NCRDSET-1006	Virtualization In Industries	Mr.S.Manavalan, Ms B,Sangavi, Ms V.Suwathi	44
8	NCRDSET-1007	The Internet Of Things In Oil-Gas Industry	Mr.S.Manavalan, Ms.N.Suganya, Ms. P.Priya	51
9	NCRDSET-1013	Customer Service For Voiced Based Im Bot	Mr.S.Manavalan, Mr.S.Venkatesan, Mr.V.Arun, Mr.A.Arulselvam	56
10	NCRDSET-1014	An Intelligent Processing Approach To Big Surveillance Video Data Driven By Smart Front_End Cameras	Mr.D.Sathyamurthy Mr.A.Karthik Mr. M.Naveenkumar Mr. J.Jayachandru Mr. S.Magnedran	61
11	NCRDSET-1015	A Novel Technique For Unsupervised Forensics Analysis Of Video File Container	Mr. D.Sathyamurthy, Ms. R.Atchaya Ms. V.Ghouthiya Ms. E.Dhivyadharshini	72

12	NCRDSET-1019	A Lightweight Encryption Algorithm For Secure Iot Based On Cryptography	Mr. S.Rajarajan Mr. P.Balaji Mr. G.Rajadurai Mr.S.Sabarinathan	83
13	NCRDSET-1021	A Smart Text To Speech Recognition For Visually Challenged People	Mr. V. Rajkumar Mr.S. Anuja Mr.R. Sushitha Mr.V. Preethima	87
14	NCRDSET-1022	Survey Paper On Internet Of Things, Protocols And Its Layers Overview	Mr.K.Babu Dr.P.Marikkannu	92
15	NCRDSET-1023	A Novel Communication Assistance System For Mute Community	Mrs.Z.Asmathunnisa Mr. S.Murugan Mr. S.Prabu Mr.L. Murugan	93
16	NCRDSET-1025	Securing Medical Image Using 2d Chaotic Map And C-MLCA.	Mrs.D.Pauline Freeda Ms. J.Monisha Ms. E.Amala Sharini Ms.S.Reshma Ms.U.Bhuvaneshwari	102
17	NCRDSET-1026	Online Double Auction System Using Spectrum Allocation For PROST	Ms.T.Hemalatha Ms. K.HaniPriya Ms. V.Revathi Ms. J.JayaPriya	108
18	NCRDSET-1030	Black Spot Alert On Mobile Phones Of Travelers	Dr. D. Geetha Mr. R.Krishnakumar Mr.S. Loganathan Mr.V. Rameshkannan	112
19	NCRDSET-1031	Visible Light Communication For Data And Audio Transmission Based On Li-Fi	Mrs. Z.Asmathunnisa Ms. R.Leema Roseline Ms. S.Thamilarasi	118
20	NCRDSET-1044	Hybrid Cloud Approach For Secure Authorized Deduplication	Mr.R.Gunasekaran Ms.M.Kamali Ms.V.Karpakam Ms.S.Mathivathani	124
21	NCRDSET-1051	Trends On Customer Purchases In E-Commerce Using Big Data	Ms. Shobhanjaly P Nair Ms.K.S. Abhinayaa Ms. U.Arthi. Ms.V. Harshini.	133
22	NCRDSET-1054	Secure Pin confirmation for ATM Transaction using wireless plans	Mrs. V. Varalakshmi	139
23	NCRDSET-1056	Analysis For Ddos Attacks In Big Data (Hadoop)	Mr.N.Kumar, Ms .K. Thilagavathi, Ms. K. Kayalvizhi,	144
24	NCRDSET-1058	Degraded Peri-Ocular Image Recognition In Enrollment System Using Deep Neural Networks	Mr.R.Gunasekaran , Ms.A.Ananthi, Ms.R.Sangeethapriya, Ms.P.Suriya	152

25	NCRDSET-1076	Content Based Image Retrieval Using Feature Extraction With Ann Algorithm	Ms. R.BowjiyaBanu, Ms. S. Soniyagandhi, Ms. P.Pallavi, Ms. R.Vinothini Ms.S.Vanathi	161
25	NCRDSET-1078	Sec Fish-A Smart Fishermen Device	Ms. S.Maheswari, Ms. M.K.Rameeza Sulthana, Ms.S.Senthamizhini, Mr.C. Saravanan	165
26	NCRDSET-1083	A Dynamic Web Content Reader Application For Low Vision Patients Using Python	Ms. R. Seetha Kannagi, Mr.P. Arunkumar, Mr.D.N. Narendran, Mr.M.Santhosh, Mr.C.Sakthivel	171
27	NCRDSET-1084	Providing A Smart And Dynamic Optimal Solution For Bus Scheduling	Mrs. G .Sivasathiya, Ms. V. LakshmiPriya, Ms. S. Livingsha Mercy, Ms. E. Padmini	177
28	NCRDSET-1086	Implementing Wan Services In Software Defined Networks With Open Apis	Mr.S.Rajarajan, Ms. M.Abina, Ms. S.Srimathi	182
29	NCRDSET-1100	Smart Health Care System Using Datamining	Mrs. K.Poornambigai, Ms. V.Vijayalakshmi, Ms. S.Varalakshmi, Ms. N.Hemalatha, Ms. T.Kaviyarasi	188
30	NCRDSET-1109	Secure password storage and authentication by encrypted negative password	Ms. V .Varalakshmi, Ms. C.Abina, Ms. A.Arthiya, Ms. V.Bakkiya, Ms. Y.Jenifer, Ms. P.Pavithra	193
31	NCRDSET-1111	Reliable And Energy-Efficient Hybrid Screen Mirroring Multicast System	Ms.Pramisha, Sr.Punitha,	201
32	NCRDSET-1122	Gene Based Disease Prediction Using Pattern Similarity Based Classification	Mrs.M.Mangalam , Ms. T.Anitha, Ms. M.Kanimozhi, Ms. G.Revathi	208
33	NCRDSET-1124	Information Oriented Application For The Farmers	Mr.C.Aravind, Mr.R.Vigneshwaran, Mr.Vinoth. V, Ms.Sivasathiya. G	216
34	NCRDSET-1127	Analysis And Importance Of Software Development	Ms.Jenifer Y, Sr. D.Punitha Jilt	222

TABLE OF CONTENT**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

Sl. No.	PAPER ID	Title of the Paper	Author Name	Page No.
1.	NCRDSET-1002	Design of Low Cost CNC Plotter Machine using Arduino Uno	Mr.S. BalaBasker	1
2.	NCRDSET-1012	Marine Monitoring & Early Warning Detection Using Wireless Sensor Networks	Mr. R. Radhakrishnan Mr. S. Balabasker	6
3.	NCRDSET-1029	IoT Based Smart Garbage Collecting System	Dr. N. Dhanasekar Mr. S. Pasupathi Raja Ms. S. Soundarya	11
4.	NCRDSET-1037	An Automatic Object Based Efficient and Flexible Spraying Agro-Robot for Agricultural Application	Ms. R. Arutselvi Ms. K. Kamali Ms. S. Niranjanadevi	16
5.	NCRDSET-1057	Smart security device for the protection of women	Ms. A.Premi Ms. T.Kiruthuka	21
6.	NCRDSET-1060	IoT Based Controlling of Advanced Hybrid Energy System for Industrial Applications	Ms. A.Priya Ms.S.Sathiya Ms. V.Sumathi	28
7.	NCRDSET-1062	Design of 32 Bit Vedic & Array Multiplier	Mr. S. Guru, Mr. M. Vignesh, Mr. S. Manibalan Mr. V. Vengatesan,	33
8.	NCRDSET-1070	IoT Based Automatic Digital Toll Plaza using RF Technology	Ms. R. Karkuzhali, Ms. R. Ramya, Ms. T. Suruthi, Mr. A. Arul	38
9.	NCRDSET-1077	Innovative Wireless Power Transfer System for Biomedical Capsule Endoscopy with Optimum Coil Configuration	Mr. S. Sathyamoorthy Ms. E. Gayathri, Ms. B. Keerthana, Ms. S. Sowmiya	46
10.	NCRDSET-1081	High Speed Dynamic Share Link between Mobile Terminals Using Visible Light Communication	Mr.D.Venkatesh Mr.R.Rajkumar Mr.T.Vignesh	53
11.	NCRDSET-1082	Segregation of Waste using IoT	Mr. V.V. Vishall Jeganath Mr.M.Sri Hari, Ms.G.Geethapriya	60

12.	NCRDSET-1105	A Assorted Novel-Discriminative Based Hashing Method	Mrs. B. Mary Amala Jenni Mrs. D. Umamaheswari	64
13.	NCRDSET-1107	A Novel Dual Broadband Modified Circular Patch Antenna for Wireless Application	Ms. R. Avila Vinnarasi Ms. T. Elavarasi Ms.K.Kanchana Mrs. B. Mary Amala Jenni,	68
14.	NCRDSET-1108	Design of a 60 GHz Power Amplifier utilizing 90nm CMOS Technology	Mr. V. Venkatesan Mr. S. Durai Raj	74
15.	NCRDSET-1115	Plant Based Completely Biodegradable Printed Circuit Boards	Ms. E. Durga, Ms. K. Prabavathi, Ms. R. Haripriya, Ms. V. Manishaand Mrs. A. Uma Maheswari	79
16.	NCRDSET-1116	Implementation of Image Processing Technique for Detection of Brain Tumors using MRI	Mrs. D. Umamaheswari, Ms. M. Ilaiya Rani, Ms. M. Meera, Ms. G. Karanya	87
17.	NCRDSET-1117	Design and Implementation of Drawing Robot by Using Embedded System	Ms. S. Stella, Ms. E. Suganya, Ms. B. Varsha Ms. S.K .Suriya	92
18.	NCRDSET-1126	Design and Comparison of Performance Characteristics of Rectangular Slot and Square Slot Patch Antenna	Mr. S. Durairaj, Mr. V. Venkatesan	98
19.	NCRDSET-1133	A Smart Contrivance for Women's Security	Ms. S. Devika Ms. S.K. Suriya	103
20.	NCRDSET-1135	Design of Security System for Vehicles	Mr. B. Arunkumar	107
21.	NCRDSET-1137	A Language Teaching Ability for Deaf And Dumb using Wireless Technology	Mr.A. Shalik Moomin, Mr.M. Arun Ms.S. Gandhimathi	113
22.	NCRDSET-1139	Chebyshev Polynomial approximation for Distributed Signal Processing	Ms. S. Devika Ms. S. K. Suriya	118
23.	NCRDSET-1140	FPGA implementation of OFDM transceiver using NTT and INTT algorithm	Ms. S.Arul Jenifer	122

24.	NCRDSET-1147	Hypervisor and Redemption – Awareness Analysis of 5G Networks	Mrs .D. Umamaheswari Mrs. B. Mary Amala Jenni	127
25.	NCRDSET-1153	IoT Based Automated Blood Bank System	Mr. D. Arokia Micheal john, Mr. T. Selvakannaiya, Mr. C. Hariprasath Ms. S. Devika	132
26.	NCRDSET-1154	Smart Agriculture Fields Based on IoT	Dr. P. Arjun, Mrs. M. Phemina Selvi, Mr. M. Ganesan, Mr. N. Mohamed Wasim akram	138
27.	NCRDSET-1155	An Advanced Vehicle to Vehicle Collision Detection Technique using Wireless Technology	Mr. S. Alexander, Mr. M. Aruloli, Mr. S. Kathiravan Mrs. Karthika	143
28.	NCRDSET-1157	An Energy Efficient Shift Register Based on Decoder Enabled Gated Pulsed Latch	Mr. A. Muruganmuthu	151
29.	NCRDSET-1164	Early Diagnosis of Parkinson's Disease using Machine Learning Techniques	Sr. S. Anita	155
30.	NCRDSET-1165	FPGA Implementation of High Performance FIR Filter Design using Distributed Arithmetic Based Approximate Sum of Products	Ms. A. Anusuya	161
31.	NCRDSET-1166	Smart security device for the protection of women	Ms. A.Premi Ms. T.Kiruthuka	167
32.	NCRDSET-1168	FPGA Implementation of Approximate Error Detection and Correction in Fault Tolerance Code of Hamming and BCH with using Stochastic Checkers	Ms. R.Suganya	174
33.	NCRDSET-1169	Low Power and Accurate Complex Square Root Computation using Low-Complexity Methodology	Ms. P. Jeya Stella,	179

Analysis and Importance of Software Development

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Abstract - Software project management is an art and science of planning and leading software projects. It is a sub-discipline of project management in which software projects are planned, implemented, monitored and controlled. In software engineering, a software development process is the process of dividing software development work into distinct phases to improve design, product management, and project management. It is also known as a software development life cycle. A software process is represented as a set of work phases that is applied to design and build a software product. Project management objectives are the successful development of the project's procedures of initiation, planning, execution, regulation and closure as well as the guidance of the project team's operations towards achieving all the agreed upon goals within the set scope, time, quality and budget standards. In this paper the effective trends and ways for the software development life cycle has been represented.

Keywords- integration, requirement, project Management, software process, test, integration, Requirement.

I. INTRODUCTION

The software engineering can be defined as a set of tools ,method and techniques which are applied to develop a professional software. The software project management objective is produce quality software products to satisfy user needs Scheduled times and at acceptable cost. Project management software is software used for project planning, scheduling, resource allocation and change management. It allows project managers (PMS), stakeholders and users to control costs and manage budgeting, quality management and documentation and also may be used as an administration system. Especially for small Sized companies, many software project teams are unable to Deliver quality products on time. The key to achieve this Objective is to introduce a suitable software process. There are many famous existing processes in the world, Such as RUP (Rational Unified Process), TSP (Team Software Process), PSP (Personal Software Process) etc. They all have many successful cases. But it is very hard to use Those processes in small sized companies in our nation. Because the small size companies have not enough money, People, or other resources to apply them directly. After we Study the problems which often appear in some small sized Companies, we present a process framework. This framework Will be helpful to other small sized software companies.

Securing Medical Image Using 2-D Chaotic Map and C-MLCA.

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Abstract -The progressive development in telecommunication and networking technologies have led to the increased popularity of telemedicine usage.It involves storage and transfer of medical images and related information so security concern is emerged.This project presents a method to provide the security to the medical images since its play a major role in people healthcare organizations by using Two D chaotic map and C-MLCA.The main idea in this work based on the chaotic sequence in order to provide efficient encryption method.It allows reconstructing the original image from the encrypted image with high quality and minimum distortion in its content and doesn't effect in human treatment and diagnosing.

IndexTerms—Two Dimensional chaotic map,C-MLCA

I.INTRODUCTION

To develop an application for secure transfer of medical image using chaotic encryption and C-MLCA.Internet based communications are evolving at a tremendous rate. Encryption and compression of data has become an important way to protect data resources especially on the Internet, intranets and extranets. Encryption then compression involves applying special mathematical algorithms and keys to transform digital data into code before they are transmitted and decryption involves the application of mathematical algorithms and keys to get back the original data from code. The goal of security management is to provide authentication of users, and integrity, accuracy and safety of data resources. The model for encryption and compression of an image is designed with the objectives to have confidentiality and security in transmission of the image.Used data as well as storage in the data warehouse, with the help of suitable user-defined key.

II.LITERATURE SURVEY

In this paper, an efficient chaotic encryption scheme is proposed for gray scale medical images using Arnold cat map and pseudorandomly enhanced chaotic map. The scheme achieves secure encryption by Arnold transformation followed by pixel value modification with chaotic key sequence [1].In this project, to image encryption method which uses NC (Non-linear Cycle) and 2D CAT (Two Dimensional Cellular Automata Transform) in sequence to encrypt medical images. NC to generate a pseudo noise sequence equal to the

Implementing WAN Services in Software Defined Networks with Open APIs

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Abstract -For desired wide area network (WAN) connections cloud applications require the ability to customize bandwidth and network policies. But, In Virtual Private Network (VPN) is difficult to provide this ability. Software-Defined Network (SDN) creates the opportunities to provide this ability. In this paper, we design Grace, a SDN-based system to provide diverse connections with flexible bandwidth and customized policies, implementing WAN as a service. Grace provides the ability to customize WAN connections without policy conflicts, allocates required bandwidth optimally, translates them into low-level configurations for underlying network devices, and successfully deploys WAN in a short time.

Index Terms—Soft-defined network (SDN), wide area network (WAN), bandwidth allocation, policy conflict.

