Proceedings of the International Conference on Recent Trends of Computer Science and Electronics 2017

Author
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Chair Message

As a chair, I have the honor to welcome you with great respect and enthusiasm to the second International Conference on Recent Trends in Computer Science and Electronics Engineering (RTCSE'17) to be held at Swiss Garden Hotel, Kuala Lumpur Jalan Pudu 55100 Malaysia on 02 – 03 January 2017. It is the 4thconference hosted by Gyancity Research Lab and as a founder member I hope that we will continue to provide such forums in future as well. RTCSE'17 intended to attract innovative technical and scientific work in the field of computer science and electronics engineering. The response to the conference was over whelming and I am proud to state that we have received really good quality contributions and I am sure as a participant you will share the same sentiment later.

I am pleased to inform you that we received more than 500 papers. In order to maintain publication ethics and practices of Scopus Index Journal, we accepted only 120 papers (24% acceptance rate). All accepted papers have been submitted to the SCOPUS Index Journals and these papers will be available online by middle of 2017.

As a chair and on behalf of the organizing committee I sincerely hope that RTCSE'17 will offer a great venue at Kuala Lumpur to the participants coming from different parts of the world to share and contribute in the areas of their expertise. We hope to provide a good platform to the participants of RTCSE'17 where not only they meet and share their vision, ideas but also fertilize their thoughts in the ever-growing area of computer science and electronics engineering technologies.

I am also confident that our keynote speakers will be able to enrich your knowledge during the conference and I wish you a very pleasant and enjoyable stay in Malaysia.

Best wishes.
D. M. Akbar Hussain, Aalborg University Denmark

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2nd January 2017	
14:00-18:00	Skype Presentation @Gyancity Research Lab, India 10, 13, 18, 22, 23, 31, 34, 50, 71, 75, 107, 108, 116, 117, 150, 151, 153, 154, 155, 173, 174, 176, 179, 180, 181, 182, 184, 185, 186, 188, 190, 195, 196, 197, 198, 201, 202, 203, 204, 205, 207, 208, 212, 214, 217, 223, 225, 227, 228, 243, 250, 261, 262, 264
14:00-18:00	Conference Registration @Orchid Room, Level 2 Swiss-Garden Hotel, KL, Malaysia

3rd January 2017 Presentation In Lotus 2 & 3 (two parallel session), At Level 3 Swiss-Garden Residences, KL, Malaysia	
08:00	Registration
08.30	Welcome Speech by Prof D M Akbar Hussain (Aalborg University, Denmark)
08.40	Keynote by Muhammad Athar Javed, Director General, Pakistan House Denmark
09:00	**SESSION 1.1 (Lotus 2), 1.2 (Lotus 3)** Session Chair: Prof Bhawani Shankar Chowdhury & Prof Prabhat Kumar: 3, 5, 6, 12, 17, 19, 27, 35, 36, 44, 80, 81, 103, 110, 114, 147, 178, 193, 199, 203, 266
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20:00	Conference Closing

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KEYNOTE 1:

Prof D M Akbar Hussain

Aalborg University, Denamrk

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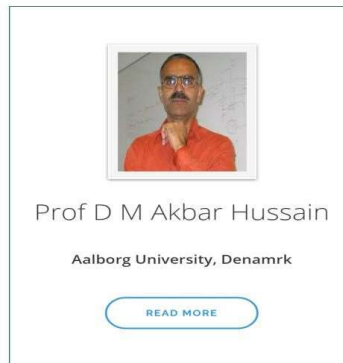
D. M. Akbar Hussain is working as an associate professor in the department of Energy Technology, Aalborg University Denmark. He holds a PhD degree in Control Engineering from the Faculty of Engineering and Applied Sciences (EAPS), University of Sussex ENGLAND, more specifically, in the field of state estimation / Tracking and its implementation on multi-processor systems. The main focus of his research is related with computer and control engineering. He has made contributions in several energy related areas for example; PV integration with grid and security issues related with grid communication network, energy efficient hardware design and design of control to get maximum power from a wind turbine. He has the experience of working in three continents (ASIA, EUROPE and NORTH AMERICA) with different cultural heritage and feels proud in adapting to these environments adequately. He has multi-discipline/cross disciplined ability in teaching and he has have been teaching both core computer science and engineering subjects, for example Computer Architecture, Micro-controller Programming, Compiler Construction, Operating Systems, Software Engineering, Digital Signal Processing, Real Time and Embedded System Programming, Databases and Engineering Management. He is chief editor of a Springer Book CCIS series published in November 2008, 2013; he is also author of a contributory chapter in a book "Parallel Processing in Control System Environment, published by Prentice Hall UK, 1993, edited by Eric Rogers. He has reasonable publications record in the various fields of his interest and expertise in some refereed journals, Springer books and conference papers. He has been the Chief Editor of Journal of Software Engineering, Associate Editor of International Journal on Computer Engineering and Information Technology (IJCEIT), Editor of Advances in Computer Science and IT, Editor of International Journal of Computer Science and Software Technology (IJCSST) Editor Board Member of International Journal of Multidisciplinary Sciences and Engineering (IJMSE), Regional Editor for Journal of Computing & Applications, Editorial Board Member for ACRS International Journal on computing & ACRS Journal on Mathematics and Computer Science and Member of International Committee for IMECS. He has also reviewed couple of books on filtering, management, computer science and actively involved in reviewing conference papers related with his research. He is external examiner, chairman of the evaluation committee and coordinator for over 20 PhD examinations. He was member of the E-study board of Aalborg University for many years and now is an observer for the same study board. He has formally obtained a certificate in management from the University of Toronto, CANADA, Adjunktpædagogikum ved Aalborg Universitet (University Pedagogy for Assistant Professors).