1. INTRODUCTION

WIDE area networks (WANs) connecting datacenters locating in different places become an indispensable infrastructure in cloud applications. Many applications, providing on-demand computing and storage resources, rely on low latency inter-datacenter communications or high-throughput transfers. These applications result in rapid growth in interdatacenter traffic, and significantly increase the bandwidth requirements of WAN. Given such huge demands, service providers (SPs) have to charge hundreds of millions of dollars for Gbps traffic rate in WAN. However, even high investment is still unable to cope with the ever-changing requirements. First, networks interconnecting multiple datacenters are diverse. Second, the bandwidth demands are continuously changing in the WAN connections, and thus the ability to provide flexible bandwidth configurations is necessary.

Virtual private network (VPN) as an important network technology, provides WAN connections over the public network infrastructure. However, it has several main problems unsolved. First, applying for VPN services is a time-consuming and complicated process. Second, although VPN provides end-to-end connections through manual installation, it is difficult to establish diverse connections such as interconnecting multiple datacenters in a short time. Third, achieving on-demand bandwidth allocation requires frequent changes of

A Lightweight Encryption Algorithm For Secure Iot Based On Cryptography

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Abstract -The data and image encryption system for security improvement and delay minimization is presented. An efficient image-encryption scheme based on AES system and 2D compressive sensing is proposed. The proposed hybrid encryption scheme is built using a combination of Advanced Encryption Standard (AES). The proposed model starts by encrypting the secret data; then it hides the result in a cover image using 2D-DWT. Both color and gray-scale images are used as cover images to conceal different text sizes. The Internet of Things (IoT) being a promising technology of the future is expected to connect billions of devices. Simulations result shows the algorithm provides substantial security in just five encryption rounds. The hardware implementation of the algorithm is done on a low cost 8-bit micro-controller and the results of code size, memory utilization and encryption/decryption execution cycles are compared with benchmark encryption algorithms.

Keywords – 2D Compressive, Internet.

I. INTRODUCTION

Internet of Thing is the emerging technology in the field of Computer Engineering especially in networking field. Where networking may consist of the internal or external network. The Internet is the backbone of the IOT. And IOT is the technology where electrical, mechanical objects may be connected to the internet to control them remotely from anywhere of the world. Useful data and information will be swapped by billions of devices and services and these services and devices will be powered by Internet of Things. As IOT systems will be ubiquitous and pervasive, a number of security and privacy issues will arise. And the things which are connected to the internet may have many security concerns. Due to security and privacy related concerns, IOT could not set himself as a reliable technology.

Information Security of Applications in Internet Of Things(IOT)

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Abstract - The Internet of things(IOT) is heavily affecting our daily lives in many domains, ranging from tiny wear-able devices to large industrial systems. Consequently, a wide variety of IOT applications have developed and deployed using different IOT frameworks. An IOT framework is a set of guiding rules, protocols and standards which simplify the implementation of IOT applications. The success of these applications mainly depends on the ecosystem characteristics of the IOT framework, with the emphasis on the security mechanisms employed in it, where issues related to security and privacy are pivotal. In this paper, we survey the security of the main IOT frameworks, a total of 8 frameworks are considered. For each framework, we clarify the proposed architecture, the essentials of developing third-party smart apps, the compatible hardware, and the security features. Comparing security architectures shows that the same standards used for securing communications, whereas different methodologies followed for providing other security properties.

I.INTRODUCTION

The Internet of Things (IOT) plays a remarkable role in all aspects of our daily lives. It covers many fields including healthcare, automobiles, entertainments, industrial appliances, sports, homes, etc. The pervasiveness of IOT eases some everyday activities, enriches the way people interact with the environment and surroundings, and augments our social interactions with other people and objects. This holistic vision, however, raises also some concerns, like which level of security the IOT could provide? and how it offers and protects the privacy of its users? Developing applications for the IOT could be a challenging task due to several reasons; (i) the high complexity of distributed computing, (ii) the lack of general guidelines or frameworks that handle low level communication and simplify high level implementation, (iii) multiple programming languages, and (iv) various communication protocols. It involves developers to manage the infrastructure and handle both software and hardware layers along with preserving all functional and non-functional software requirements. This complexity has led to a quick evolution in terms of introducing IOT programming frameworks that handle the aforementioned challenge Background.

Smart Health Care System Using Data Mining

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Abstract - Data mining is one of a new powerful technology which is of high used in modern computer world. It is a sub field of computer science that uses already existing data in different databases to transform it into new researches and results. In this data-rich world, people are running out of information. This can be a matter of risk for the person who needs immediate remedies regarding their poor health. To unfold this hurdle, the concept of data mining is the best suited. Here, the traditional approaches have been replaced by smart technologies. The main purpose of data mining application in healthcare system is to develop an automated tool for identifying and disseminating relevant healthcare information. In this system, we have presented a web based application for Predicting diseases based on user input symptoms. It predicts probable diseases by mining data sets and provides remedial solutions for Effective Diagnosis.

Keywords- SVM Algorithm , Data Mining , Web Application.

I. INTRODUCTION

Health is one of the most important assets of our life which directly reflects in any form of progress or development. In today's hustle and bustle of life, most of the people neglect this asset which may be due to lack of time and complexity in the vast data available over the Internet. Data mining has introduced various techniques which would overcome this problem and assist us to emphasize on both health and work simultaneously. In present era, Data Mining is becoming popular in healthcare field because there is a need of efficient analytical methodology for detecting unknown and valuable information in health data. In health industry, Data Mining provides several benefits such as detection of the fraud in health insurance, availability of medical solution to the patients at lower cost, detection of causes of diseases and identification of medical treatment methods.

It also helps the healthcare researchers for making efficient health care policies, constructing drug recommendation systems, developing health profiles of individuals etc. This data contains details regarding hospitals, patients, medical assert, cure cost etc. So, there is a must to create a commanding tool for scrutinizing and extracting significant information from this intricate data. The analysis of health data improves the healthcare by enhancing the concert of patient organization tasks. The results created by Data Mining technologies improve the progression of predicting the comparable patients and clustering them under a challenging group based on illness or fitness issues, so that healthcare involvement offers them effectual treatments.

Virtualization in Industries

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Abstract— In, early days industries used physical role-based servers but as they were hard to scale according to the load they are getting and it was hard to manage the infrastructure and if any server is failed then the service correspond to that server also gets down and a plausible solution to all these problems were solved by Virtualization.

I.INTRODUCTION

Today many people know that the most efficient way of getting max performance from an infrastructure is by Virtualization as it provides efficiency and redundancy at many levels but only a few knows that why all major organizations moved to Virtualization from using physical servers in their datacenters and why is it more efficient, convenient and better choice to run all servers on virtualized computing fabric rather than deploying everything on physical servers.

II.ABOUT VIRTUALIZATION

Virtualization is a technology in which an application, guest os or data storage is kept away from the true underlying hardware or software. A key use of virtualization technology is server virtualization, which uses a software layer called a hypervisor to emulate the underlying hardware. This often includes the CPU's memory, I/O and network traffic. The guest operating system, normally interacting with true hardware, is now doing so with a software emulation of that hardware, and often the guest operating system has no idea it's on virtualized hardware. While the performance of this virtual system is not equal to the performance of the operating system running on true hardware, the concept of virtualization works because most guest operating systems and applications don't need the full use of the underlying hardware. This allows for greater flexibility, control and isolation by removing the dependency on a given hardware platform. While initially meant for server virtualization, the concept of virtualization has spread to applications, networks, data and desktops.[8]

2.1 History Of Virtualization

As many say that Virtualization started from 1972 by IBM in its mainframe on VM/370 as an advanced function and a Type-I code but the truth is that is goes at-least 8

The Internet of Things in Oil-Gas Industry

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Abstract— In this paper proposes architecture based on the Internet of Things for monitoring various operations of the oil and gas industry. Use of several Wireless Sensor Networks in management of oil and gas platforms is researched. New opportunities created by processing of data collected via sensors for improvement of safety of oil platforms (deposits), optimization of operations, prevention of problems, troubleshooting and reduction of exploitation costs in oil and gas industry.

Keywords— Internet of Things, Wireless Sensor Networks, monitoring, sensors, smart objects, network gateways, control center.

I.INTRODUCTION

In the modern era, the oil and gas industry faces new production problems, especially against the background of a decline in oil prices. Finding new modernized ways to improve results and reduce costs in order to increase efficiency and competitiveness is an urgent and important task. Here a special role is assigned to collection of more detailed and accurate information about the production process and solution of the control problem. Directions such as increasing the speed of exploration and detection of oil, increasing oil production and reducing the risks to health, security of humans and the environment identified as a result of equipment malfunctions or operator errors are constantly developed with application of Internet of Things (IoT).

IoT is characterized as the next revolutionary development layer of information technologies fields after computer, Internet and mobile telephone communication. It is mainly used in medicine, agriculture, oil-gas industry and other fields in order to remotely control occurring changes, prevent fires and provision of other useful functionality.

Kevin Ashton, one of the developers of Radio Frequency Identification (RFID) technology notes that, IoT has a potential to change the world as much as Internet, may be even more [1].

Solution of several important social problems is expected with realization of IoT. Also, improvement issues of control development processes in oil and gas industry will be solved.

IoT will affect everything that surrounds us in nearest decades. Mentioned technology is mainly applied in following fields [2]:

- oil-gas industry: control of oil products exploration, production, processing,

Customer Service For Voice Based Im Bot

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Abstract - IM Bot or conversational interfaces as they are also known, present a new way for individuals to interact with computer systems. Traditionally, to get a question answered by a software program involved using a search engine, or filling out a form. A chatbot allows a user to simply ask questions in the same manner that they would address a human. The most well-known chatbots currently are voice chatbots: Alexa and Siri. Chatbots are currently being adopted at a high rate on computer chat platforms. The Customer Service chatbot will be built using artificial algorithms that analyze user's queries and understand user's message. Customer just have to put their query to the chatbot which is used for chatting. The system will use the artificial intelligence algorithms to give appropriate answers to the user. If the answer is found invalid, then some system to declare the answer as invalid can be incorporated. This system may help Tele-Customers to stay updated with the every user's queries and it will provide an answer.

Keywords- Artificial intelligence, Speech recognition, Chatter box, internet

I. INTRODUCTION

The most well-known Chatbot's currently are voice Chatbot's: Alexa and Siri. However, chatbots are currently being adopted at a high rate on computer chat platform. The technology at the core of the rise of the chatbot is natural language processing ("NLP"). Recent advances in machine learning have greatly improved the accuracy and effectiveness of natural language processing, making chatbots a viable option for many organizations. This improvement in NLP is firing a great deal of additional research which should lead to continued improvement in the effectiveness of chatbots in the years to come.

Most commercial chatbots are dependent on platforms created by the technology giants for their natural language processing. These include Amazon Lex, Microsoft Cognitive Services, Google Cloud Natural Language API, Facebook Deep Text, and IBM Watson. Platforms where chatbots are deployed include Facebook Messenger, Skype, and Slack, among many others.

In this project AWS service for building conversational interfaces for any applications using voice and text. With Amazon Lex, the same conversational engine that powers Amazon Alexa is now available to any developer, enabling you to build sophisticated, natural language chatbots into your new and existing applications. Amazon Lex provides the deep functionality and flexibility of Natural Language Understanding (NLU) and Automatic Speech Recognition (ASR) so you can build highly engaging user experiences with lifelike,

Secure Password Storage and Authentication By Encrypted Negative Password

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Abstract- secure password storage is very much important thing for the systems which are based on password authentication. Because of the simplicity and efficiency it has been widely used. In our framework, first, the received plain password from a client is hashed through a cryptographic hash function (e.g., SHA-256). Then, the hashed password is converted into a negative password. Finally, the negative password is encrypted into an encrypted negative Password (abbreviated as ENP) using a symmetric-key algorithm (e.g., AES), and multi iteration encryption could be employed to further improve security. The algorithm complexity analyses and comparisons show that the ENP could resist lookup table attack and provide stronger password protection under dictionary attack. It is worth mentioning that the ENP does not introduce extra elements (e.g., salt). Besides this, the ENP could still resist precomputation attacks. Most importantly, the ENP is the first password protection scheme that combines the cryptographic hash function, the negative password and the symmetric-key algorithm, without the need for additional information except the plain password.

I.INTRODUCTION

A password is a form of secret authentication data that is used to control access to a resource. The front line defense against intruders is the password system. The password is kept secret from those not allowed access, and those wishing to gain access are retested on whether or not they know the password and are granted or denied access accordingly. The use of passwords goes back to ancient times. Sentries guarding a location would challenge for a password. They would only allow a person in if they knew the password. In modern times, passwords are used to control access to protected computer operating systems, mobile phones, cable TV decoders, automated teller machines (ATMs), etc. A typical computer user may require passwords for many purposes: logging into computer accounts, retrieving e-mail from servers, accessing files, databases, networks, websites, and even reading the morning newspaper online. Despite the name, there is no need for passwords to be actual words; indeed passwords which are not actual words are harder to guess, but are generally harder for users to remember.

1.1. Typical Password Protection Schemes

1.1.1 Hashed Password: The simplest scheme to store passwords is to directly store plain passwords. However, this scheme presents a problem that once adversaries obtain the authentication data table, all passwords are immediately compromised. To safely store passwords, a common scheme is to hash passwords using a cryptographic hash function,

Reliable and Energy-efficient Hybrid Screen Mirroring Multicast System

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Abstract-Data sharing in networks are now days a challenging one where the source is sending a video file to destination, major problem is interference. Once the router is set to search for a path takes too time for identifying a better path to transmit data. The performance is affected due to the time delay of searching path and the interference cause data loss or interruption of transmission. To solve this problem and provide multicast video streaming over Wi-Fi network, some research efforts have been devoted to overhearing and forward error correction (FEC)-based multicast transmission. In this method, the sender delivers the data to the target receiver using unicast transmission while the non-target receivers overhear the unicast transmission. Because the rate adaptation and MAC-layer retransmission are operated by the unicast transmission between the sender and the target receiver, high transmission rate can be achieved. Moreover, FEC schemes are employed to provide reliable data delivery to the non-target receivers who cannot utilize the MAC-layer retransmission. The proposed system not only shapes the screen mirroring traffic, but also determines the target sink device and Raptor encoding parameters such as the number of source symbols, symbol size, and code rate while considering the energy consumption and processing delay of the Raptor encoding and decoding processes.

Index Terms— Screen content, Screen mirroring, WiFi, Multicast, Systematic Raptor codes, Overhearing

I.INTRODUCTION

SCREEN mirroring technology enables a mobile device to duplicate its screen content in real-time onto a large display device, such as monitor, TV, and projector. This technology allows the mobile user to overcome the constraints of the small display unit in a mobile device. Furthermore, screen mirroring can be applicable to various applications, such as gallery sharing, presentations, mobile streaming, and mobile gaming. Because of its wide range of applications, state-of-the-art mobile devices typically offer screen mirroring functionality, and some commercial products are already available, e.g., AirPlay, Chromecast, MirrorOp, Splashtop, and Miracast.

In particular, Miracast, which is developed by the WiFi Alliance, aims to act like a wireless High Definition Multimedia Interface (HDMI) cable. In Miracast, the source device (i.e., the mobile device) encodes the screen content with H.264/AVC and transmits the compressed video data to the sink device (i.e., typically WiFi enabled

Automatic Movable Platform for Railway Track Crossing

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Abstract -The proposed system is used for the passenger who can be able to reach one platform of the railway station to the other without use of staircase steps and excavators. The system consists of movable platform which connects the two platforms of the railway station. Sensors are placed on the two sides of the railway station. If the train arrives at one end of railway station, the sensor network indicates the movable platform through Zigbee protocol with the help of Arduino microcontroller then the movable platform will automatically close. When the train departs the station, the other end of sensor network indicates the movable platform through Zigbee protocol with the help of Arduino microcontroller then the movable platform will automatically open. Then the passenger who can be able to reach one platform of the railway station to the other using movable platform.

Keywords-Zigbee protocol,Arduino microcontroller.

1.INTRODUCTION

The present railway systems in India are not automated which are fully manmade. In railway stations normally we use bridges. It is very difficult for the elderly persons or handicapped persons to use the bridge. There are several problems due to current platform system. Climbing stairs to foot over bridge for changing platform is one of the major issue every one faces during the beginning and end of the rail journey. Everyone wishes the arrival and dispatch of a train from platform No. 1 without requiring climbing stairs. For Senior Citizen and differently abled, it is certainly a painful experience. Even for normal person, pain of climbing stairs with handful of luggage is visible on their faces. Certainly, Indian Railways is looking for provision of escalators and lifts, but there is lot that should have also been done while providing stairs. There are many incidences when the platform of the train changed to PF 1 when VVIP has to board a train. There was a funny instance when platform of Rajdhani train changed to PF, but in return the coach guidance board started indicating wrongly. The VVIP along with family members had to travel a distance of 400 meter running along with luggage. In view of few accidents due to stampede at FOB, no one now dares to take such action.

Secure PIN confirmation for ATM Transactions using Wireless plans

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Abstract— Now-a-days many unauthorized access and theft takes place in ATM machines. In general, all the keypad based verification system has several possibilities of password guessing by way of shoulder movements and skimming device attacks. Shoulder-surfing is an attack on secret code authentication that has traditionally been hard to defeat. At the same time the growth of mobile technology, with regard to availability of services and devices like Smartphone's has created a new occurrence for message and data processing capability to do Daily Works. One such phenomenon that has emerged in the Social work Environment is BYOD (Bring Your Own Device), which means the users can use their personal device to access company resources for work [12]. This paper proposes a Wireless Pin Authentication Method (WPAM) for secure transactions using BYOD trend. In addition to that Kerberos authentication protocol is used for user's authentication. Hence, considered as a reasonable trade-off between safety, usability and cost. So, this paper mainly concentrates on providing efficient security to ATM against theft.

Keywords— Personal identification number, Skimming attack, Pin Verification, Shoulder surfing attack, Wi-Fi.

I. INTRODUCTION

Nowadays many unauthorized access, threats and theft takes place in ATM machines. Currently PIN numbers are used for security in ATMs. The crime rates are also increased with fleeting time and will never fall as attackers are efficient enough with all detailed criminal knowledge collected with them. The service provider must promote a stable security of user data for customer satisfaction. The goal is to protect ATM from theft using counter measures for security. As the ATM related security are public and published in newspaper and internet. So the security measures applied are known to both the regulator and attacker. Nowadays we use 4-Digit PIN code for safety and security for money deposition and transaction. But in real the PIN numbers can be hacked easily through specific fraudulent activities and it can be observed by human or device attackers. The attackers now are technically knowledgeable they have every idea about the usage of the user. At first, the attacker will try hacking the 4-PIN code using finger prints plated in the number box. Then the hacker tries hacking the bar code of the card using the detector and a duplicate card of the user is framed for theft. Through this method the thief can withdraw our money without the regulators knowledge and initiate theft without any doubt.

Currently Personal Identification Number (PIN) is used for security in ATMs and authentication is provided by the Users entering (PIN). This PIN numbers can be hacked easily through specific fraudulent activities and it can be observed by human or skimming device attackers. So, this paper proposes a Wireless Pin Authentication Method (WPAM) for secure ATM transaction using Wi-Fi technology. In this method, customers use their own wireless devices (Laptop, Smartphone and Tablet) for ATM Transactions.

Marine Monitoring & Early Warning Detection Using Wireless Sensor Networks

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Abstract-- Marine monitoring using wireless sensor networks (WSN) is a challenging area of research due to the instability of the oceanic environment. The early warning system for ocean monitoring and defending is an instant need of the hour constraint for avoiding huge losses in marine world. It can be possible using the information gathering technologies, such as ultrasonic, radar, machine vision, infrared, laser, and other integrated technologies, such as Wireless sensor networks, underwater marine detectors and computer information processing. It sound like science fiction, but the fact in today's technology is to know about the complexity in ocean monitoring, managing and protecting the marine safety. This paper mainly focuses on the applications of WSNs and early detection measures of marine Traffic Control Technology using WSNs involved to protect oceanic marine world.

Keywords: *Wireless Sensor Networks, Marine monitoring, applications of WSN, Sensor Nodes*

I.INTRODUCTION

The only way to save the Oceanic environment is to open up the new ways in which we learn and understand the complexity of marine life, and we can monitor waters and coasts. The key aspect for turning on the vision of saving the marine life put into reality is the availability of an effective and cooperative underwater sensing, reasoning, and communication platform. This makes possible for sensing and actuating devices to exchange data and signals, network (connect) together, collaboratively and locally asses their observation environment and act upon. The Early detection of oceanographic threats and traffic control has been recognized as one of the first priorities and effective ways in saving marine environment.. This paper highlights the main components necessary to form an ideal marine based WSN system, and some projects involved in implementing control and security in Marine WSNs.

II.OBJECTIVES OF THE STUDY

1. A study on the applications of WSNs a
2. To study on early detection measures of marine Traffic Control Technology using WSNs

Research Methodology

The study is based on secondary source

Design of Low Cost CNC Plotter Machine using Arduino Uno

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Abstract - To reduce the cost of the CNC machine we have proposed an idea to recycle the unused Cd-Rom parts from the old computer system. The implementation of our idea consists of the followings: Arduino controller, Stepper motors – for the motion of X and Y axis, mini step Servo motor, CNC shield V3.0, Arduino Processing software, Inkscape software is used to create G-codes for the input data, and arduino processing software using GRBL is used to control the axis x, y and Z axis. Plotting of coordinates is cultured within G-codes prepared by a software after which it is transferred to the microcontroller by which the motor mechanism is instructed to draw the image or text data, motor mechanism includes X-and Y-axes that can each work independently, yet simultaneously

Index Terms— Computer Numerical Control (CNC), G-code, Micro-controller Unit (MCU), Plotter, arduino board

I. INTRODUCTION

A Plotter is a special type of printer that uses a pen to draw images on solid surfaces. In Computer Numeric Control (CNC), microprocessor is used which is capable of processing logical instructions interfaced with a computer. The logical instructions are provided by using a computer in the form of code or text or image which is then transformed into a machine language by microprocessor to be executed by the machine. A CNC plotter machine is a 3D controlled 2D plotting machines which uses a pen to draw text or image on any given solid surface. It can be used for the purposes such as PCB Design, logo design, etc. This project is based on CNC plotter machine with the increasing demand for the use of CNC plotters in universities and laboratories, a cheap and less complex design is an absolute need. The parts used for the plotter in our project are easily available at a very low price and spare part are also used. The construction is very simple and robust.

II. OBJECTIVES

The objectives of this project is to design and implement a CNC plotter machine (Drawing surface area 20cm x 20cm) which will be able to draw a PCB layout (or any image) on a solid surface.

III.METHODOLOGY

A CNC plotter is able to draw complex line drawings. The coordinates are uploaded to the machine controller by a separate program. The image file is transformed into a G-code via Software. Then the code is transferred to the microcontroller by which the motor mechanism is instructed to draw the image. In this project, we are going to present a simple design for a CNC plotter. Our idea is an arduino based design using ATMEGA 328P microcontroller. The machine will have three motors to implement the X, Y, and Z axis. A servo motor will be used along the Z axis for positioning the pen which will go up for logic 0 and down for logic 1[1]. Drawing will be done on the X-Y plane where the positioning will be controlled by stepper motors. Mini CNC Plotter Machine is worked on input as a G codes of Design and Converting it via use of arduino, Stepper Drivers, CNC Shield, Stepper Motor in to a Rotation of Lead screw. We have work on to maintain lowest cost of our project. We have design a simple construction of our project. This is easier way to use stepper motor with lead screw, CNC shield, Stepper drivers, Arduino based atmega328 Board, etc. The Setup of machine is flexible that's why it will be easily Transported and Maintenance time is short.

IV. SOFTWARE AND CODING

A. To Complete The Task Of Entire Project Three Software Is Used

1. Inkscape

A Assorted Novel-Discriminative Based Hashing Method

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Abstract— this paper represents the hashing method. Hashing methods have proven to be useful for a variety of tasks and have attracted extensive attention in recent years. Various hashing approaches have been proposed to capture similarities between textual, visual, and cross-media information. However, most of the existing works use a bag-of-words method to represent textual information. Since words with different forms may have similar meaning, semantic level text similarities cannot be well processed in these methods. To address these challenges, in this paper, we propose a novel method called semantic cross-media hashing (SCMH), which uses continuous word representations to capture the textual similarity at the semantic level and use a deep belief network (DBN) to construct the correlation between different modalities. To demonstrate the effectiveness of the proposed method, we evaluate the proposed method on three commonly used cross-media data sets are used in this work. Experimental results show that the proposed method achieves significantly better performance than state-of-the-art approaches. Moreover, the efficiency of the proposed method is comparable to or better than that of some other hashing methods.

I. INTRODUCTION

Due to the rapid expansion of mobile networks and social media sites, information input through multiple channels has also attracted increasing attention. The relevant data from different modalities usually have semantic correlations. For example, images can be used to find semantically relevant textual information. Existing methods proposed to use Canonical Correlation Analysis (CCA), and deep Boltzmann machine to approach the task. Due to the efficiency of hashing-based methods, there also exists a rich line of work focusing the problem of mapping multi-modal high-dimensional data to low-dimensional hash codes, such as discriminative coupled dictionary hashing (DCDH) , Cross-view Hashing (CVH) , and so on. In short text segments (e.g., micro blogs, captions, and tags), the similarities between words are especially important for retrieval. For example: *journey* vs. *travel*, *coast* vs. *shore*. According to human-assigned similarity judgments, more than 90% of subjects

Hypervisor and Redemption –Awareness Analysis of 5G Networks

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Abstract-Recently, Fifth Generation (5G) cellular networks have gained promise as a paradigm that could provide rich computational resources for users. Virtualization is a key technology for wireless communications, especially in standard Long Term Evolution (LTE) systems, which enable cloud based multi-tenancy business models through providing a shared scalable resource platform for all users. Despite the potential significance of Hypervisor for cellular networks, several challenges remain to be addressed. For cellular networks, providing multiple levels of security is essential to support different levels in information sensitivity. However, placing different customers' services requirements on a virtualized evolved Node B's (eNB's) scheduler may lead to noticeable security vulnerabilities. In this work, we present an overview of cellular network security issues in a fully virtualized environment along with their preventative measures. Hypervisor is implemented by allowing service providers to share their resources while performing different scheduling policies and sharing one eNB. To evaluate the considered framework, the average delays for different traffic types were measured. The results of the simulation showed that virtualization could noticeably reduce average user equipment delay compared with the non-sharing scheme.

Index Terms -5G Cellular Networks, LTE, Scheduling, Virtualization, Security-Awareness.

I. INTRODUCTION

Wireless networking provides various advantages, particularly improving productivity due to increased accessibility to information resources. However, wireless technology is extremely vulnerable to new threats and exposes the existing profile to additional information security risks. For instance, unencrypted or weakly encrypted algorithms allow attackers to read private information, thereby compromising data confidentiality. Wireless networks have recently witnessed a tremendous growth in the data traffic due to the increase in the number of users that are always demanding higher data rates. In the Third Generation Partnership Project (3GPP), to cope up with the new demand for increased data traffic, network virtualization based architectures are being proposed for next generation networking in wireless domain, especially in Fifth Generation (5G) wireless networks. The sharing of resource blocks (RBs) by services' providers

Implementation of image processing technique for detection of brain tumors using MRI

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Abstract - Brain tumor is a perilous disease which causes brain damage. So, detection and classification of brain tumor in early stage is necessary. The brain tumor may be of cancerous (malignant) or may be of non-cancerous (Benign) and its detection is a very much important to reduce the death rate of human suffering from tumor. The detection of brain tumor can be performed by using various image processing techniques like brain magnetic resonance imaging (MRI), Computed Tomography (CT) etc. Among these techniques the brain MRI is widely adopted in the world due to its significant features. The MRI deals with the complicated problem of brain tumor detection. Due to its complexity and variance getting better accuracy is a challenge. The proposed system consists of three parts such as Preprocessing, Feature extraction and Classification. Preprocessing has removed noise in the raw data, feature extraction we used GLCM (Gray Level Co- occurrence Matrix) and classification we used (Extreme Learning Machine). In this paper compare the accuracy results of proposed classification technique (Extreme Learning Machine) to Adaboost classification technique.

Keywords - Magnetic Resonance Image, Brain Tumor, Feature Extraction, Extreme Learning Machine, Adaboost, Segmentation.

I. INTRODUCTION

Nowadays, most of the brain tumor patient is increasing considerably. The human brain is one of the most important parts of human body. The human body is made up of inorganic matter, made up of cells. The cells grow divide helps us to be healthy but unwanted growth cells tends to tumor forming. The two types of brain tumors one is malignant and another one is benign. In medical diagnosis using image data include X-ray, CT scan and MRI. One of the most reliable technique is Magnetic Resonance image (MRI). The MRI is type of scan that uses strong magnetic field and radio waves to produce detailed images of the inside of the body. The MRI is radiation free then others and a powerful method for detect the brain tumor. But it is very time consuming. some of the machine learning techniques used are ANN, SVM and KNN. But these methods are used results of many problems such as outlier, error rate, mis-classification which we have to address. In this problems overcome the extreme learning machine algorithm are very popular.

In this paper, the classification method for MRI is project using the extreme learning machine algorithm. The ELM (extreme learning machine) is a neural network based model and innovative new data driven tool that utilizes a state of the act layer feed forward network.

A Novel Dual Broadband modified Circular Patch Antenna For Wireless Application

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Abstract – This paper presents a circular patch micro strip antenna operate in dual band (1.66 GHz and 2.777GHz). The proposed Circular patch antenna will be in light weight, flexible, slim and compact unit compare with current antenna used in dual band. The paper also presents the detail steps of designing the circular patch micro strip antenna and the simulated result. HFSS software is used to compute the gain, power, radiation pattern, and S11 of the antenna. The circular micro strip antenna exhibits appropriate required parameters depend on the feed point position, size of the circular patch and length of the micro strip line. The agreement between the measured and simulated results is slightly differ caused by several factors that would be discussed in result part.

Keywords: Circular microstrip antenna, feed line, cavity model

I. INTRODUCTION

Microstrip antennas are used in communication systems due to simplicity in structure, conformability, low manufacturing cost, and very versatile in terms of resonant frequency, polarization, pattern and impedance at the particular patch shape and model. The performance of the antenna is affected by the patch geometry, substrate properties and feed techniques. In a circular microstrip antenna, the mode is supported by the circle shape on a substrate with height is very small compared to wavelength ($h \ll \lambda$). Referring to the dimensions of the circular patch, only one degree freedom to control the radius, a of the patch. This would not change the order of the modes but the absolute value of the resonant frequency. Basically a circular micro strip antenna can only be analyzed via the cavity model and full-wave analysis. The cavity model also provides the method that the normalized fields within the dielectric substrate can be found more accurately and it does not radiate any power. Microstrip antennas have profound applications especially in the field of medical, military, mobile and satellite communications. Their utilization has become diverse because of their small size and light weight. Rapid and cost effective fabrication is especially important when it comes to the prototyping of antennas for their performance evaluation. As wireless applications require more and more bandwidth, the demand for wideband antennas operating at higher frequencies becomes inevitable. Inherently micro strip antennas have narrow bandwidth and low efficiency and their performance greatly depends on the substrate parameters i.e. its dielectric constant, uniformity and loss tangent. The microstrip antennas are mostly a broadside radiator.

Design of a 60 GHz Power Amplifier utilizing 90nm CMOS Technology

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Abstract

In order to satisfy the short-distance high-speed wireless transmission communication system, such as Wireless Personal Area Network (WPAN) applications. A 60GHz high efficiency single ended power amplifier is proposed, which is with three stages cascade structure, and it is design with SMIC 90nm 1P9M CMOS technology. The on-chip spiral inductor with small inductance and high-quality factor is designed with the top metal layer, this type of spiral inductor can be used as the passive circuit for input, output and inter-stage impedance matching network circuits design in order to improve the overall performance of the PA. The additional power efficiency will be increased by the reduction of the transmission losses and output matching losses. The simulation results show that the power amplifier can achieve the power gain of 17.2dB, the output power is 8.1dBm at 1dB compression point, the saturated output power is 12.1dBm, the peak power additional efficiency is 15.7% and the DC power consumption is 70mw at 1.2 V voltage supply.