KEYNOTE 2:

DR. AHMAD FADZIL ISMAIL

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Dr. Ahmad Fadzil Ismail, currently an Associate Professor at Department of Electrical and Computer Engineering, Faculty of Engineering, International Islamic University Malaysia (IIUM). He completed his bachelor degree studies in Electrical Engineering at Gannon University, Pennsylvania, USA with Cum Laude Latin honors. He holds MSc and PhD from University of Essex, University of Bath, UK, respectively. He is registered with Board of Engineering Malaysia as a Professional Engineer and also a senior member of IEEE. His research interests include development of active and passive target tracking algorithms, radio frequency and wireless systems and microwave and millimeter wave technology.
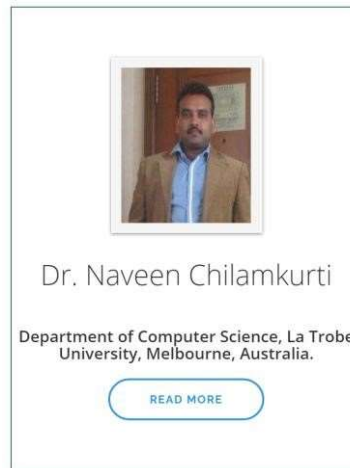
KEYNOTE 3:

Prof Mohsin Jamil

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Dr Mohsin Jamil is working as an assistant professor and deputy head of department in the department of Robotics at National University of Sciences and Technology (NUST), Islamabad Pakistan. He holds a PhD degree in Electrical Engineering (Control Systems/Power Electronics) from the University of Southampton, U.K. He has done two MSc degrees from National University of Singapore and Dalarna University Sweden in the field of Electrical Engineering (Automation and Control Engineering. His PhD thesis was "Repetitive Current control of Two-Level and Interleaved Three Phase PWM utility connected inverters". The main focus of his research is related with the application of control systems in different domains of electrical engineering. He has made contributions in the filed of control engineering, biomedical, computer networking and overall communication systems. He has published more than 50 papers in International peer reviewed conferences. He is active member of IEEE and currently serving as Chair IEEE student activities Islamabad region (R10) section.

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Dr. Naveen Chilamkurti

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Dr. Naveen Chilamkurti is an acting head of Department of Computer Science and Information Technology in La Trobe University, Melbourne, Australia. He is an TECHNICAL EDITOR of IEEE WIRELESS COMMUNICATIONS MAGAZINE (Impact Factor= 6.524) and Associate Technical Editor of IEEE Communications Magazine (Impact Factor = 4.46). He is also serving as EDITOR-IN-CHIEF International Journal of Wireless Networks and Broadcasting Technologies (IJWNBT) (IGI-Global USA publication) and many more springer. Wiley and IEEE journal. He is also SENIOR MEMBER of International Electrical and Electronic Engineering (IEEE). He was general chair and co-chair in various global conferences like ISWPC2009, 2011, 2012, 2013, ATNAC 2011, 2012, IEEE ICC 2014, IEEE SMARTGRIDCOMM 2013, IEEE IoT

2013, MUM 2014….and so on. He has published 180 Journal/conference papers including IEEE and ACM Transactions. He has supervised 40 students as of 2015 and 37 students graduated PhD, Masters and Honours program. He has received grant from many funding agency like National ICT Australia (NICTA), Department of Industry, Innovation Science, Research and Tertiary Education and so on. Major global publisher like Springer, IGI Global, Wiley, Nova Publications (USA) have published Book written by him.

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KEYNOTE 5:

Prof. Geetam Singh Tomar

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Prof. Geetam Singh Tomar (IEEE M' 2002), received his UG, PG, and Ph. D. degrees in electronics engineering from reputed universities of India. He is also Principal, Malwa Institute of Technology & Management, Gwalior, India and R&D Advisor, MPCT Group of Colleges, Gwalior. He is actively involved in research and consultancy in the field of Air Interface and Advanced communication networks. He is actively involved in IEEE activities and has organized more than 10 International conferences in India and other countries. He is a Visiting Professor in Hannam University Korea, Thapar University Patiala, and many other institutes of repute. He has served in IIITM and other Institutes of National Importance. He received International Pluto award for academic excellence in 2009 from Cambridge UK. He was listed in 100 top academicians of the world in 2009. Listed in who's who in the world for 2008, 2009 and 2010 continuously. He is chief editor of 5 International Journals and has published more than 100 research papers in international journals/conferences and has written 05 books, two of which are published by Springer Verlag, Germany. His emphasis is on spreading research activities in the pockets of India where research activities are at low level.

Abstracts of Paper Accepted in RTCSE-2017

Paper	Abstract of Research Paper
Paper ID 03	**Design and Comparison of PID and Proportional Resonant Controllers for Matrix Converter** M.Arifeen Ali[1,2], Mohsin Jamil[1,3], Raheel Afzal[1,2], Asad Nawaz[1,2], Gussan Mufti[1,2], M. Zubair[2] and Syed Omer Gilani[1] [1] School of Mechanical & Manufacturing Engineering (SMME), National University of Sciences and Technology (NUST), Sector H12 Main Campus, Islamabad, Pakistan [2]U.S Pakistan Centre for Advance Studies in Energy (USPCAS-E), National University of Sciences and Technology (NUST), Sector H12 Main Campus, Islamabad, Pakistan [3]Department of Electrical Engineering, Faculty of Engineering, Islamic University Madinah, Kingdom of Saudi Arabia arifeen.ali@gmail.com , mohsin@smme.nust.edu.pk , raheelafzal91@yahoo.com , asad.n1991@gmail.com , mzubair@casen.nust.edu.pk , omer@smme.nust.edu.pk *Abstract* In this paper we represent a comparison between PID and Proportional resonant controllers for matrix converter used for unbalance load application. The simulation has been done in Matlab Simulink. A linear model transfer function of matrix converter has been taken to be control by Proportional Resonant controller and PID controllers. Various parameters are taken to find out the close loop system stability. First PID controller and then Proportional resonant controller checked for close loop system's responses. Optimal controller has been suggested on the basis of best performance for reference sinusoidal tracking. **Symbols:** Matrix Converter, PID Controller, Proportional Resonant Controller (PR).
Paper ID 05	**Design of an Input Filter for Matrix Converter for the purpose of Harmonics Reduction** Asad Nawaz[1,2], Mohsin Jamil[1,3], M.Arifeen Ali[1,2], Raheel Afzal[1,2] and Syed Omer Gilani[1] [1] School of Mechanical & Manufacturing Engineering (SMME), National University of Sciences and Technology (NUST), Sector H12 Main Campus, Islamabad, Pakistan [2]U.S Pakistan Centre for Advance Studies in Energy (USPCAS-E), National University of Sciences and Technology (NUST), Sector H-12 Main Campus, Islamabad, Pakistan [3]Department of Electrical Engineering, Faculty of Engineering, Islamic University Madinah, Kingdom of Saudi Arabia asad.n1991@gmail.com , mohsin@smme.nust.edu.pk , arifeen.ali@gmail.com , raheelafzal91@yahoo.com , omer@smme.nust.edu.pk *Abstract* Matrix converters having wide variety of applications are an emerging technology in the industry. Matrix converter converts AC supply voltages into varying magnitude and frequency output voltages. Thus matrix converter has proven to be a good alternative to Voltage Source Inverters. However, matrix converters are open to an instability i-e harmonic distortion in the input currents, which is examined here. In this paper an input filter for matrix converter is designed for the purpose of reducing total harmonic distortion and smoothen the input currents in order to satisfy EMI requirements. *Keywords:* Matrix converter, harmonics , input filter, modulation.

Paper *ID 06*	**Secure Mobile Commerce in Ad hoc Network Using CAEC2M** Khaleel Ahmad[1], Md Shoaib Alam[2], M A Rizvi[3] [1,2]School of CSIT, Maulana Azad National Urdu University, Hyderabad, India [3]Departemt of CSE, NITTTR, Bhopal, India [1]khaleelamna@gmail.com, [2]shoaib.al9@gmail.com, [3]marizvi@nitttrbpl.ac.in **Abstract** M-Commerce applications in the world have grown exponentially over the years. It had set up for mobile users to engage wirelessly of ad hoc network infrastructure in online business irrespective of place or time. Providing anonymous, secure and trust based connection service in ad hoc network is quite a challenging task. Anonymity, security and privacy of the transaction or message transmission are the highest priority need to be delivered to the destination node on time. In this paper, a CAEC2M (Cellular Automata Elliptic Curve Cryptography Mix network) algorithm to secure Mobile Commerce over ad hoc network is proposed. An attempt is made to design a mix-network (Mix-Net) using elliptic curve cryptography based on cellular automata which creates a hard to trace communication to protect the anonymity of the sender and encrypt the sensitive information to avoid any eavesdropper trying to access the data during transmission. CAEC2M provides also confidentiality, integrity and authentication. *Keywords:* Elliptic Curve Cryptography, Cellular Automata, Mix-Net, Anonymity, Security
Paper *ID 09*	**Prototype Development to Detect Electric Theft Using Pic 18F452** Saad Yousuf, Mohsin Jamil, Zia Ur Rehman, Asif Hassan, Syed Omer Gilani Department of Robotics & Artificial Intelligence School of Mechanical & Manufacturing Engineering (SMME) National University of Sciences & Technology (NUST) H-12 Main Campus Islamabad. Saadyousuf45@gmail.com, mohsin@smme.nust.edu.pk, ziaurrehman@smme.edu.pk, asifhassan768@gmail.com, omer@smme.nust.edu.pk **Abstract** Speed is one of the key reasons for accident in vehicles. These over speed accidents could be avoided if emergency services could be able to get the information and take necessary actions in time. Now a day it is very hard to imagine our daily life without transportation. Every invention has some limitation and so with the transportation. With the increase in the population the numbers of vehicles also increase on roads and highways to meet the necessity of travelling. And hence with the increase in vehicles, traffic jams and accidents are also increasing. So we need to develop a system, which can help the public in such situations and can reduce the risk of mishap. Today, remote development has tilted the chances for achievement more than ever. This paper insight about mishap of car crisis ready circumstance. *Keywords*: GPS, GSM, AT commands, ARM7 microcontrollers, Android Studio Interface.

Paper ID 10	**Trust Evaluation on Social Media based on Different Similarity Metrics**

Anubha Maurya, M. P. Singh
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Abstract

 With advancement in internet era, the importance of social media is increasing day by day. It enables users to share their profile data, ideas, videos and any content they have with them. With benefits, it also has several issues related to it. One of the issue is "how to protect users from after effect of friendship over social media?". This paper proposes a trust model to overcome it. The proposed model calculates trust to assist end users to take decision about accepting friend-request on social media. Trust evaluation is based upon profile similarity analysis. Trust computation uses preferred attribute among profile attributes to evaluate trust of users. The paper analyzes different trust evaluation methods based on the proposed model.

Keywords: Social Media, trustor, trustee, profile similarity analysis, similarity metrics, Ordered Weight Average (OWA)

Paper ID 12	**Internet Traffic Classification using Machine Learning**

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Kumar NIT Patna Bihar, India prabhat@nitp.ac.in

Abstract

 Internet traffic classification is one of the popular research interest area because of its benefits for many applications like intrusion detection system, congestion avoidance, traffic prediction etc. Internet traffic is classified on the basis of statistical features because port and payload based techniques have their limitations. For statistics based techniques machine learning is used. The statistical feature set is large. Hence, it is a challenge to reduce the large feature set to an optimal feature set. This will reduce the time complexity of the machine learning algorithm. This paper tries to obtain an optimal feature set by using a hybrid approach -An unsupervised clustering algorithm (K-Means) with a supervised feature selection algorithm (Best Feature Selection).