1. Introduction

In recent years, as demand for high data rates for short-range communications within 10 meters has been on the rise, unlicensed bands (59-64 GHz) driven by the 802.11ad and 802.15c standards are of worldwide concern. 60GHz technology with high data transmission capacity, high security, strong anti-interference ability [1]. CMOS technology is used in millimeter-wave front-end circuit design due to its low cost and high integration. The main challenge in integrating millimeter-wave communications using low-cost technology is to design a power amplifier (PA) that meets power requirements. However, the low breakdown voltage of CMOS devices greatly limits the output power. How to improve the power added efficiency (PAE) when the maximum output power is obtained is the biggest challenge to design a millimeter wave PA. Up to now, some well-behaved 60GHz CMOS power amplifiers [2-10] have been reported in the literature. The PAEs of PA are mostly below 12% at high gain or high output power. The research by P.H. Chiang et al. [8] shows that the saturation output power can be as high as 16dBm through multiple coupling, but the power gain and PAE are only 9.2dB and 7.2% respectively. Studies by Y.S. Lin et al. [9] obtained gains of up to 30 dB using a cascade of 5 stages, but with a PAE of only 9.7%.

The first section of the article mainly introduces the power amplifier design considerations, to analyze the additional power efficiency; Section 2 introduces the circuit layout and simulation results;

Design and Comparison of Performance Characteristics of Rectangular Slot and Square Slot Patch Antenna

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Abstract - In recent years there is a need for more compact antennas due to rapid decrease in size of personal communication devices. This paper deals with the problem of size and performance of antenna. This paper presents design and comparison of simulation of a rectangular slot patch antenna and square micro strip patch antenna at 2.6 GHz for S-Band communications that provides a radiation pattern along a wide angle of beam and achieves a good gain. The square micro strip patch antenna was analyzed using Ansoft/Ansys HFSS. The proposed inset feed patch antenna provide good Resonant Frequency, Return Loss, VSWR, Radiation Pattern and the antenna Gain.

Keywords – HFSS, VSWR

I. INTRODUCTION

Micro strip patch antennas (also just called patch antennas) are among the most common antenna types in use today, particularly in the popular frequency range of 1 to 6 GHz. This type of antenna had its first intense development in the 1970s, as communication systems became common at frequencies where its size and performance were very useful. At the same time, its flat profile and reduced weight, compared to parabolic reflectors and other antenna options, made it attractive for airborne and spacecraft applications. More recently, those same properties, with additional size reduction using high dielectric constant materials, have made patch antennas common in handsets, GPS receivers and other mass-produced wireless products. This tutorial article is intended to provide basic information on patch antenna design and operation, directed to engineers who are mainly designers of RF microwave circuits. The paper hope that this information will assist them as they design circuitry connected to these antennas, or as they are called on to evaluate and specify a vendor's antenna product for their current project.

The demand on the portable mobile devices is increasing progressively with the development of novel wireless communication techniques. In that respect, compact size, light weight, low profile and low cost are now quite important challenges to be accomplished by the designers for every wireless mobile component. Recently, there is growing research activity on multi-frequency and wideband antennas for various wireless applications such as WLAN (Wireless Local Area Network) or WiMAX (Worldwide Interoperability for Microwave Access). In particular this paper, a great interest in wideband antenna for use in wireless communication has been presented. The wideband antenna Preferred over narrow

Design of security system for vehicles

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Abstract:

A smart security system is a special idea which makes motorcycle driving safer than before. This is implemented using GSM and GPS technology. Many times we hear the cases of bikes getting stolen from parking area or sometimes we forgot to remove the keys from bike by mistake. In these cases it is really difficult to get the bike back. This paper proposes a design to solve this purpose. This system provides two stage security systems. The main concept behind this project is of a bike security system using a password entered through keypad. This system turns on the Buzzer when wrong password is entered for 3 times. User can change this password anytime he/she wish using a keypad. If the rider wears the helmet then only the bike will be turned on. The working of this smart helmet is very simple, vibration sensors are placed in different places of helmet where the probability of hitting is more which are connected to microcontroller board. So when the rider crashes and the helmet hit the ground, these sensors sense and gives to the microcontroller board, then controller extract GPS data using the GPS module that is interfaced to it. When the data exceeds minimum stress limit then GSM module automatically sends message to ambulance or family member. The RF is used for starting the two wheeler first it checks whether the driver is drunken end or not if drunken it will not allow him to start the two wheeler. Here a circuit which detects when a call is incoming in a mobile phone by means of a flashing LED. It can detect even when the calling mobile phone and the engine will be automatically turned off.

Keyword: Alcohol Sensor, GSM, GPS, Microcontroller, Pressure Sensor, Smart helmet, Vibration Sensor.

I. INTRODUCTION

The thought of developing this project comes to do some good things to the society. Day by day the two wheeler accidents are increasing and leads to loss of many lives. According to a survey of India there are around 698 accidents occurring due to bike crashes per year. The reasons may be many such as no proper driving knowledge, no fitness of the bike, fast riding of bike, drunken and drive and s o o n Sometime the person injured, the accident may not b e directly responsible for the accident, it may be fault of rider, but at the end it's both the drivers involved in the accidents who is going to suffer. If accidents are one issue, lack of treatment in proper time is another reason for deaths.

According to the survey India 698 accidents occur per year, nearly half the injured people die due to lack of treatment in proper time. There are many reasons for this, such as late arrival of ambulance, no persons at place where the accident occurred to give information to the ambulance or parents.

This is a situation we observe in our day to day life, a thought of finding some solution to

Design of 32 Bit Vedic & Array Multiplier

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***ABSTRACT** – Multipliers are the fundamental components in many digital signal processing systems. Many import signal processing systems are designed on VLSI platform. In the VLSI system design performance area and power consumption are three important parameters of which power consumption the important factor to be considered. The largest contribution to the power consumption in multiplier is due to generation and reduction of partial products. So it is very much important to know the efficiency of different multipliers. One of the major components required to design a multiplier is Adder. In the existing system the execution time for most processor is dependent on its multipliers and hence need for high speed multiplier arises. The results are simulated for both Vedic & array multiplier for 16-bit length data only. In the proposed system is to simulate both Vedic and array multiplier using 32-Bit length. The advantage is high speed, reduce the time and LUT (look up table) The aim of this project is to provide a fast multiplier in VLSI domain.*

I. INTRODUCTION:

Multiplication is most useful arithmetic operation and widely used in Microprocessors, DSP and other Communication applications. Most of the DSP algorithms require real-time processing with several multiplications. Multiplication is the steps of adding a number of partial products. Multiplication algorithms differ in terms of partial product generation and partial product addition to produce the final result. For higher order multiplications, a huge number of adders are used to perform the addition of partial product. The speed limitation is largely associated with conventional multiplier architectures due to the latency introduced by number of adder structures. For high speed processors requirement, the need of high speed multiplier is increased. An efficient multiplier unit is designed in term of low power consumption, high speed, low area, minimum delay .The conventional mathematical algorithms can be simplified and optimized by the use of Vedic mathematics. By using this technique we can increase the computational speed of processor to perform fast arithmetic operations. Vedic multiplier (VM) is the fastest multiplier and it is based on Vedic multiplication formula called sutra. The main advantage of Vedic Multiplier is that the generation of partial product and their addition are done concurrently. Vedic techniques reduce the complexity, execution time of the system, power, area etc

II. ARRAY MUTIPLIER:

Array multiplier is an proficient layout of a combinational multiplier. Multiplier circuit is based on add and shift algorithm. Every partial product is generated by the multiplication of the multiplicand with one multiplier bit. The partial product are shifted according to their bit orders and then added. Multiplication of two binary numbers can be obtained by using AND logic gate that produced the product bit. The various product

A Smart contrivance for Women's Security

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Abstract - Women safety is necessitate of the hour now-a-days. In India, there are many cases of women pestering and molestation. Safety of women matters let be whether at home, outdoor or it be their work place. The literature surveyed shows that there are many mobile applications that are used for women safety purpose. One recent research study shows that there is a footwear chip which is sticked to the footwear that gets activated when the person taps one leg behind the other 4 times. We focus on developing a prototype that is a smart band which gets activated by tapping on the screen twice. Once the device is activated it starts sending the GPS location to the ICE contacts and police control rooms. There is a pulse rate sensor embedded in the device that senses the pulse rate of the person and a temperature sensor that senses body temperature of the person. The band when thrown with force the force sensor will get activated and sends the current location of the victim. A Piezo buzzer siren will get activated after 1-2 mins of the actual device getting turned on. The range of the buzzer is of 80-110 dB which can be heard from a distance of 50 feet long. An electric shock circuit is designed that emits electric current. On the top of the band screen there are two metal points that generates the shock when the two metal points come in contact with any surface or anybody. The device supports a micro usb charging. A smart application will be developed on the android platform which is connected with the device via bluetooth interface that shows the sensed data of the subject to the ICE contacts. Until the device is turned off it will send the location on the interval of 5 mins and will keep on beeping continuously.

Index Terms— GPS location, Piezo Buzzer Siren, Electric shock circuit, GSM module, Force sensor, Pulse rate sensor, Temperature sensor.

I. INTRODUCTION

The Internet of things [1] (IoT) is the network of physical devices, vehicles, and other items embedded with electronics, software, sensors, actuators, and network connectivity which enable these objects to collect and exchange data. Each thing is uniquely identifiable through its embedded computing system but is able to interoperate within the existing Internet infrastructure. Experts estimate that the IoT will consist of about 30 billion objects by 2020. As of 2016, the vision of the Internet of things has evolved due to a convergence of multiple technologies, including ubiquitous wireless communication, real-time analytics, machine learning, commodity sensors, and embedded system

Chebyshev Polynomial Approximation for Distributed Signal Processing

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Abstract—Unions of graph Fourier multipliers are an important class of linear operators for processing signals defined on graphs. We present a novel method to efficiently distribute the application of these operators to the high-dimensional signals collected by sensor networks. The proposed method features approximations of the graph Fourier multipliers by shifted Chebyshev polynomials, whose recurrence relations make them readily amenable to distributed computation. We demonstrate how the proposed method can be used in a distributed denoising task, and show that the communication requirements of the method scale gracefully with the size of the network.

Index Terms—Chebyshev polynomial approximation, denoising, distributed optimization, regularization, signal processing on graphs, spectral graph theory, wireless sensor networks

I.INTRODUCTION

Wireless sensor networks are now prevalent in applications such as environmental monitoring, target tracking, surveillance, medical diagnostics, and manufacturing process flow. The sensor nodes are often deployed en masse to collectively achieve tasks such as estimation, detection, classification, and localization. While such networks have the ability to collect large amounts of data in a short time, they also face a number of resource constraints. First, they are energy constrained, as they are often expected to operate for long periods of time without human intervention, despite being powered by batteries or energy harvesting. Second, they may have limited communication range and capacity due to the need to save energy. Third, they may have limited on-board processing capabilities. Therefore, it is critical to develop distributed algorithms for in-network data processing that help balance the trade-offs between performance, communication bandwidth, and computational complexity.

Due to the limited communication range of wireless sensor nodes, each sensor node in a large network is likely to communicate with only a small number of other nodes in the network. To model the communication patterns, we can write down a graph with each vertex corresponding to a sensor node and each edge corresponding to a pair of nodes that communicate. Moreover, because the communication graph is a function of the distances between nodes, it often captures spatial correlations between sensors' observations as well.

This work was supported in part by FET-Open grant number 255931 UNLocX. The authors would also like to thank Javier Perez'-Trufero for his help producing some of the graphics in this paper. That is, if two sensors are close enough to communicate, their observations are more likely to be correlated. We can further

Early Diagnosis of Parkinson's Disease Using Machine Learning Techniques

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Abstract - The Scans Without Evidence of Dopaminergic Deficit (SWEDD) is a non-degenerative variant, however it is clinically diagnosed as Parkinson's disease (PD). The effective diagnosis of PD from SWEDD helps for patient management in neural disorders. The Single Photon Emission Computed Tomography (SPECT) images provide valuable information about the content of dopamine in striatum, which improves the diagnosis of early stage PD. The present work proposes an effective system for Volume rendering SPECT images using alpha stable distribution based intensity normalization techniques for discriminating early PD from Healthy Control (HC) and SWEDD. The input images are chosen from Parkinson's Progression Markers Initiative (PPMI) database and the slices which has high specific uptake region are alone selected for further analysis. Statistical features are extracted, and classified using different machine learning techniques namely Naïve bayes, J48, Bayes net, Decision tree, K nearest neighbor. The highest accuracy is obtained by Decision tree classifier than other classifiers. These techniques are practiced to develop a promising diagnostic model for early diagnosis of PD.

Keywords- SPECT, PPMI database, SWEDD, Early PD, RBF- ELM, performance metrics

1. INTRODUCTION

PD is a movement disorder, causes due to deterioration of dopamine content in the striatum region of the Substantia Nigra (SN). The PD is clinically recognized by the cardinal symptoms like resting tremor, rigidity, postural instability, and bradykinesia, cognitive and psychiatric disturbances and it has an effective response to the drug levodopa (medication used to treat PD) in the advanced stage. However, the symptoms are unknown and ineffective response to levodopa at an early stage of the disorder [1, 2, 3]. The SPECT images are used for proper identification of dopamine content. Here the injected radiopharmaceutical drug binds to the dopamine transporters in the striatum. The distribution of the drug in the brain locates the dopamine content in it [4]. Hence the quantification of dopamine content in the human brain found to be an appropriate biomarker for diagnosing PD. About 10-15% of PD subjects have normal dopamine content in the scans, coined as SWEDD [5, 6]. PD medications to SWEDD subjects are not responding and regular follow up of these subjects are also unlikely to have PD [7, 8]. The GE health care report [9] states that the normal scan has high striatal uptake (dopamine), which forms symmetric shape or two comma shaped focal regions. Whereas an abnormal scan has reduced striatal uptake or circular region in one of the striatum, forming asymmetric shape.

Image processing techniques use intensity normalization approaches to rectify the errors that arise due to physiological reasons and baseline calibration of gamma camera. The integral and Cube based intensity normalization [10, 11, 12] approaches compute the mean integral value and cumulative intensity values of the image pixels by setting reference region outside the striatum. In another method, the normalization is done based on the maximum intensity value of the voxels, which may lead to wrong normalization because of peak intensity values due to noise. In alpha stable distribution based intensity normalization, common reference region (outside striatum) is set for both normal and abnormal images. The reference region is normalized to quantify the dopamine content in the striatum for easy and accurate diagnosis of PD [13]. The

Prediction of Minimum Surface Roughness and Tool Wear in End Milling of Metal Matrix Composites Using NSGA-II

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Abstract - Particulate metal matrix composites (PMMCs) are being widely used in the aerospace and automotive industry due to their favorable properties, mainly high specific strength and wear resistance. However, machining of particulate metal matrix composites presents a great challenge to the industry as the reinforcing particles easily abrade most of the common cutting tool materials. Being a complex process, it is very difficult to determine optimal parameters for improving machining performance. Tool flank wear and surface roughness are the most important output parameters, which decide the machining performance. A multiple regression model was used to represent the relationship between input and output variables and a multi-objective optimization method based on a non-dominated sorting genetic algorithm-II (NSGA-II) was used to optimize end milling process parameters. A non-dominated solution set was obtained.

Keywords: end milling, tool flank wear, surface roughness, optimization, non-dominated sorting genetic algorithm (NSGA-II)

I. INTRODUCTION

The end milling process is one of the most fundamental metal removal operations used in the manufacturing industry because of its ability to remove material faster and giving reasonably good surface quality [1]. It is widely used in a variety of manufacturing industries including the aerospace and automotive sectors, where quality is an important factor in the production of slots, pockets, precision moulds and dies [2]. Greater attention is given to dimensional accuracy and surface roughness of products in the industry these days. Moreover, surface finish influences mechanical properties such as fatigue behavior, wear, corrosion, lubrication and electrical conductivity. Thus, measuring and characterizing surface finish can be considered for predicting machining performance [3]. CBN cutting tools have greater wear resistance than other tool materials due to their high degree of hardness [4]. Cubic boron nitride (CBN) coated end mill are expensive compared to uncoated, the cost of the cutter can be recovered by a longer tool life and higher productivity. They are used to machine non-ferrous materials at high speeds and have high thermal conductivity. It has low thermal conductivity but higher compressive strength, which makes them conducive to machine hot at higher speeds. Kumar Reddy et al. [5] studied the components produced during end milling of Al/SiC particulate metal matrix composites. The results showed that the surface roughness of both surfaces...

X. RESULTS AND DISCUSSION

After this experimentation, various points are come out from the operation of FSW and testing of welded joints.

- The pin diameter and shoulder diameter are increased with the increase in thickness of the plates or specimen undergoing the process of FSW.
- The speed of the tool is one more important parameter to be selected for the process. It is selected as per the thickness of the plates and diameter of the tool. Also suitable higher speed helps to generate higher temperature which is important requirement for the FSW process.
- Also for the effective welding process the suitable higher temperature should be created during the process, so that weld quality is to be increased. The higher speed of the tool give more better quality of the weld aesthetically. As the temperature reaches to its high range the quality of weld increased i.e. quality of weld directly proportional to the temperature created during the process.