Keywords: Internet traffic, Classification, Management, Machine learning

Paper ID 13	**Detection of Sybil Nodes in Wireless Sensor Networks** Kumar Debasis devkunu@gmail.com M.P. Singh mps@nitp.ac.in Prabhat kumar,prabhat@nitp.ac.in Sachin Bhaskar, sachinbhaskar007@yahoo. Com **Abstract** Wireless Sensor Networks (WSNs) usually operate in remote areas and communicate wirelessly over the medium i.e. air. Due to the location and working mechanism of WSNs they are prone to attacks from malicious sources that are aimed at subverting their normal operations. Sybil attack is a type of attack on WSNs where a malicious node either fabricates some new identities for itself or steals identities of some legitimate nodes. This paper thoroughly examines the threats that a Sybil attack possesses, and classifies this attack into different types, enabling us to understand the consequences of such attacks better. This paper proposes a new approach to authenticate a sensor node based on a cryptographic hash function. It also evaluates the performance of the proposed approach in wireless sensor networks both theoretically and through simulations in terms of the energy and memory consumed. *Keywords:* Sybil attack, Sybil node, cluster head, random string, hash.
Paper ID 17	**Potential and Limitations of Kinect for Badminton Performance Analysis and Profiling** Huong Yong Ting, Yong Wen Daniel Tan, Boung Yew Simon Lau School of Computing, University College of Technology Sarawak, 96000 Sibu, Sarawak, Malaysia. alan.ting@ucts.edu.my, danieltan@ucts.edu.my, drsimon@ucts.edu.my *Abs*tract Badminton is a highly technique-oriented sport. Performance analysis and profiling are essential steps in badminton coaching in order to identify the strengths and weaknesses of an athlete. Correct badminton technique and movement is particularly essential to be mastered by novice badminton players at the preliminary grooming stage. With the advancement of technology, computerized systems are increasingly used to monitor performance of athletes, and to support coaching activities such as in badminton. In this paper, we investigated and identified the key potential and limitations of the Microsoft Kinect sensor for badminton performance analysis, particularly on novice badminton player. It is found that key selected badminton strokes as identified by expert coaches such as forehand crosscourt lift, backhand touch net, backhand lift, forehand lift, forehand push net, backhand clear, backhand push net, forehand touch net, and forehand clear can be measured and analyzed accurately and consistently with Microsoft Kinect sensor. *Keywords:* Kinect, Badminton, Performance Analysis, Movement.

Paper ID 18	### Test Data Generation and Optimization Using Bio-Inspired Algorithm Manju Khari, Prabhat Kumar, Gulshan Shrivastava National Institute of Technology Patna, India manju.cse15@nitp.ac.in, prabhat@nitp.ac.in, gulshanstv@gmail.com **Abstract** Software testing is performed with the aim of identifying possible defects in the software product. The rising demand for the techniques (like Ant Colony Optimization (ACO)& Genetic etc.) that can generate test data increases as the complexity of the software increases. Generating test data is a crucial activity in software testing. It is the process of constructing a set of test data for evaluating the quality of a software application. In this work an algorithm is proposed that performs better than ACO and Genetic Algorithm (GA) based on various parameters namely running time, complexity, the efficiency of test cases and branch coverage. The proposed algorithm is GACO algorithm, the best features of GA and ACO is used to find a suitable solution to solve optimization problems. The results from GACO solves the purpose very well giving better results than various nature-inspired algorithm under consideration i.e. GA and ACO used in software testing in the sense that better complexity, less running time, good test data sets, and Path coverage. GACO give better test cases, better coverage, less redundancy. The inspiring result raises the need to carry out future work. *Keywords:* BioInspired Computation, Genetic, Ant Colony optimization, Fitness function.
Paper ID 19	### Energy Aware Routing for Pest Detection in Coffee Plantation using Wireless Sensor Networks [1]Roshan Zameer Ahmed, [2]Rajashekhar C. Biradar [1]Department of Electronics and Communication Engineering, Reva ITM, Bangalore, India. [2]School of Electronics and Communication Engineering, Reva University, Bangalore, India. [1]roshanahmed31@revainstitution.org, [2]raj.biradar@revainstitution.org **Abstract** This paper proposes an Energy Aware Routing for Pest Detection (EARPD) for forwarding the information of Coffee White Stem Borer existence in Coffee Plantation using Wireless Sensor Networks. Acoustic signals that are made with biting sound by the pests inside the stem are captured by the nodes, and the information is aggregated at Cluster-Head (CH) which is to be conveyed to sink node in an energy-efficient way. Eventdriven routing of the aggregated data is carried out by the CH which follows a Poisson distribution and maintains energy conservation by reducing the number of control packets for route establishment. Simulation analysis of EARPD is compared with data routing for in-network aggregation and energy-efficient hierarchical clustering routing protocol in terms of packet delivery ratio, control overhead and energy consumption. The EARPD simulation results outperform set alongside the corresponding techniques. *Keywords:* Clustering, Aggregation, Routing.

Paper ID 21	**NWR: Net Weighing Based Timing Driven Routing Algorithm** Geetanjali Udgirkar and G Indumathi **Abstract** Net weighing algorithms for timing driven placement are effective way of optimizing delays during routing of designs. We present two novel timing driven routing algorithm which is based on weighting of the critical nets. In the first method slack of the net is considered in evaluating the criticality of the net, whereas, in the second method we consider exponent of the criticality of the pin. These weights are then applied to all the nets while performing timing driven global routing. The results of our experiments are encouraging, wherein, we obtain an improvement of 17.38% and 22.35% over vpr in the weighing schemes called Method A and Method B respectively. *Keywords:* Global Routing, Detailed Routing, Timing Drive Routing, FPGA.
Paper ID 22	**A Review of UML Model Retrieval Approaches** Alhassan Adamu[1,2], Wan Mohd Nazmee Wan Zainon [2,*] [1]Department of Computer Science, Kano University of Science and Technology, Wudil, P.M.B 3244 Kano, Nigeria [2]School of Computer Sciences, Universiti Sains Malaysia, 11800 Penang, Malaysia kofa062@gmail.com, nazmee@usm.my **Abstract** Several approaches for matching and retrieval of UML models have emerged in the literature. They vary in method and techniques based on the way they identify corresponding UML diagrams elements. UML diagrams retrieval involves some steps starting with the identification of diagrams elements, calculating their similarity, and finally retrieved the similar diagrams for appropriate reused. This review paper presents an analysis of the previous works of UML diagrams reuse. The review analyzes the existing work in the following perspectives: retrieval techniques, query formulation and evaluation procedures, and the diagrams supports. *Keywords:* Software reuse; UML Models; Models Matching; Models Retrievals

Paper ID 23	**Adaptive Thresholding Technique for Segmentation and Juxtapleural nodules Inclusion in lung segments** Muhammad Zia ur Rehman, Muzzamil Javaid, Syed Irtiza Ali Shah, Syed Omer Gilani, Mohsin Jamil, Irfanullah Department of Robotics and intelligent Machine Engineering, School of Mechanical and Manufacturing Engineering, National University of Sciences and Technology (NUST), Islamabad 44000, Pakistan. ziaurrehman@smme.edu.pk, muzzamil.javaid@gmail.com irtiza@smme.nust.edu.pk, omer@smme.nust.edu.pk, mohsin@smme.nust.edu.pk, iullah.mscs15seecs@seecs.edu.pk *Abstract* Early diagnosis of lung cancer plays crucial role in the improvement of patients' chances of survival. Computer aided detection (CAD) system has been a groundbreaking step in the timely diagnosis and identification of potential nodules (lesions). CAD system starts detection process by extracting lung regions from CT scan images, this step narrows down the region for detection. Hence saving the time consumption and reducing false positives outside the lung regions that results in the improvement of specificity of system. Proper lung segmentation significantly increases the performance of CAD systems. Different algorithms are presented by various researchers to improve segmentation results. An intensity based approach is presented in this paper for the segmentation of parenchyma and the goal is to achieve reasonable segmentation results in less time. Algorithm used in this paper is based on the Intensity based thresholding which is the fastest method for image segmentation. Images used in this research to analyze algorithm's result are taken from Lung Image Database Consortium (LIDC). Twenty random cases were picked, each having different number of slices (128 to 300). Algorithm is implemented using MatlabR2014 and a system with processor of 2.6 GHz and RAM of 4 GB. Total time taken for a single case of 128 images was 6.3 seconds and hence with an average of 49 milli sec/slice. **Keywords:** Lung cancer, Juxta-pleural nodules, Computer aided detection (CAD), segmentation, Intensity based thresholding
Paper ID 26	**Cryptography As a Service (CaaS) : Quantum Cryptography for Secure Cloud Computing** Thouhedul Islam, Rashidah Funke Olanrewaju Department of Electrical and Computer Engineering, Kulliyyah of Engineering, International Islamic University Malaysia, Kuala Lumpur, Malaysia tisuchi@gmail.com, frashidah@iium.edu.my **Abstract:** Cloud Computing is an emerging technology nowadays. Due to the accessibility, availability, and cost effectiveness, cloud computing has became essential computing system in both, private and public sectors. However, secure data transfer is still a big question where transferring link between user and server are not stabilized yet. As a result, many cloud users lost their valuable data. However, this paper proposes as integrated service of Advanced Quantum Cryptography with Cloud Computing. To ensure the secure Cloud Environment between sender and receiver, Quantum Cryptography proposes the use of photons and physics to generate cryptographic keys. **Keywords:** Quantum Cryptography, Cloud Computing, Cryptography, Cloud.

Paper *ID 27*	## FPGA Based LVCMOS I/O Standard Based Digital Clock Design for Network Synchronization Deepa Singh Atal Bihari Vajpayee-Indian Institute of Information Technology, Gwalior, India deepasingh.iiitm@gmail.com **Abstract** The idea is to develop a digital clock design that consumes least amount of power for its operation. Low Voltage complementary metal oxide semiconductor i.e. LVCMOS IO standard is used at fixed temperature and changing output load at various frequencies. FPGA family used is Virtex6 and software used of simulation of proposed algorithm for digital clock is Xilinx. Coding is done using Verilog. The results are taken for LVCMOS at frequency 0.1GHz, 1GHz, 10GHz and 100 GHz respectively and data is collected to make digital clock efficient. For making any device efficient means the amount of power consumed by it should be small with desirable output. *Keywords:* LVCMOS25, Digital Clock, Energy Efficient, Low power, FPGA.
Paper *ID 30*	## MANET Parameter Analysis and its Impact on Next Generation Network Shadab Pasha Khan[1], M. A. Rizvi[2], Sitendra Tamrakar[3] [1]Department of Computer Science & Engineering Chameli Devi Group of Institutions Indore, India [2]Department of Computer Engineering & Applications National Institute of Technical Teacher's Training & Research Bhopal, India [3]Department of Computer Science & Engineering AISECT University Bhopal,India shadabpasha@gmail.com, marizvi@nitttrbpl.ac.in, drsitendra@gmail.com **Abstract** A mobile ad-hoc network is a type of network in which all the nodes can communicate each other without any fixed infrastructure. This unique property of MANET is useful in conditions where exchange of information is the prime objective under any circumstances. In this type of network all communicating nodes cooperate with each other in the distributed manner and offer dual responsibility, one as a host and the other as router. This quality of MANET paves the way for numerous new and exciting applications over Next Generation MANET. These applications may include, such as group communication, data telemetry, automotive applications, music and video streaming, real time mobile applications. Two main evolutions of multihop next generation ad hoc networks are projected, namely WMN and Opportunistic Networks. In this paper an honest attempt is made to enumerate and briefly discuss issues and challenges of Next Generation *Keywords:* MANET, WMN, Ad-hoc.

Paper ID 31	**Hardware based Brain MR Image De-Noising using Weiner filter with Discrete Haar Wavelet Transform**

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Abstract

Noise is a serious issue in any brain MR image analysis. Additive noises like Gaussian noise, salt and pepper noise and multiplicative noise like speckle noise are most common noises make MR image to suffer in diagnosis. In brain image analysis, MR image de-nosing plays an important role. Image de-nosing step improves the image quality by removing unwanted noise present in the image by applying some transformation techniques without losing the useful information. In the proposed work an attempt has been made to study different noise models like additive random noise, impulse noise, multiplicative noise and haar discrete wavelet transform combination with weiner filter has been presented. An attempt has been made to implement the same in hardware platform and study the performance of the implemented algorithm. Results were compared with several performance metrics like PSNR, Mean square error (MSE), Absolute Mean square error (AMBE), Structural similarity Index (SSIM). It has been implemented in a single board computer (raspberry pi) open source software platform OpenCV.

Keywords: Haar wavelet transform, Weiner filter, median filter, salt-and-pepper noise, Gaussian noise, speckle noise.