CONCLUSION

After the study of Experimentation of friction stir welding of aluminium alloys some of the good points were came out. There are also some other points that also taken in to consideration for the extra work to be done. The some of concluded points regarding this study

- The process cost gets minimized automatically as the experimentation is done within the available tools and machines.
- The health hazards are decreased to zero whether the fusion welding has many health hazards affected on operator due to ultraviolet rays, also production of harmful gases during the process.
- With the use of conventional milling machine the FSW can carried out successfully for the materials for those fusion welding is not possible.
- Use of backing plate to specimen gives the support and useful to avoid the movement of plates during the process. Also it helps to form good weld and also it decreases gap on back side of the welded plate.

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Investigation on Utilization of Biogas & Prosopis Juliflora Biodiesel in Dual Fuel Mode in a Single Cylinder Diesel Engine

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Abstract - In this work, experiments were accomplished on a single cylinder DI diesel engine by means of using bio-gasoline as a primary gas and prosopis juliflora biodiesel and diesel oil as secondary fuels in twin gas operation. the experiments were executed to degree overall performance parameters i.e. (brake specific fuel consumption, brake thermal efficiency and exhaust gas temperature) and emission parameters together with carbon monoxide, carbon dioxide, nitrogen oxide unburned hydro carbon and smoke and so forth. At one-of-a-kind load conditions. For the twin-fuel system, the consumption device of the check engine became changed to convert into biogas and biodiesel of a twin-fuelled combustion engine. Biogas turned into injected during the consumption procedure by means of gas injectors. the take a look at confirmed that, the engine performance parameters like BP, BTE and EGT gradually increase with increase in engine load for all check situations the usage of both pilot fuels diesel and PJFO. However, the BSFC of the engine confirmed lowering slope with increase in engine load for all check conditions. Above 40% engine load the BSFC values for all check fuels are very near every other. The engine emission evaluation confirmed that the CO₂, CO and NOX emissions increase with boom in engine load for each single and twin gasoline mode. In addition the usage of both pilot fuels. The NOX awareness of exhaust gases in dual gasoline mode is superior than that of single mode.

Keywords: Biodiesel; Biogas; Diesel Engine

Analysis of Strength in Unidirectional Grpf Based Fiber Orientations Under Static Loading Using Ansys

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Abstract-The Composite materials have found widespread applications in various fields of engineering such as aerospace, marine, automobile and mechanical applications. The strength of the composites depends on two factors which are fiber orientation and load. In our project we are analyzing the effect of fiber orientation in a rectangular composite lamina under transverse static loading by using the finite element method. The results are obtained with the help of five different angle of orientation of GRPF/epoxy. For this analysis ANSYS software were used. By comparing the results of five different orientations we conclude the better one which will utilize full strength of the fiber composite. It is observed that the stress value is maximum of 14384 N/mm² while considered the boundary condition 1 at 30°. Also the stress value is minimum of 412 N/mm² while considered boundary condition 2 at 45°. It is also observed that displacement value is maximum of 125.409 mm while considered boundary condition 2 at 60°. From the result it is observed that the orientation of 30° with boundary condition 2 is safe while comparing other boundary conditions.

Keywords: Glass reinforced plastic fiber, Epoxy, Stress, ANSYS.

I. COMPOSITE MATERIAL AND ITS CONSTITUENTS

Composites are a combination of two or more constituent materials with significantly different physical or chemical properties. The performance of composites is superior to constituent materials acting alone. The characteristics of resultant composite materials are different from the individual constituents and unique. Within the composite, the constituent materials do not dissolve or blend into each other.

toughness, colorants, flame retardants, ultraviolet absorbers, coupling agents, lubricants, heat stabilizers, and forming agents may also be added to the matrices.

II FILLERS AND OTHER ADDITIVES

Fillers are added to a polymer matrix to reduce the cost (as fillers are less expensive than most of the resins) and to increase the modulus. They produce smooth surface. They control viscosity and reduce mould shrinkage during fabrication. But the problem is they tend to reduce its strength and impact resistance. The most common filler for polyester and vinyl ester resins is calcium carbonate (CaCO₃), which is used to reduce cost as well as mold shrinkage. Examples of other fillers are clay, mica, and glass micro spheres (solid as well as hollow).

Also toughness, colorants, flame retardants, ultraviolet absorbers, coupling agents, lubricants, heat stabilizers, and forming agents may also be added to the matrices. Coupling agents act as compatibilizers between the hydrophilic fibers and the hydrophobic polymers and improve the bond between materials by different ways; that is by eliminating weak boundary layers, by producing tough, deformable layers, by developing a highly cross-linked interphase region with an intermediate modulus, by improving the wettability (critical surface tension factor), by forming covalent bonds with both materials, and by altering surface acidity.

III. MATRIX AND ITS TYPES

The high strength of composites is largely due to the fiber reinforcement. But the importance of matrix material cannot be underestimated. Matrix provides support for the fibers and assists the fibers in carrying the loads. It also provides stability to the composite material.

The major types of matrix are metal matrix, ceramic matrix and polymer matrix. Accordingly composites are classified into metal matrix composite (MMC), ceramic matrix composite (CMC) and polymer matrix composite (PMC). Table 1.1 gives the applications of composites classified on the basis of the matrix used.

Following are the requirements of a good matrix material.

- Excellent chemical resistance.
- Low coefficient of thermal expansion.
- Strength at elevated temperature (depending on application).
- Should be easily process able into the final composite shape.
- Dimensional stability (maintains its shape) and Reduced moisture absorption
- Low shrinkage.

IV. SUPERIOR CHARACTERISTICS OF COMPOSITE MATERIALS OVER OTHER MATERIALS

Majority of the composite materials provide a combination of strength and modulus that are either comparable to or better than many traditional metallic counterparts. Owing to their low density, the strength-weight ratios and modulus-weight ratios of these composite materials are superior to most of the other known metals. Fatigue strength as well as fatigue damage tolerance of many composite laminates are extremely good and because of this reason there are emerged as an important class of structural materials and found applications in aerospace, military, marine automotive industry. They are useful for making medical applications.

IIoT Enabled Smart Automated Guided Vehicle for Manufacturing Industry 4.0

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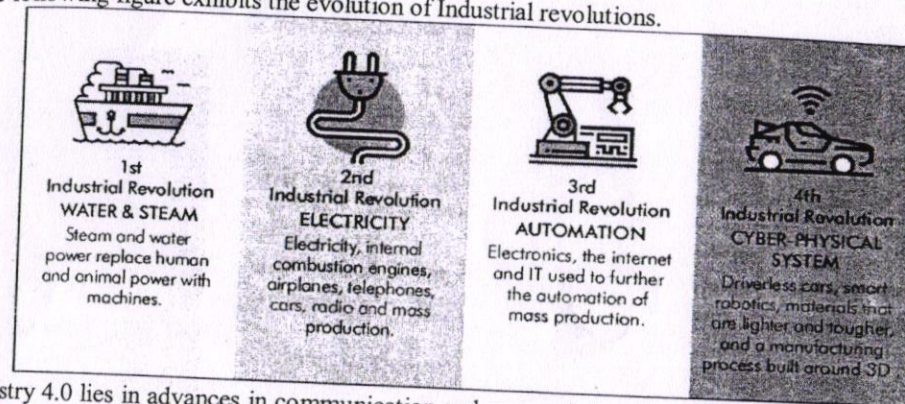
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Abstract - Automation of automated guided vehicle improves the tasks of safety and minimization of use of energy in the material handling process of the factory. In addition with this, the driverless AGV material handling system need have to be integrated with IIoT (The Industrial Internet of Things) to enhance the Fourth Industrial Revolution for making the system smart-decision making. In this paper, we deal the setup of AGV-Conveyor-Loading and unloading Grippers with IIoT in real industry environment for enhancing the third industrial revolution. The goal of AGV enabled IIoT is to make the machines to communicate and cooperate with each other and also with humans and thus to improve the own-decision making of the system. The AGV model is composed of Arduino Mega 8 microcontroller and ultrasonic and IR sensors to detect the obstacles and to control the path of motion respectively. The AGV traces the defined path of IR tape/RFID tag coated surface as per the map. If any hurdle or block found in between then the machines communicate with each other and with humans to de-activate the process via Bluetooth and internet connectivity. Once the problem is resolved then the whole system is autonomously activated for further progress. This work totally reduces the time and labours for the process and increases the flexibility of manufacturing.

IndexTerms — Industry 4.0, IIoT.

flexibility by improving the tasks of safety and minimizing the use of energy. The AGV kits consist of software, hardware and navigation. Other than the above mentioned tasks, now-a-days AGVs need to be focused on value-creating tasks which can attract the young digital generation to the fourth generation of industry.

The following figure exhibits the evolution of Industrial revolutions.



Industry 4.0 lies in advances in communication and connectivity rather than technology. It consists of cyber-physical systems, the Internet of things. Cloud and Cognitive computing. Over the internet of Things, cyber-physical systems communicate and co-operate with each other and with humans in real-time both internally and across organizational services [3].

Industry 4.0 contains the four design principles that are explained below.

Interconnection

The ability of machines, devices, sensors and people to connect and communicate with each other via the Internet of Things(IoT) and the Internet of People(IoP).

Transparency and Interconnectivity

Interconnectivity permits the operators to collect vast amounts of useful information and data from all angles of points regarding manufacturing process. Transparency permits to make appropriate decisions out of vast amounts of useful informations collected.

Technical assistance to support humans

The assistance systems must be able to aggregate and visualize information comprehensively for making informed decisions and solving urgent problems on short notice. Also the cyber-physical system must be able to conduct a range of tasks that are unpleasant or unsafe to the human co-workers.

Decentralized decisions

The cyber-physical systems must be able to make decisions on their own and perform their tasks as autonomously as possible. But in case of some exceptions interferences or conflicting goals be delegated to higher level.

Automated guided vehicle

AGVs are self-guided vehicles which are used as material handling systems in order to transport raw materials and manufactured products from one point to another without any human intervention.

Design and Analysis of Composite Catalytic Converter

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Abstract - The source of pollution and global warming is air pollution. It is to be noted that air pollution is mainly caused by the toxic gases from the exhaust of the automobiles. Only 30 percentage of the fuel is converted into energy source to run the engine remaining 70 percentage of fuel is of un burnt hydrocarbon carbon monoxide and nitrogen oxides. This toxic content is reduced by the invention of catalytic converter. Automotive three way converter have represented over the last 25 years for reduction of pollution in the atmosphere. Here the performance of the catalytic converter is studied and analysis is done by ANSYS FLUENT package. The uniform flow inside the converter is controlled by increasing the cone angle of the converter to utilize the maximum amount of substrate in the converter. Economical wastage also reduced by changing the cone angle. Since the substrate is a noble material it is costly by utilizing all the substrate by changing the angle will reduce the wastage. Amount of conversion taking place inside the converter after maintaining uniform flow is studied by this analysis. The chemical reactions and flow of gases inside the converter is discussed here for the analysis purpose. The efficiency of the catalytic converter is mainly depend upon the effective conversion of CO, CH₄, NO into CO₂, H₂O O₂ and N₂ which less toxic than the carbon monoxide hydrocarbons and nitrogen oxides. Three way catalytic converter (TWC) is taken for analysis because of its tendency to control the nitrogen oxides along with reaming toxic content.

I. INTRODUCTION

The source of pollution and global warming is the air pollution. It is to be noted that air pollution is mainly caused by the toxic gases from the exhaust of the automobiles. Now a day the demand for automotive vehicle is huge. There are numerous automobiles which are to be noted that there is a huge air pollution which is affecting our environment. To control the toxic content from the exhaust of the automobile engine a component is added to the exhaust region of the engine. This component is named as catalytic converter, which is able to convert the toxic gas content into non-toxic content by catalytic reaction.

A catalytic converter is a vehicle emissions control device that converts toxic pollutants into less toxic pollutants by catalytic a redox reaction (oxidation or reduction).

catalytic converters for smoke stacks called cat's. Then he developed catalytic converters for warehouse forklifts that used low grade non-leaded gasoline.

In 1950s he began research to develop catalytic converters for gasoline engines used on cars. Catalytic converters are also used on electrical generators, forklifts, mining equipment, trucks, buses, locomotives, motorcycles, and airplanes. They are also used on some wood stoves to control emissions.

1.1 ANATOMY OF CATALYTIC CONVERTER

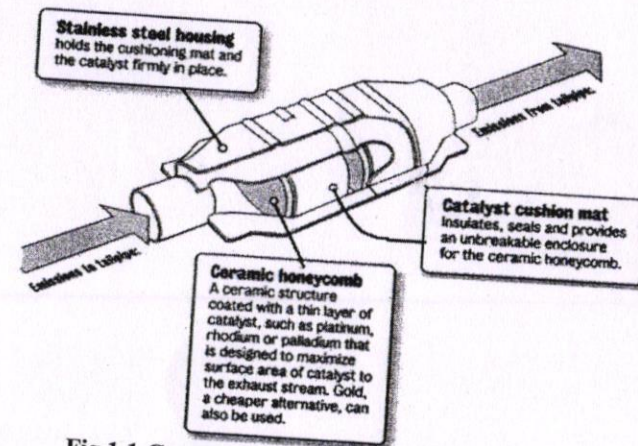


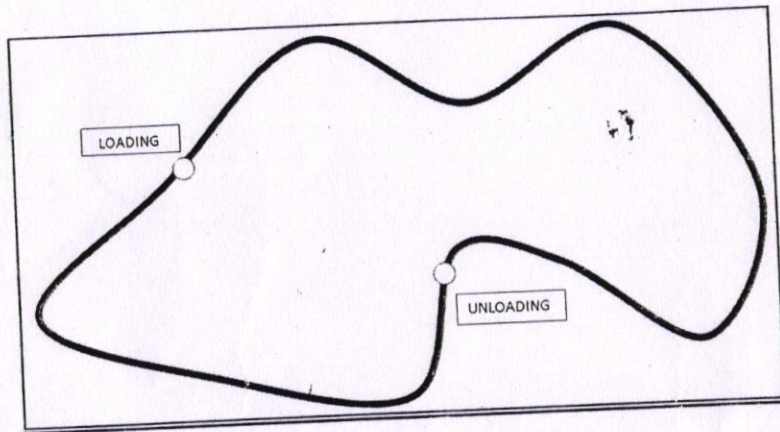
Fig.1.1 Components of catalytic converter

II. COMPUTATIONAL FLUIDS DYNAMICS

Computational Fluids Dynamics (abbreviated as CFD) is a method of calculating fluid flows, heat and mass transfer, chemical reactions and similar phenomena by numerical solving mathematical expression. The accuracy of the solutions is dependent on the following properties Consistency: The discretisation error should approach zero for infinite small grid sizes or time steps. For this case, the algebraic finite difference equations become equal to the original partial differential equations. Stability: Numerical errors (truncation errors for example) should be bounded for all iteration step and not explode the solution. Convergence: A numerical method is convergent if its solution approaches that of the partial differential equation for decreasing grid sizes and time steps and if numerical errors are bounded. This means that both consistency and stability are required to achieve convergence.

The CFD simulations were performed with the commercial software program Ansys Fluent 13.0. For the calculation of the particle trajectories, the discrete phase model (dpm) was applied. This model is based on the Euler-Lagrange method and uses the following steps:

1. Solve the continuous-phase flow.
2. Create the discrete-phase injections.
3. Solve the discrete-phase injections.



VI. CONCLUSION

This system can transfer information about process' occurrence to the concerned person/department through the connectivity of IIoT with the automated guided vehicle, conveyor and gripper mechanism. By getting the information, the employee can move forward to rectify the problem of block on the path. The process of Activation and De-activation occur autonomously according to the signal received from the sensors. Thus the implementation of interconnection between machines and IIoT enhances also lean manufacturing standard of eliminating wastes such as time and labour.

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Performance Analysis of Friction Stir Welding of Aa6063

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Abstract - Generally, for joining process for soft materials such as aluminum alloys and also for hard materials like steels friction stir welding is used as it avoids many of the common problems obtained in fusion welding. Also if we gone through joining of aluminum alloys could be usually faced problems in many cases available in various fields like automotive, aerospace, ship building industries, electronics etc. where fusion welding is not possible due to large difference in physical and chemical properties of the components to be joined. Mainly the problems occurred in the welding processes like porosity formation, solidification cracking, and chemical reaction may arise during fusion welding of dissimilar materials. Even if good welded joints may be obtained in some limited cases with special attentions to the joint design and preparation, process parameters and filler metals. For avoiding the drawbacks of fusion welding friction stir welding (FSW) seems to be a very reliable technique as it permits welding of aluminum alloys. To avoid the majorly obtained health defects observed during traditional welding methods or fusion welding it can be used. The productions of ultraviolet rays and the gases produced in the process which are harmful to human beings are minimized to large extent. The parts produces in FSW of aluminum alloys have been becoming increasingly significant in industrial applications because of their technical and economic benefits. The article contains mainly the selection of tool material and process parameters with experimentation trials of FSW of AA6063. Also this contains the large overview on tool material selection which depends on the operational parameters such as temperature of the operation, wear resistance, geometry and load bearing ability also the tool degradation process. The design of tool is very important because the target is not only the material removing from the metal but also heating and mixing the material by frictional heat. The article contains information about many numbers of tool geometries and importance of tools for friction stir welding of AA6063. And the selection of operational parameters as per the specimen size which are used for the process and the testing of parts after the welding.

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Comparison of Mechanical Characterization of Glass and Chicken Feather Epoxy Composite Natural Fiber Composite

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Abstract - This research demonstrates that chicken feathers can be used as matrix to develop completely biodegradable composites with properties similar to that of composites having polypropylene (PP) as matrix. Feathers are ubiquitous and inexpensive but have limited industrial applications. Feathers have been preferably used for composite applications due to their low density and presence of hollow structures that facilitate sound absorption. However, previous approaches on using feathers for composites have used the whole feather or the feather fractions as reinforcement with synthetic polymers as matrix resulting in partially degradable composites. In addition, the hydrophilicity of the feathers and hydrophobicity of the synthetic matrix results in poor compatibility and therefore less than optimum properties. Although it has been shown that feathers can be made thermoplastic and suitable to develop films and other thermoplastics, there are no reports on using feathers as matrix for composites. In this research, chicken feathers were used as matrix and Glass fibers as reinforcement to develop completely biodegradable composites. Tensile, flexural and acoustic properties of the feather-Glass composites were compared to PP-Glass composites. Utilizing feathers as matrix could enable us to develop low cost 100 % biodegradable composites containing feathers or other biopolymers as the reinforcement.

Keywords - Chicken feathers, Matrix, Composites, Biodegradable.

I. INTRODUCTION

Polymers have generated wide interest in various engineering, in view of their good strength and low density as compared to monolithic metal alloys. As lighter in weight they are suitable materials for weight sensitive uses, but the limitation is the high cost. Considering cost factor, one can use of low cost fillers materials viz., chicken feather, jute, flying ash etc., which available with least effort. The mechanical properties of the composites are not changed by the addition of such fillers, as many researcher have studied the same. There have been various outputs on use of filler materials like

Effect of Thermal Spray Coating (SiC) on Fuel Consumption and Emission Control on IC Engine

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Abstract - In the age of rapid industrialization, one of the biggest problems faced by the world is fuel economy. The major components of the polluted environment are the increase of CO_2 , SO_2 and CO which is mainly contributed by automobile fuels. This ecological imbalance is the major hazard for human, animals, plants and planets. According to the sources of ONGC (Oil and Natural Gas Commission) there will be a great demand for automobile fuels due to increased rate of consumption of fuels and an impact on necessity of providing clean air environment in coming years. Hence there is a need arises for the automobile industry not only to find alternative fuel sources but also to produce fuel economic and eco-friendly vehicles. Here comes the rescue of thermal sprayed coating to solve the above problem considerably. A coating and surface modification technology allows not only protecting the surface against hostile environments but also improve the performance, extending the life and enhancing the appearance of materials. Thermal spray coatings are depositions of materials which has been melted or plasticized immediately prior to projection onto the substrate. The metal used and the application system used vary but most applications result in thin coating applied to surface requiring improvement to their corrosion or abrasion resistance properties. In this paper the thermal spray coating of I.C engine for reducing the emission and thereby improving the efficiency of the I.C engine are described. A two wheeler has been taken for testing and results are analyzed with thermal spray coating.

Key words: Fuel Consumption, Thermal spray coating, SiC, Emission Control.

I. INTRODUCTION:

In the age of rapid industrialization one of the biggest problems faced by the world is fuel economy. The major components of the environmental pollution are CO_2 , SO_2 and CO which is mainly contributed by burnt fuels of automobile fuels. This ecological imbalance is the major hazard for human, animals, plants and planets. According to the sources of ONGC (Oil and Natural Gas Commission) there will be a great demand for automobile fuels due to increased rate of consumption of fuels and an impact on necessity of providing clean air environment in coming years. Hence there is a need arises for the automobile industry not only to find alternative fuel sources but also to produce fuel economic and eco-friendly vehicles. Here comes the rescue of thermal sprayed coating to solve the above problem considerably. A coating and surface modification technology allows not only protecting the surface against hostile environments but also improve the performance, extending the life and enhancing the appearance of materials. Thermal spray coatings are depositions of materials which has been melted or plasticized immediately prior to projection onto the substrate. The metal used and the application system used vary but most applications result in thin coating applied to surface requiring improvement to their corrosion or abrasion resistance properties. In this paper the thermal spray coating of I.C engine for reducing the emission and thereby improving the efficiency of the I.C engine are described. A two wheeler has been taken for testing and results are analyzed with thermal spray coating.

A coating and surface modification technology allows not only protecting the surface against hostile environment but also improve the performance, extending the life and enhancing the appearance of materials. The thin coating of metal used depends upon the application results in surface improvement in respect of corrosion or abrasion resistance properties [1]. Thermal spray coating is a mechanical process of melting raw materials (either through the flame or electrical) into the plasma stage. The plasma stage material is loaded in a spray gun and sprayed on piston top.

II. COATING WITH GOOD LUBRICATION

It is essential to have least frictional forces present in between mating and/or reciprocating components. High coefficient of friction leads to higher wear rate affecting the engine life. Besides, mechanical friction has significant effect on the internal combustion (IC) engine fuel economy. In an IC engine, the major sources of frictions are valve train, piston system, crank and bearing system. Mechanical friction represents 10-15% of Indicated Mean Effective Pressure (roughly translates into energy available in a combustion cycle). Of the total frictional loss about 50-65% is accounted in piston system alone. Valve train system contributes 10-20% of friction loss and crank and bearing contributing the rest [2]. There is a pressing need to reduce these frictional losses to improve overall efficiency of the engine, reduce oil consumption and to increase life of engine.

III. TRIBOLOGY PROPERTIES

A coating is applied to improve the wear resistance and scuffing resistance at least as good as the cast iron liner substitute. Fine grained tribologically functional ceramics such as SiC, Al_2O_3 and Fe-oxides present in a coating can improve surface related properties such as hardness, compressive strength, abrasion resistance and scuffing resistance [2, 4, 9]. Scuffing is the major tribological issue of mass movement of surface elements via contact between two metals, especially when lubrication film breaks down. The coatings should also possess good mechanical and thermal shock resistance, good adhesion and strain compliance with the aluminum alloy substrate to meet the engine durability requirements. The tribological characteristics of the plasma coating lengthen the life cycle of the engine, while emissions decrease as a result of the reduction in fuel and oil consumption. It has been reported that plasma sprayed Fe/FeO as well as stainless steel/BN coatings reduced ring/bore wear by 40% and improved engine oil economy by 13600 km/l [6, 7].

IV. HEAT TRANSFER

Heat transfer to the block is to be kept to an absolute minimum, since this represents major heat loss. The coating should have low thermal conductivity, insulating the combustion chamber from conduction mode of heat transfer through aluminum or super alloy. Thermal barrier coating (TBC) was developed with an aim to reduce heat transfer. Computer simulations of internal combustion (IC), diesel and rocket engine as well as experimental data of diesel engine have shown that if the engine cylinder wall is coated externally by 2 mm thin layer of an insulating oxide, the heat loss is reduced by 15% [5, 8]. If a coating is applied on inner diameter of cylinder bore, then the thermal gradient is lower for conduction mode heat transfer and the heat loss is further reduced. In a thermal barrier coating (TBC), a bond layer is applied above nickel-based super-alloy to improve the adherence of oxide layer. The thermally grown oxide has good coherency with the bond layer (zirconia oxide).

IX. CONCLUSION

This experimental analysis of GRPF/epoxy based composites using ANSYS leads to the following conclusions

- Modeling of the composite lamina in ANSYS is possible.
- Analysis of the composite at different orientations is possible using ANSYS.
- The stress and displacement curves are obtained and analysed using ANSYS.
- It is observed that the stress value is maximum 14384 N/mm^2 while considered boundary condition 2 at 30° .
- Also the stress value is minimum 412 N/mm^2 while considered boundary condition 4 at 45° .
- It is also observed that displacement value is maximum 125.409 mm while considered boundary condition 2 at 60° .
- From the result it is observed that the orientation at 30° with boundary condition 2 is safe while comparing other boundary conditions.
- From this it is concluded that we can use the safe orientation for better performance. The default orientation of material is replaced by safe orientation and shows above results.

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Design and Fabrication of Elliptical Bicycle and Save Electrical Energy With The Help of Piezoelectric Transducers

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Abstract – ElliptiMove is a tool used in training by fitness enthusiasts and athletes to improve their performance with an innovative engineering concept that combines the motion of running, bicycling and elliptical machine. Elliptical cycling is for people who want to get physically fit, achieve their fitness goal and recover from hip and knee injuries. Its unique mechanism encourages maximum people to use this bike. Our aim is to design the elliptical bicycle in an optimized manner by reducing its weight and cost in a such a way that it has low impact, high performance, exciting outdoor workouts and has an significant role in human welfare.

Index Terms— elliptical bicycle, piezoelectric transducers

1. INTRODUCTION

The ElliptiMove is an elliptical bicycle. By modifying the elliptical trainer motion and combining it with the functionality of a bicycle, the ElliptiMove bicycle delivers a high-performance workout experience that closely mimics running outdoors while eliminating the impact. It provides the most comfortable, fun and efficient way to get out and exercise. ElliptiGO co-founder and former Ironman tri-athlete Bryan Pate was inspired to create the world's first elliptical bicycle after injuries plagued him to the point where he could

High Step-Up DC–DC Converter with Active Soft-Switching and Voltage-Clamping for Renewable Energy Systems

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Abstract - A novel high step-up DC-DC converter with coupled-inductor and switched-capacitor is proposed in the paper, which is widely used in the renewable energy system as the front-end stage for low voltage source. The combinational employment of switched-capacitor and coupled-inductor makes high voltage gain achievable without extreme duty cycle, resulting in reduced voltage stress on power switches. Hence, MOSFETs with low resistance $R_{DS(ON)}$ could be utilized as the main switch to reduce conduction loss. Meanwhile, due to the leakage inductance of coupled inductor, the current falling rate becomes controllable and reverse-recovery problem of output diode is alleviated. Importantly, by incorporating active clamped-circuit, not only voltage spike caused by leakage inductance is restrained, but also zero-voltage switching (ZVS) could be obtained for the main and auxiliary switches. Specially, the clamped-circuit plays a role of energy transfer to boost the gain as well. Finally, a prototype with power rating of 500W is implemented to verify the performance of the proposed converter.

Index Terms—high gain, switched-capacitor, zero-voltage switching (ZVS), active clamp.

I. INTRODUCTION

In renewable energy systems with photovoltaic (PV) and fuel cells, high step-up DC-DC converters are in pressing demand because the low voltage generated by the PV and fuel cells should be boosted to a relatively high-standard dc bus voltage for the grid-connection. For instance, the output voltage of the most fuel cell stacks or individual PV cells should be less than 40 V in consideration of cost and reliability issues for household applications, which means that a front-end DC-DC converter with over ten times voltage gain is essential to converse low output voltage of the fuel-cell stack or PV to a standard high bus voltage before a 220-V ac output grid-connected. How to extend voltage gain, reduce the voltage stress on the switches and improve the conversion efficiency constitutes the main concerning issues [1][2][3].

There are several approaches to attain high gain. Beyond all doubt, the conventional boost converter could not be qualified to provide a high voltage gain. High voltage stress on

To Improve Performance Response of Economic Load Dispatch by using Grey Wolf Optimization Technique

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Abstract - Economic Load Dispatch is a problem of determining the power output of each generating unit of the power system such that the total fuel cost is minimum while all the system constraints are like generation limits, valve point loading effects, etc. The problem of determining the outputs of the generating units at minimum cost is known as Optimal Power Flow (OPF) problem. The production cost of any generator is unique and is a quadratic function of power generated by it. For a given power generated by the unit, a unique cost is incurred. The minimum cost incurred for all the units combined together becomes the optimization problem which is known as the Economic Dispatch (ED) problem. The paper presents the optimal generation cost for the power system by using Grey Wolf Optimization Algorithm (GWOA). GWOA is most advanced and fastest method for optimization problem and can be implemented for any generated bus data in power system.

Index Terms— Economic Dispatch, Optimal Power Flow and GWOA Algorithms.

I. INTRODUCTION

The Economic Load Dispatch (ELD) can be defined as the process of allocating generation level to the generating units, so that the system load is supplied entirely and most economically. For an interconnected system, it is necessary to minimize the expenses. The economic load dispatch is used to define the production level of each plant, so that the total cost of generation and transmission is minimum for a prescribed schedule of load. The objective of economic load dispatch is to minimize the overall cost of generation. The method of economic load dispatch for generating units at different loads must have total fuel cost at the minimum point.

In a typical power system, multiple generators are implemented to provide enough total output to satisfy a given total consumer demand. Each of these generating stations can, and usually does, have unique cost-per-hour characteristic for its output operating range. A station has incremental operating cost for fuel and maintenance; and fixed costs associated with the station itself that can be quite considerable in the case of a nuclear power plant, for example things get even more complicated when utilities try to account for transmission line losses, and the seasonal changes associated with hydroelectric plants.

21 Level Staircase Sine Wave Inverter with Reduced Switches and THD

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Abstract – Several industrial applications require high power inverter with sinusoidal waveforms and with minimum distortion. For medium and high power applications, it is difficult to attain this result using a single switch. With this background the concept of multilevel inverters were introduced in 1974. At present situation multilevel inverter is becoming more popular due to its staircase output whose characteristics are closer to the characteristics of sinusoidal waveform. But generally it has some disadvantages like, requirement of increased number of switches, complex pulse width modulation methods to reduce harmonics. The cascaded H-bridge multilevel inverter requires least number of components to achieve various voltage levels by which the quality output is obtained. However as the number of voltage levels m grows the number of active switches increases according to $2 \times (m-1)$ for the cascaded H Bridge. Here, the novel multilevel inverter topology with reduced number of power switches is proposed so that the switching losses can be reduced. The power quality of the proposed system is improved by using selective harmonic elimination (SHE) method. The whole system is numerically reformed utilizing MATLAB/SIMULINK and the simulation results are presented.

Index Terms - Multilevel inverter (MLIs), PWM techniques and Total Harmonic Distortion (THD), Cascaded H-bridge, SHE.

I. INTRODUCTION

Generally, the voltage source inverters generate an output voltage with a two level, so they are also called the two-level inverter. To obtain a quality output voltage or a current waveform with a minimum amount of ripple content, they require a high switching frequency along with various PWM techniques. For the high power and medium power application, these two-level inverters have some disadvantages, like switching losses due to high frequency operation, the distorted output voltage and current waveforms and the large total harmonic distortion of the voltage and current [1]. Hence multi-level inverters are used to mitigate the overall THD. In the multilevel inverter increasing the number of voltage levels without requiring higher ratings on individual devices can increase the power rating. And if the number of voltage level increases, the harmonic content of the output voltage decreases.

The multilevel inverter can be classified as flying capacitor, Cascaded H-Bridge and diode clamped multilevel inverters. Out of these technologies Cascaded H-Bridge multilevel inverter is one of the well-known, most advantageous, much simpler and basic method of multilevel inverter [2]. Multilevel inverter provides a suitable solution for medium and high

Smart Prepaid Energy Meter using GSM and Arduino

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Abstract - The aim of paper is to propose a different method for measuring and billing of the energy consumed rather the conventional method. Here a new procedure is followed based on ATmega 328P microcontroller for controlling and detecting energy consumed. It is possible to recharge the electricity balance through this system jus by sending an SMS. It also continuously reads the energy meter readings and automatically sends some updates like low-balance alert, zero-balance alert, recharge alert when necessary to the registered number through GSM modem. Illegal usage of power is detected and alert message is sent to the authorities immediatlyt.