Paper ID 34	**An Efficient Face Detection and Recognition for Video Surveillance**

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Abstract

In this paper, a comprehensive scheme is proposed for unconstrained joint face detection and recognition in video sequences for surveillance systems. The proposed technique is robust and aims to develop a unified framework to address the challenges of varying head orientation, pose and illumination level in a highly integrated fashion so as to benefit from the interdependence between the high fidelity face detection and the subsequent recognition phases. Unlike conventional video based face recognition techniques, emphasis is laid on the acquisition of a pose constrained training video database followed by the extraction of well aligned face images from the training videos. We have proposed a new Indian Faces Video Database (IFVD) to demonstrate the performance of the proposed approach especially in the challenging environment of varying skin color and texture of faces from the Indian subcontinent. Our approach produces successful face tracking results on over 86% of all videos. The good tracking performance induces high recognition rates: 85.86 on Honda/UCSD and over 77.49 % on IFVD.

Index Terms: Face Detection, Face Recoginition, Classification, Adaboost, SVM, Manifold learning, Kalman Tracking

Paper ID 35	**Analysis of Multiple Hidden Layer Vs Accuracy in Performance Using Back Propagation Neural Network**

Stuti Asthana[1], Amitkant Pandit[2], Anil Bhardwaj[2]
[1]CSE Department, Suresh GyanVihar University, Jagatpura, Jaipur, Rajasthan, India.
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Abstract

In this paper it is been analyzed that the proportionality among hidden layers neurons plays very important role in determining the accuracy of the target output. Better Proportionality of neurons with appropriate number of hidden layers result in higher accuracy. In general, in any neural network atmost two hidden layers are enough to train the network. But in some cases where accuracy is chief criteria then hidden layer plays vital role.This problem get crucial when someone have to deal with multiscript numeral recognition where many numerals have similar shape but different values. For example '0' shape in Arabic resembles numeric "Five" whereas in Hindi, English and many other scripting languages it resembles numeric "Zero". This crucial problem usually arises when a person writes any number/pincode in two or more scripting language like Hindi and Farsi. These types of problems are taken into consideration and accuracy is considered chief criteria.

Keywords : Neural Network, Multiple hidden layers, Multiscript Pincode Recognition.

Paper ID 36	**Novel Block Matching Reduced Complexity Motion Estimation and Compensation Algorithm for Mobile Domain: DBTSSDS**

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Abstract

Recent Day Communication between ends is facilitated by the development in the area of wired and wireless networks. The end to end devices like mobiles, handheld and palm size PC's have limited capability for computation, display capacity and bandwidth. This augment, for ways for communicating large data files like video, in highly compressed and acceptable quality over the limited available bandwidth. Block matching algorithms is a vital step for achieving the efficient and acceptable compression .The block matching algorithm defines the total computation cost and effective bit budget. Recently various fast search algorithms for video coding using Orthogonal Logarithmic Search Algorithm (OSA) has been proposed This paper presents a novel method Based on the extension and modification of research work MTSSDS [11] block matching algorithm. The proposed algorithm utilizes the concept of logical dead blocks. The proposed algorithm is termed as Dead Block on Modified Three steps and Diamond search Block matching Algorithm (DBTSSDS) for the block based motion estimation for mobile domain. It has been found that from the original Three step Search (3SS/TSS) and Diamond Search (DS) method, the PSNR value has increased and the computations and thus computation time (faster) has been reduced significantly .The experimental results based on the number of video sequences were analyzed to demonstrate the advantages of proposed motion estimation technique.

*Keywords:*Block Matching, Motion estimation, TSS,DS, MTSSDS I. INTR

Paper ID 37	**Implementation of Router for NOC on FPGA** Gaurav Verma[1], Harsh Agarwal[2], Shreya Singh[3], Shaheem Nighat Khanam[4], Prateek Kumar Gupta[5], Vishal Jain[6] [1,2,3,4,5]Department of Electronics & Communication, Jaypee University, A-10, Sector-62, Noida (U.P.)-India [6]Bharati Vidyapeeth's, Institute of Computer Applications and Management (BVICAM), New Delhi, India Gaurav.iitkgp@gmail.com **Abstract** In today's technological era, SOC has undergone rapid evolution and is still processing at a swift pace. But due to this explosive evolution of semiconductor industry, the devices are scaling down at a rapid rate and hence, SOC today have become communication-centric. However the existing bus architectures comprising of wires for global interconnection in SOC design are undergoing design crises as they are not able to keep up with the rate of scaling down of devices. To overcome bottleneck of communication system, NOC is an upcoming archetype. In on-chip network, router is considered as an important component. This paper proposes router, its components and parameters which affects the entire design. Thus, to validate the functioning of NOC on hardware, router has been designed in VHDL and simulated in Xilinx ISE 14.1 targeting Xilinx XC5VLX30-3 FPGA. **Keywords:** Network-on-chip, System-on-chip, VHDL, Field programmable gate Array
Paper ID 38	**Real time Telemedical Health Care systems with Wearable Sensors** Fawwaz Eniola Fajingbesi, Rashidah Funke Olanrewaju, Bisma Rasool Pampori*, Sheroz Khan, Mashkuri Yaacob International Islamic University Malaysia *Central University Kashmir, India fawwazfajingbesi@yahoo.com, frashidah@iium.edu.my, bismarasoolhr@gmail.com, sheroz@iium.edu.my, mashkuri@iium.edu.my **Abstract:** The time between detection and response to chronic disease could go a long way in saving lives. The current trend in health monitoring systems is to move from the hospital centered device to eventually portable personal devices. Hence Telemedical health care which involves the remote delivery of medical care service to either out-of-hospital or admitted patients through wireless network and computer information technology. This paper systematically reviews the most recent works in telemedical health care system to propose a more efficient model. The focus is more on wearable sensors and devices with most attention given to cardiovascular patient in recent times. The huge literature available reflects the size of activity and attention given to telemedicine. The reviewed works are published within the last five years. The proposed systems are compared in terms of their connectivity, targeted application, type of sensor used etc. Our study reveals Telemedicine to be a profound field with researchers from multidisciplinary sector. However, there are still many gaps that need to be filled before it reaches maturity. Factors such as efficient wireless technology transmission, cyber data security, sensor design and integration, device miniaturization and intelligent algorithm for multi parameter data fusion require further considerations. **Keyword:** Telemedicine, Telehealth, Wearable Sensors, Wireless Communication, Physiological Parameters, Vital Sign.