Index Terms— smart meters; Arduino; energy meter; GSM.

I. INTRODUCTION

In a world where everything is automated, the automation of the energy payments is much needed. The world is being digitized and it is important that we should be able to move along with trends and changes. Energy is the most common and most important resource and the need for it use it in a controlled manner is crucial where the resources for it are scarce. So, using Prepaid Energy meters helps us to avoid the wastage of power consumed in our daily lives. Moreover, it is also important to protect the revenue of the government from the loss occurs due to the illegal usage of power. Hence, there is a definite need for us to use an advanced energy meters, which can both monitor the consumption and theft.

II. EXISTING SYSTEM

The energy meters used now-a-days are modified version of the older system, the digital meters doesn't have a prepaid system, where the power to be consumed is estimated prior to its usage and recharged, similar to that of a prepaid talk time for a mobile. Moreover to it, there is no proper equipment which can detect the illegal power usage, using power without actually paying for it. However, in some energy meters an LED is provide which blinks whenever someone tries to open the energy meter box, but this can be stopped using a button which is provided at it backside, which doesn't guarantee security.

Carrier level shifted based control method for the PWM 3L-T-type qZS with capacitor imbalance compensation

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Abstract - This paper presents a modified carrier level- shifted based control method for a pulse width modulation controlled three-phase three-level T-type quasi-impedance source inverter. The benefits of the proposed strategy are a uniform distribution of shoot-through states of constant width throughout the fundamental period and the mitigation of the inner capacitors' voltages imbalance. The latter is achieved by means of a proportional-integral controller, which adjusts the relative time application of redundant states. The improved performance is demonstrated in terms of reliability, as the capacitors do not suffer from neutral point imbalance. The control method can also be implemented in a different multilevel inverter configuration with an impedance-source network. A comprehensive simulation study and several experiments were performed in order to validate the adopted method in situations of imbalanced capacitor voltages.

Index Terms— Quasi and T - type.

I. INTRODUCTION

An increasing energy demand, lack of conventional energy resources, growing concern over environmental pollution, and concept of on-site energy generation have led to the rapid rise in renewable energy generators. Most of these generators are inverter-based, both in connection to the lowvoltage distribution network and in islanded operation. As of 2015, many of them interact with photovoltaic (PV) modules [1], considered one of the most promising technologies, with a cumulative installation capacity of 227 GW [2]. Some studies have identified benefits in PV systems without galvanic isolation [3], as well as in the use of three-level inverter (TLI) topologies within the residential sector [4], [5]. The main advantages of the former include higher performance, higher power density, and lower cost—due to the absence of the transformer. In comparison with their two-level counterparts, TLIs show advantages in lower power switching losses from commutating only half of the dc-link voltage, better harmonic performance at the output, and a reduced ac output filter [4]. A relatively recent multilevel topology is that of the T-type inverter [6], [7], causing several manufacturers to compete for a lead in the market. In comparison with the more mature neutral point- clamped (NPC) [8], the T-type inverter only needs a single power switch to clamp the middle point to the positive or negative dc rail. This reduces conduction losses, consequently lowering power switching losses at lower switching frequencies [5]. However, because the outer switches of the T-type inverter have to block the full dc-link voltage, the

Control strategy of Permanent Magnet Brushless DC Motor with Snubber circuit using Fuzzy Logic Control

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Abstract - Brushless DC (BLDC) motors are widely used for many industrial applications because of their reliability, high efficiency, high starting torque, and less electrical noise. For the speed control of BLDC motor, different controllers are used. In this work, the performances of BLDC motor have been evaluated without controller and with conventional controllers PI and PID. The results have been compared with fuzzy based controller. In comparison with conventional controllers, fuzzy controller gives effective speed response but conventional controllers provide better response with changing load. At the same time the additional snubber circuit will be used to increase the dv/dt and di/dt protection. MATLAB/SIMULINK software is used to carry out the above investigation.

IndexTerms—BLDC motor, PI controller, PID Controller, Fuzzy controller, Snubber Circuit.

I. INTRODUCTION

Industries use mainly two types of motors: (i) dc motors where the flux is produced by the current through the field coil of the stationary pole structure, (ii) permanent magnet brushless dc motors where the permanent magnet provides the necessary air gap flux instead of wire wound field poles. As the brushless DC motors do not have brushes, the commutation takes place electronically. BLDC motor is actually a permanent magnet synchronous motor (PMSM) with trapezoidal back EMF [1].

BLDC motors comprise several attractive properties such as smooth speed control and torque –speed characteristics [1]. Moreover, the control of DC motor also simple and does not requires complex Hardware [2] and [3]. But, DC motors have main disadvantages regarding to lifetime of brushes are the limited. A lower reliability occurs caused by the brushes and the operation need time to time maintenance of replacement [4].

Proportional Integral and Derivative (PID) controllers have been used in industrial control applications for a long time. PID controllers date to 1890s governor design. Despite having been around for a long time, majority of industrial applications still use PID controllers. According to a survey in 1989, 90% of process industries use them. This widespread use of PID in industry can be attributed to their simplicity and ease of re-tuning on-line.

IoT Based Induction Motor Controlling and Monitoring by Using Raspberry-Pi

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Abstract - Now days the induction motor has remained the most popular type of motor for industrial applications. The primary advantage of the induction motor is its straightforward rotor construction leading to low cost, ruggedness, and low maintenance requirements. This paper presents a remote control and monitoring system for an induction motor based on Internet of Things (IoT) for safe and economic data communication in industrial fields. A module of transducers and sensors monitors the parameters like Temperature, external moisture RPM, vibrations, load current and voltage of induction machine and send to the processing unit (Raspberry Pi), which will analyze and display the parameters, here the processing unit also communicates with Gateway module to send information to cloud database for remote monitoring. The system also presents the Automatic and manual control methods to stop or start the induction machine to avoid system failures. To make the system fast and user friendly it provides an android application.

Index Terms — Induction Motor, Internet of Things, Raspberry Pi, Temperature, Vibrations, moisture, load current.

I. INTRODUCTION

Before the invention of AC induction motors dc motors were widely used for industrial requirements. With the invention of AC induction motors due to their higher performance attributes over DC motor, industrial automation is being frequently done with it. An induction motor comprises a magnetic circuit interlinking two electric circuits which are placed on the two main parts of the machine: (i) the stationary part called the stator and (ii) the rotating part called the rotor. Power is transferred from one part to the other by electromagnetic induction. The primary advantages of the induction motor are its straightforward rotor construction leading to low cost, ruggedness, and low-maintenance requirements, but it is much more difficult to control.

(a) Electrical-related faults: Faults occurred due to the unbalance supply voltage or current, single phasing, under or over voltage of current, overload and etc., are come under this category.

(b) Mechanical-related faults: Faults due to broken rotor bar, mass unbalance, air gap eccentricity, bearing damage, rotor winding failure, and stator winding failure are come under this category.

PV Battery Charger Using an L3C Resonant Converter for Electric Applications

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Abstract—In Electric Vehicles with rooftop PV panels, the solar irradiance and surface temperature can affect their performance and output voltages (e.g., $V_{pv} = 24-45V$ DC). In these systems, the maximum energy must be extracted from the variable input voltage (PV panel), boosted by different gains, and stored in high voltage battery packs. Furthermore, depending on the battery state of charge, the charger should operate in constant voltage, constant current, or constant power modes, all the way from complete discharge condition, up to the charged floating voltage phase ($V_{bat} = 230 - 430V$ DC). This combination of the variable PV input voltage and different states of charge creates a significant regulation challenge for the converter. In this paper, a high efficiency fourth order L3C resonant converter is proposed with an extreme voltage regulation capability that can effectively extract the maximum power from the PV panels and respond to the battery states of charge at different voltage and current levels. The experimental results from a 350W prototype prove the features of the proposed L3C resonant converter and demonstrate its ability to track the maximum input power while responding to the battery various states of charge.

Index Terms - Photovoltaic panel, electric vehicle, wide DC-DC voltage regulation, full soft switching conditions

I. INTRODUCTION

DC-DC power converters with variable voltage gain and boosting features are among the main components for PV energy systems, since the maximum power must be extracted from the low voltage, variable input source and boosted to a high voltage level [1, 2]. In PV energy systems for Electric Vehicles (EVs) with rooftop PV panel, it is also essential to employ a rechargeable battery pack to store energy and release it later [4-6]. Using battery packs for energy storage imposes challenging design constraints for the power converter, due to the different battery operating modes, including constant current, constant voltage, constant power, and no-load condition [8]. The combination of a PV panel and a rechargeable battery in an energy system requires extreme voltage gain variations from the input ($V_{pv} = 24-45V$ DC) to the output ($V_{bat} = 230 - 430V$ DC), and this needs to be supported by solar battery chargers. In this case, the charger should not only track the input voltage variation in order to extract the

Multi Objective Social Spider Algorithm Based Optimal Location and Sizing of Svc Devices for Voltage Stability Improvement

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Abstract— This paper presents social spider algorithm for determining the optimal location and size of Static Var Compensator (SVC) devices in power systems. The aim of SVC devices in Egyptian interconnected electrical power system is to increase the system load ability within the permissible voltage levels and to minimize the power losses and generating costs simultaneously. The proposed algorithm is applied to 500 KV interconnected electrical power system network. The numerical results achieved in MATLAB showed that the social spider technique succeeded at determining the optimal location and size of SVC with minimum power losses and minimum generating costs, as well as improvement in the system voltage profile.

Index terms: voltage stability, FACTS, Optimal Location and Size, social spider algorithm.

I. INTRODUCTION

Flexible AC Transmission Systems (FACTS) have been implemented in many power systems. These devices have many functions and can play important roles in the power system. They can be used for power quality improvement, voltage support, power flow control, improvement of the system stability, and an increase in the system reliability [1-4]. FACTS devices can be classified according to their connections to the electrical power system like series, shunt and/or combined connection. Static VAR Compensator (SVC) and Static synchronous compensator (STATCOM) are from the shunt connected FACTS types. Static Synchronous Series Compensator (SSSC) and Thyristor Switched Series Capacitor (TSSC) are from the series while Unified Power Flow Controller (UPFC) is the combined compensator type [5-7]. According to the type of connecting FACTS devices into the power system, the operation and the role of these devices in the power system is determined. The series FACTS devices are used for providing capacitive/inductive and line resistance compensation [6-9]. For the voltage support by controlling the reactive power flow, shunt FACTS devices are attained during sag/swell condition and fault operating conditions [9]. The combined devices can play the role of both series and shunt compensators [4-5, 10]. SVC as a shunt compensator type is exploited in this framework to control the reactive power flow and consequently regulate the system voltage. The SVC is characterized as fast response and has high reliability in the compensation problem compared to mechanically switched capacitor

Radial Movement Optimization (RMO) Technique for Solving Unit Commitment Problem in Power Systems

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Abstract - Unit commitment (UC) is one of the nonlinear optimization problems with linear and nonlinear constraints. In this work, radial movement optimization (RMO) is employed to solve the optimal thermal unit commitment problem. Radial movement optimization is a novel global optimization technique used to solve the complex optimization problems. In this work, 10, 20, 40, 60, 80 and 100 unit systems are considered for implementing the RMO technique in the cost estimation of thermal unit commitment problems. The simulation test results show economic results and good convergence, while satisfying the constraints of the objective function. The results also show that the RMO algorithm outperforms the other algorithms like GA, PSO, DE etc. with minimum cost.

Keywords: Radial movement optimization; Optimization; Unit commitment; Thermal

I. INTRODUCTION

In electrical power systems, unit commitment (UC) problem is considered as a complex problem because of its nonlinearity and it is a mixed-integer optimization problem. Unit commitment is a blend of generator scheduling problem and the generation allocation problem. It deals with the optimum amount of time for which a generating unit must be operated at a per hour basis in order to meet the load requirements effectively. With the help of this optimization, it is possible to supply power with least possible losses and minimum fuel consumption, in order to maximize the profit. Besides achieving minimum total production cost, a generation schedule needs to satisfy a number of operating constraints. These constraints reduce freedom in the choice of starting-up and shutting-down of generating units. The constraints to be satisfied are usually the status restriction of individual generating units, minimum up time, minimum down time, capacity limits, generation limit for the first and last hour, limited ramp rate, group constraint, power balance constraint, spinning reserve constraint etc., (Saravanan et al., 2013).

Regarding the power demand variations, the UC problem is to commit adequate units at appropriate time and with enough generated power, economically. In addition, most of the unit types in the electric power systems are the thermal units which cannot instantly turn on and produce power.

Dragon Fly Algorithm Based Forecasting of Substation Demands

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Abstract - Load forecasting is an important component for power system energy management system. Precise load forecasting helps the electric utility to make unit commitment decisions, reduce spinning reserve capacity and schedule device maintenance plan properly. Besides playing a key role in reducing the generation cost, it is also essential to the reliability of power systems. Load forecasting plays an important role in power system planning, operation and control. Planning and operational applications of load forecasting requires a certain 'lead time' also called forecasting intervals. The proposed dragonfly algorithm is implemented on real time data from 2016 to 2018. Electricity demand predictions have been made for next 5 years as one set and consecutive 5years as another set . The proposed dragonfly algorithm is found to be highly accurate with a Mean Absolute Percentage Error (MAPE) of 6.54 within a confidence interval of 2.25%. Moreover, the proposed dragonfly algorithm has a computation time of approximately 05 minutes which is favorable for offline training to forecast electricity load for a period of five years.

Index Terms—DA Algorithms.

I. INTRODUCTION

Electric load forecasting is the process used to forecast future electric load, given historical load and weather information and current and forecasted weather information. In the past few decades, several models have been developed to forecast electric load more accurately. Load forecasting can be divided into three major categories:

A. Long-term electric load forecasting (LTLF): used to supply electric utility company management with prediction of future needs for expansion, equipment purchases, or staff hiring. LTLF the prediction time can be as long as 10 years and above. A precise long term load-forecasting is essential for monitoring and controlling power system operation.

B. Medium-term load forecasting (MTLF): used for the purpose of scheduling fuel supplies and unit maintenance .MTLF the prediction time is 2-5years.

Dynamic Power Management System Employing Single Stage Power Converter for Standalone Solar PV Applications

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Abstract - This paper presents a dynamic power flow management system for a solar PV system employing a single stage single inductor based dual input/output DC-DC converter feeding standalone DC loads backed up by a rechargeable battery. A time sharing voltage mode control scheme has been proposed for power flow management between solar PV, battery and standalone DC load and also it maintains a constant DC load voltage and performs MPPT operation of solar PV. The implementation of the control scheme has been described in detail. The steady state performance of the single stage converter has been explained with the relevant analytical expressions derived along with the characteristics. A state space average model was developed for simulating the transient behavior and validating the working of the system for step changes in the input solar PV power and the DC loads. A hardware prototype of the proposed system has been fabricated and the proposed controller has been implemented using dSPACE DS1103 Real Time interface (RTI) board. The working of the proposed scheme for the different levels of input solar insolation and DC Load power demand has been satisfactorily demonstrated and the corresponding results are also provided.

Index Terms—DC-DC power conversion, Batteries, Solar power generation, Power converter, Multiport circuits and Photovoltaic power systems.

I. INTRODUCTION

Harnessing renewable energy sources such as wind energy, solar energy, tidal, etc. is critical for overcoming problems due to global warming and environmental degradation caused by the use of fossil fuels. Among all renewable energy sources, solar PV is abundant, has high power density, is modular and scalable. Solar PV is used both in grid connected applications and standalone applications. It can be used in a wide range of applications from a microwatt internet of things (IoT) system to a megawatt scale solar PV plant [1], [2]. Solar PV operates in a wide range of DC voltages, while electrical and electronic systems also have different levels of DC voltage requirements [3]. Hence, it is necessary to use power electronic interfaces for solar PV applications. Since the energy from solar PV is intermittent in nature, it is necessary to combine energy storage systems and other renewable energy sources to maintain reliable operation for standalone PV systems. This can be achieved by many single

Effect of DC Ripple and Commutation on the Line Harmonics of Current-Controlled AC-DC Converters

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Abstract - Line harmonics are usually predetermined under the simplified assumption that the dc current is sufficiently smoothed. However, in practical operation of controlled converters, e.g., feeding medium-size dc drives, it frequently happens that the dc ripple cannot be neglected. For the predetermination of line harmonics, this means that the operating point is specified by the emf and the mean value of the dc current, i.e., the associated control and commutation angles, are unknown. The consideration of the basic effects of commutation and dc ripple leads to line current harmonics that are separated into positive and negative sequence systems. Selected results of systematic evaluations show the amplitude and phase as a function of dc reactance as well as of the emf and mean dc current in the range of usual low-and medium-voltage supply networks. In comparison with the conventional pre calculation assuming sufficient dc smoothing, significant deviations occur in the case of higher dc ripple.