Paper ID 44	**Power Challenges in wireless body area network for mobile health powered by human energy harvesting: A survey** Harmandeep Singh Sangha Department of Electronics & Communication Engineering, Global Institute of Management & Emerging Technologies Amritsar, Punjab, India. harmandeepsinghsangha@gmail.com Harsh Sohal Chitkara University Research and Innovation Network (CURIN), Chitkara University, Punjab, India. harsh.sohal@chitkara.edu.in **Abstract** Wireless body area network has become a leading solution in mobile health. The prominent use of wireless sensor networks and miniaturization of electronic and electrical devices on a regular basis has authorized the progress of wireless body area networks. These devices are used to provide a health monitoring on a continuous basis and real time feedback to the user and medical personnel. As these devices are wireless in nature and wide variety of sensors are available so it offers many innovative ways to improve systems involved in healthcare and quality of life. Scavenging of energy in human environment has been focused on locating new tremendous ways to charge body nodes in human environment. In such networks the quality of service by considering various parameters like latency, throughput and packet loss is most important. In this paper the scope and demands of WBAN in mobile health and the power requirements is discussed. *Keywords:* Mhealth, Ehealth, telehealth, energy harvesting component, medium access control protocol.
Paper ID 48	**Assessment of Dynamic Spectrum Allocation Technique in Heterogeneous Network** Ahmad Fadzil Ismail[1], Mohammad Kamrul Hasan[1], N. I. Othman[1], Wahidah Hashim[2] Department Electrical and Computer Engineering Faculty of Engineering International Islamic University Malaysia College of Computer Science and Information Technology, Universiti Tenega Nasional (UNITEN), Malaysia nurzati.iwani90@yahoo.com, af_ismail@iium.edu.my, hasankamrul@ieee.org, wahidah@uniten.edu.my **Abstract** Mobile devices are becoming the priority of access to a growing trend of online services. As services use higher quality images & video, an increase of wireless network capacity is required. In this case, spectrum is a way to go. Even though capacity is important, there are other factors as well, for example, coverage, flexibility and resilience. Dynamic spectrum access technology allows higher transmission power according to location & safe sharing with licensed users (LU). Dynamic spectrum allocation (DSA) technique enhances the spectrum efficiency for the users in Heterogeneous Network. This paper explains about the findings that are observed by two different researches that are related to our research title. The first paper is about the basic OFDM structure using GNU Radio software and implemented using USRP hardware. The second research is about the implementation of Dynamic Resource Allocation for LTE using GNU Radio. The first research explained about the advantages and disadvantages of OFDM configuration. The second research explained more about the implementation of Dynamic Resource Allocation in the uplink and downlink configuration, and are tested using three algorithms; Max-sum, max-min and max-product. All the results are obtained from GNU Radio. However, the results are not implemented using USRP because of the short amount of time. Based on these two researches, we identified the advantages and disadvantages of the proposed designs and develop our own design to mitigate the cross-tier interference in multi-tiers HetNets. **Keywords:** OFDM, DSA, USRP, GNU radio

Paper ID 49	**Design and performance analysis of RAM_WR_Control module using Xilinx ISE 14.2** [1]Harkinder Kaur* , [2]Amanpreet Kaur** , [2]Harsh Sohal*** , [2]Isha Gupta**** , [2]Swati Singh***** , [3]Surbhi Nagpal****** [1]Department of Computer Science, Chitkara University, Chandigarh, India [2]Department of Electrical and Electronics Chitkara University, Chandigarh, India [3]Techno planet labs Pvt Ltd, India *harkinder.kaur@chitkara.edu.in, **amanpreet.kaur@chitkara.edu.in,***harsh.sohal@chitkara.edu.in ****isha.gupta@chitkarauniversity.edu.in,*****swati.singh@chitkara.edu.in,******surbhi.huria@gmail.com **Abstract** RAM_Write_Control module is designed to control the data write operation to the Random Access Memory (RAM) core. The RAM core is used for saving the raw data in impedance measurement module of Electrical Impedance Tomography (EIT) system, KHU Mark 2.5. The performance of this module is analyzed using XILINX ISE 14.2 design tool on Virtex-5 (xc5vlx20t-ff323) chip. The performance analysis is done for different I/O Standards. HSTL (high speed transceiver logic-I, II, III, IV), LVCMOS15 (low voltage metal oxide semiconductor) and LVTTL (low voltage transistortransistor logic) I/O standards are used to analyze the performance on Virtex-5 FPGA. This analysis is done at operating frequencies of 400MHz, 500 MHz, 600 MHz and 700 MHz It is observed that when LVCMOS15 performance results are compared with LVTTL, HSTL_I, II, III, IV at 700MHz we obtain 34.9%, 37.35%, 44.94%, 43.82%, 53.4% power reduction respectively. The maximum power reduction obtained at 400 MHz, 500 MHz, 600 MHz is 57.3%, 56%, 54.8% respectively, when we compared LVCOMS15 with HSTL_IV I/O standard. Keywords: Engineering, Advanced Technology, 3 R's, E-waste, Computation. *Keywords-*RAM, WRITE CONTROL, FPGA, Energy Efficiency, EIT system, Xilinx
Paper ID 50	**Security and privacy Challenges: Internet of Things** Ms. Seema Nath Jain Assistant Professor Department of Mgmt & I.T Ideal Institute of Management and Technology Affiliated to GGSIPU, Dwarka seemanath.iimt@gmail.com Dr. Subhranil Som Associate Professor Amity Institute of Information Technology Amity University, Noida **Abstract:** Most of the people use the Internet every day but little knows how it really works. Now a Days internet of things (IoT) has been area of research as many heterogeneous devices are connected through internet. This will capacitate the devices with new abilities. In such a case, the confidentiality of data plays an important role. It includes data validation and confidentiality, secrecy and reliability amongst various users and the constraints of security and privacy policies. Traditional security methods cannot be directly applied to IoT technologies due to the different standards and communication stacks involved. Moreover, the amount of more interconnected devices will lead to less adaptability; so a more modifiable structure is needed to deal with security threats in a drastically dynamic environment. This survey reports on the current research on the Internet of Things by examining the related literature, identifying current trends, challenges that threaten IoT and future directions.