Index Terms— AC – DC Converters and Line Harmonics.

I. INTRODUCTION

Since the share of converter loads in electrical power supplies is increasing, the disturbances they cause must also be increasingly taken into account. In the case of current-controlled ac/dc converters, these disturbances include not only the variable reactive power consumption but, in particular, the harmonics of the line current that generate corresponding voltage harmonics at the internal impedance of the supply network. In the interest of other loads, these voltage disturbances may not exceed certain limits (compare, e.g., [1] and [2]) and should therefore be known at the planning stage. The line current harmonics are usually predetermined under the assumption that the dc current is sufficiently smoothed.

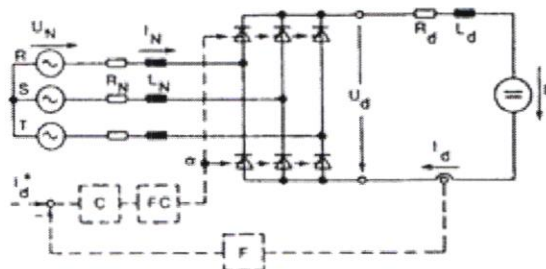


Fig. 1.1 Basic circuit of a current-controlled six-pulse bridge converter

the calculation, this means a decoupling between the three-phase and the dc side, and therefore, a correspondingly simple predetermination is feasible. However, in practical operation of controlled AC/DC converters, it frequently happens that the dc current shows a ripple that cannot be neglected. This appears in cases such as medium-size dc drives in which an additional dc inductance is omitted for cost reasons.

Quantum mechanical investigations on molecular structure, spectroscopic and molecular docking studies of Diosmetin as potential Anti-diabetic agent

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Abstract - In the present study, The optimized molecular geometries and vibrational characteristics for the diosmetin have been studied theoretically using Hartree-Fock (HF) and density functional theory (DFT) methods with 6-311++G (d,p) as basis set. The geometrical parameters and vibrational frequencies obtained from the DFT method are found to be in good agreement with the experimental outcome and a detailed interpretation of the vibrational spectra of the compound have been made on the basis of the calculated potential energy distribution (PED). Furthermore, molecular docking study indicates that the investigated compound shows better inhibitory activity towards aldose reductase enzyme than the standard drug and hence this study may be supportive in the field of drug discovery to design more potent anti-diabetic agents.

IndexTerms— Diosmetin ; Computation; Docking; Aldose reductase.

I. INTRODUCTION

In recent years flavanoid compound have attracted more attention, because of their wide range of biological profile in the field of drug design. Diosmetin (DIOS) is an aglycone of the flavonoid, chemically known as 5, 7-dihydroxy-2(3-hydroxy-4 methoxyphenyl) chromen-4-one and it can be found in food items such as parsley and thyme [1]. Diosmetin (DIOS) possessing a wide range of biological activities like antibacterial [2], antimicrobial [3], anti-inflammatory [4], antioxidant effects [5] and it can be used as a traditional Mongolian medicine to treat liver diseases [6]. Thus, owing to the vast range of biological significance of DIOS, the present study aimed an extensive spectroscopic and quantum chemical investigation to provide structural conformational and vibrational frequencies to understand the effect of functional group. The literature survey reveals that to the best of our knowledge, no HF/DFT wave number and structural parameter calculations of DIOS has been reported so

Synthesis and characterisation of green phosphors

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Abstract- A green-emitting phosphor SrMoO₄ co-doped by Tb³⁺ was fabricated by solid-state metathesis reaction route for the first time. X-ray powder diffraction (XRD) analysis revealed that pure SrMoO₄ was obtained. Under excitation of UV light, these SrMoO₄:xTb³⁺ phosphors showed a strong emission band centered at 547 nm (green) which corresponds to ⁵D₄→⁷F₅ transition of Tb³⁺. Analysis of the emission spectra with different Tb³⁺ concentrations revealed that the optimum dopant concentration for SrMoO₄:xTb³⁺ phosphors are about 8 mol% of Tb³⁺. All properties show that SrMoO₄:xTb³⁺ is a very appropriate green-emitting phosphor for fluorescent lamp applications.

1. INTRODUCTION

BeSruse rare earth ions retain a great deal of energy levels and may transfer between 4f electrons, its fluorescence wavelength ordinarily extends from UV to IR range. Thus, the addition of trivalent rare earth ions as luminescent center to matrices is thought-out as an exemplary method for synthesising excellent luminescent material [1–4]. Tb³⁺-doped materials have been extensively employed as the green emitting phosphors by virtue of their strong ⁵D₄→⁷F₅ emission in the green spectral region. Earlier investigations have demonstrated that Tb³⁺-doped aluminates and phosphates displayed almost intense absorption in the UV region and illustrate strong green emission with satisfying color purity. However, the conventional aluminate, borate and phosphate phosphor have their defects respectively [5–7]. SrMoO₄ is a illustrative scheelite compound, and its central Mo metal ion is organized by four O²⁻ ions in tetrahedral symmetry (*Td*). For SrMoO₄ phosphor, green emission arises under UV-light excitation (250–310 nm), but the orange emission at 580nm is observable only if the excitation wavelength is longer than 320nm [8–10]. However, the introduction of Tb³⁺ influences upon the luminescence of the host material.

Synthesis and characterization of materials For lighting Applications

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Abstract- The nanostructured $\text{LiY}(\text{WO}_4)_2:\text{Pr}^{3+}$ phosphor was rapidly synthesized at room temperature by mechanochemically assisted solid state meta-thesis reaction method. The as-synthesized Linophosphor possess scheelite tetragoLil crystal structure with space group I41/a. Photoluminescent studies revealed that under the excitation of blue light (448 nm), a strong emission in the red region was observed at 647 nm due to the transition from populated 3P_0 level to the 3F_3 lower level of Pr^{3+} ions. The Linostructured $\text{LiY}(\text{WO}_4)_2:\text{Pr}^{3+}$ material could serve as excellent red phosphor candidate for solid state lighting applications.

Keywords- Phosphor, Solid meta-thesis reaction, Scheelite structure, WLED.

I. INTRODUCTION

Currently, researchers are engaged toward the synthesis of new class of micro/Lino structured luminescent phosphors to improve its lumen efficacy for white light emitting diodes (WLEDs) applications. Because, WLEDs are considered as promising next generation solid state lighting devices and play a major role by virtue of its high permanence, high efficiency, low-cost, energy saving, prolongation, environmental friendly, etc. WLEDs have number of prospective applications and used in fluorescent lamps, indicators, back lights, autoWbile light, traffic sigLils, etc. The ultimate and hopeful method to attain high quality phosphor-converted WLEDs is by pumping tricolor phosphors with UV InGaN chip or blue GaN chip. However, the commercially available white LED have lack of red emission component results in high correlated color temperature, low lumen efficiency of radiation, and low color-rendering index limits their applications to some extent. Hence, special attention is needed to find out an alterLitive novel red phosphor material must possess thermally and chemically Wre stable and show better luminous efficiency with low-cost. Many reports were reported on scheelite type Wlybdates or tungstates with tetragoLil structure due to their

Synthesis and characterisation of phosphors

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Abstract:

Motivated by the need for new red phosphors for solid-state lighting applications Eu^{3+} -activated BaMoO_4 phosphor has been synthesized by mechanochemically assisted solid state meta thesis reaction at room temperature and an efficient red emission under near-ultraviolet excitation is observed. The emission spectrum shows a dominant peak at 614nm due to the ${}^5\text{D}_0 \rightarrow {}^7\text{F}_2$ transition of Eu^{3+} . The excitation spectrum is coupled well with the emission of UV LED (350-410 nm) and blue LED (450-470 nm). The result show that $\text{BaMoO}_4:\text{Eu}^{3+}$ is a very appropriate red-emitting phosphor for white LEDs.

Keywords: life time, luminescent materials, phosphor

I. INTRODUCTION

Recently, white light-emitting diodes (LEDs) have attracted more attention because they have advantages of low energy consumption, long lifetime, without pollutants and so on. It is well-known that there are basically two approaches to generate white light from LEDs 1-3.. Recently, BaMoO_4 doped with rare earth are still scarce nowadays and have attracted great attention due to their applications as scintillating materials in electro-optical like solid-state lasers and optical fibers, for instance and it also had become an important luminescent material being used for pc-LED because of their excellent thermal stability and chemical stability 10.. To the best of our knowledge , so far no paper has been published on the preparation of rare earth ion doped $\text{BaMoO}_4 : \text{Eu}^{3+}$ phosphors by SSM. Based on these

Synthesis of zinc sulfide and zinc-iron sulfide nanoparticles from zinc(II) dithiocarbamate complexes and their utility for photocatalytic degradation of dyes

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Abstract - Bis(N-(pyrrol-2-ylmethyl)-N-(2-phenylethyl)dithiocarbamato-S,S')zinc(II) (1) and bis(N-methylferrocenyl-N-(2-phenylethyl)dithiocarbamato-S,S')zinc(II) (2) have been synthesized and characterized by elemental analysis and spectroscopy (IR and UV-vis). Complexes 1 and 2 have been used as precursors for the preparation of zinc sulfide and zinc-iron sulfide nanoparticles. Morphological characterization of nanoparticles was carried out using TEM. The nanoparticles are explored as photocatalysts to study the degradation of dyes using methylene blue and rhodamine-B in aqueous solution under UV irradiation. The zinc-iron sulfide works as an efficient photocatalyst for degradation of rhodamine-B.

Keywords: Zinc(II) dithiocarbamate; zinc sulfide; zinc-iron sulfide; nanoparticles; single source precursors

I. INTRODUCTION

A wide range of metal-dithiocarbamate complexes is known with examples finding use in applications as diverse as industry, agriculture, medicine and material science [1-3]. Metal sulfide nanoparticles have shown vital applications in many fields as an advanced materials such as IR detectors [6], photocapacitors for energy conversion and storage [4], sensors [5], photonic materials [6] and advanced optoelectronic devices [7]. In recent years, transition metal dithiocarbamate complexes have received a great deal of attention because of their importance as single source precursors for the preparation of metal sulfide nanoparticles [8,9]. The N-bound organic moieties in dithiocarbamate ligands in metal complexes affect the morphology and size of the metal sulfide nanoparticles [10,11]. The photocatalytic activity of the metal sulfide nanoparticles depends on the morphology and size of the nanoparticles [12]. The single source precursor for the preparation of metal sulfide

Synthesis, crystal growth and characterization of(*E*)-3-(4(dimethylamino)phenyl)-1-phenylprop-2-en-1-one: An organic crystal

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Abstract - Chalcone based materials are widely used in many industrial applications. Chalcone based single crystals, (E)-3-(4-(dimethylamino)phenyl)-1-phenylprop-2-en-1-one(Crystal) were synthesized and grown as single crystals by slow evaporation solution growth technique in ethanol. The structures of the grown crystals were solved and refined by single crystal XRD and this demonstrates that crystal (E)-3-(4-(dimethylamino)phenyl)-1-phenylprop-2-en-1-one, C₁₇H₁₇NO, was synthesized and characterized by infrared, NMR, HR-MS spectral studies. The compound crystallizes in monoclinic space group C2/c with unit cell parameters $a = 13.1956(11) \text{ \AA}$, $b = 11.8396(9) \text{ \AA}$, $c = 9.5664(6) \text{ \AA}$, $Z = 4$, and $V = 1408.55(18) \text{ \AA}^3$. The crystal packing is mainly stabilized by C-H. ... π interaction. There are no significant intermolecular interactions beyond van der Waals forces observed in the solid state = structure of the compound.

Enhanced Dielectric Behaviour Of Silver Adorned Graphene/Poly Vinyl Alcohol Composites For High Dielectric Applications

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Abstract

The electrical conductivity and the specific surface area of conductive fillers in conductor-insulator composite films can acutely promote the dielectric pursuance of those films through altering their polarization density by interfacial polarization. On this grounds, the dielectric constants, conductivities and dielectric loss in polymer composite films of PVA incorporated Ag/graphene synthesized via solvent cast method are studied. X-ray diffraction patterns confirmed the formation of Ag/graphene/PVA with good compatibility. The decoration of Ag nanoparticles on the surface of graphene layers was demonstrated by the scanning electron microscope analysis. The dielectric constant of the prepared composites are complemented up to 11.89 at 1MHz and the magnified conductivity of the composites after the incorporation of Ag nanoparticles is 1.86×10^{-4} at 1MHz which is attributed to the movement of electrons across the barrier and insulating chains in the composites by AgNPs loading. The composites also exhibited a minimum dielectric loss of 0.08 at 1MHz. The momentous gain in the dielectric constant and low losses obviously suggest that the prepared polymer nanocomposites could be apt for high dielectric applications.

Keywords: Conductivity / Dielectric loss / PVA / Graphene / Ag Nanocomposites

I. INTRODUCTION

The rapid development of electronic industries has received a great interest for high dielectric materials which is attributed to their capacity for storing large amount of electrical energy and credit worth for utilizing in the fields such as gate dielectrics, power industries, energy storage capacitors, electromechanical transducers, microelectronics, and aerospace.¹⁻
³Polymer nanocomposites with high dielectric constants can be processed with excellent thermal and mechanical properties, flexibilities, low density and high breakdown strength.

English Language Teaching Methodology

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Abstract - English language teaching is very important because of the global status of English. English language teaching is a process that requires great efforts on the part of all the participants. Classroom interaction, activities, textbooks are the most important elements of teaching process for the aims and objectives of a course. In view of the importance of English as a foreign language in Iraq, the researcher has examined the existing textbooks and system of teaching English in order to point out the shortcomings which have been hindering the Iraqi students from mastering the English language. The problem can be solved by using new textbooks. The teachers of English should also be equipped with an up-to-date knowledge of English Language Teaching (ELT).

I. INTRODUCTION

Teaching English became a professional and academic field from a half century ago. Many researches for teacher education and teacher training have been conducted in order to raise the English as well as the foreign language trainers' knowledge and capabilities in carrying out effective lessons in classroom. During second millennium of speedily globalized world, teaching English as a common communication tool has become even more significant than half century ago. For introducing the history, research methodologies, and teaching pedagogies of teaching English as a Second/ Foreign/International Language, this article is composed as a reference for present English teachers under trend of globalization.

II. THE DIRECT METHOD

If you've ever heard the Direct Method being taught, you may have rightly mistaken it for some sort of military drill, which is not far off as it was first established in France and Germany in the early 1900's to assist soldiers to communicate in a second language quickly. The direct method of teaching English is also known as the Natural Method. It's used to teach a number of different languages not just English, and the main idea of the Direct Method is that it only uses the target language that the students are trying to learn. Its main focus is oral skill and it is taught via repetitive drilling. Grammar is taught using an inductive way and students need to try and guess the rules through the teacher's oral presentation.

2.1 Key Features

Richards and Rodgers (1986:9-10) summarize the key features of the DM thus:

- (1) Classroom instruction is conducted exclusively in the target language.
- (2) Only everyday vocabulary and sentences are taught.

Time-dependent Solutions of a Single Server Queue with Single Vacation and Interrupted Closedown Time

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Abstract - This paper presents the transient behavior of an M/M/1 queueing model with single vacation and interrupted closedown time of the server. The time-dependent system size probabilities for the proposed model are obtained using the method of generating function. Further, the time-dependent mean is also obtained.

Index Terms - The M/M/1 queue; Single vacation; Interrupted closedown time; Time-dependent solution.

I. INTRODUCTION

During the past few decades, many researchers carried out works related to queues with server on vacations. In a vacation queue, the server stops serving the customers completely during the entire vacation period. There are two different vacation policies: single and multiple. This paper focuses on single vacation policy. In a single vacation policy, after the completion of vacation, the server stays idle and waits for the arrivals if no customer is waiting in the queue (refer [2], [4], [5], [6]). If there is at least one customer waiting in the queue at the vacation completion instant, the server begins the exhaustive service. Closedown the system when it becomes empty, performs major role in various real time situations as it