Paper ID 51	**MATLAB INTERFACE FOR POWER AND TIMING ANALYSIS OF DIGITAL CIRCUITS**

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Abstract:

Due to advent in CMOS technology, it has become possible now to put millions of transistors on a single chip of silicon. This has drastically increased the performance of the device and it can do much faster operations. But on the other side, putting more transistors on a silicon chip triggering the problem of increased power consumption. So, it becomes a bottleneck for the designer to choose in between performance and power consumption. Particularly, for reconfigurable hardware like FPGAs the situation is worst and demands concern. So, this paper presents some optimization techniques that are applied on FPGAs at different levels of abstraction. Some benchmark circuits like ALU, Register, Counter and RAM are used for experimental measurements to validate the results. After simulation and power analysis of benchmark circuits at different frequencies, a power aware utility software is developed that performs optimization of power keeping performance in consideration at a given frequency for the selected FPGA. The circuits have been implemented using VHDL as the hardware description language and simulation is carried out using Xilinx ISE 14.1 by targeting Virtex-4, 5 and Artix-7 FPGA.

Keywords: Xpower, STA, VHDL, FPGA, I/O Standards.

Paper ID 66	**BEDROOM MONITORING SYSTEM FOR ISOLATED ELDERLIES**

Atika Arshad[1], Ahmad Fadzil Ismail[2], Sheroz Khan[3], Wahidah Hashim[4] and Mohammad Kamrul Hasan[5]

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Abstract

With the rapid growth of a number of elderly people in the world, an increasing need has arisen to provide physical security to these isolated elderly individuals. Researchers have been working towards monitoring such smart systems for past decades. However, the needs of elderly people and their families are yet to be fulfilled, especially since the developed existing systems need their users to change their lifestyles. This work aims at creating a monitoring system for monitoring the occupancy of an elderly person on the bed. Capacitive proximity sensing system has been proved to be a probable solution for indoor localization which senses the presence of any human body. Nevertheless, generally, the requirements for installation are many which make the integration costly. In this paper, a flexible and integrated solution are proposed that makes use of inexpensive, open source hardware allowing indoor localization and fall detection. This system is designed particularly for an elderly individual living on their own. The bed monitoring system is made up of sensor electrodes made from aluminium sheets that are installed under the bed sheets to detect the sleeping patterns of the elderly. An alarm system has been integrated into the room to enable the elderly to call for help during an emergency. Presence detector and light controlling device are installed on the floor surface to detect the mobility of the elderly and turn ON/OFF the lights in the room automatically. The proposed system allows elder people to be on their own independent living at homes with all amenities.

Keywords: Elderly monitoring, Capacitive proximity sensing, Bed occupancy sensor, independent living, indoor monitoring system.

Paper ID 70	# A REVIEW: ELECTRIC FIELD SENSING FOR HUMANCOMPUTER INTERACTION APPLICATIONS Atika Arshad[1], Ahmad Fadzil Ismail[2], Sheroz Khan[3], Mohammad Kamrul Hasan[4], Wahidah Hashim[5] [1,2,3,4] Department of Electrical and Computer Engineering, International Islamic University Malaysia, Malaysia [5]Department of System & Networking, Computer Science & Information Technology, Universiti Tenaga Nasional, Malaysia atikaarshad@hotmail.com, {sheroz, af_ismail}@iium.edu.my, hasankamrul@ieee.org, Wahidah@uniten.edu.my *Abstract* Human- computer interaction (HCI) in invasive computing system has been proving as a dynamic research interest since the late nineties. The interference of a human body intercepting the way between a transmitting electrode having low frequency and a receiving electrode changes the displaced current which is computed at the receiving electrode. The procedure of human body interfacing with electric fields of low frequency could be implemented to make an extensive area of interactive fields' namely human computer interface, virtual reality, interactive surfaces as well as automotive applications. This paper aims to make an overview of some electric field sensing techniques along with their applications including Human-Computer Interaction (HCI) procedure as well as the evaluation of the robustness of the applied techniques. **Keywords:** Electric field, Capacitive sensor, Human computer interaction and Passive devices.
Paper Id 71	## Switching Control for Capacitor Banks in Distribution System Ong Kam Hoe[1], Agileswari K. Ramasamy[2] and Marayati Bte Marsadek[3] [1,3]Department of Electrical Power Engineering, Universiti Tenaga Nasional, Selangor, Malaysia [2]Department of Electronics and Communication Engineering, Universiti Tenaga Nasional, Selangor, Malaysia Wil_ng-okh@hotmail.com[1], Agileswari@uniten.edu.my[2], Marayati@uniten.edu.my[3] *Abstract* In power system generation, the angle formed within the power triangle representation is used as a reference to determine the power factor which portrays the efficiency of the power system. Since most of the industrial equipment are inductive loads which consume reactive power, the load will contribute positive reactive power to the system resulting in poor power factor. A fixed shunt capacitor bank is commonly used to solve this problem to obtain a better power factor, but the use of fixed shunt capacitor bank might lead to two extreme situations which are under-compensated or over-compensated. Therefore, in this paper, a shunt capacitor bank with appropriate switching control using relay and circuit breakers is proposed to overcome the limitation faced by the fixed shunt capacitor bank. Type of shunt capacitor bank selected is the Fuseless Capacitor Bank which will be modelled according to IEEE standard consisting 9 racks connected in parallel to the load side. The designed switching control will perform condition checking based on the criteria of power factor and determine the best control action to be taken in order to compensate the power system effectively. The modelled Fuseless capacitor bank and switching control system will then be tested on a 11kV Malaysian test distribution system with high density commercial load. The simulation results have proven this particular design with an appropriate switching control is able to react and compensate the system adequately to obey the national utility's regulations.

Paper ID 74	## High Performance FIFO Design For Processor Using Voltage Scaling Abhay Saxena, Chandrashekhar Patel Department of Computer Science Dev Sanskriti Vishwa Vidayalaya Haridwar, India abhaysaxena2009@gmail.com, shekharrockin1988@gmail.com **Abstract** In this paper, we are making High Performance FIFO Design for Processor using voltage scaling techniques. Voltage scaling is very popular approach for reducing total power of Integrated circuits. FIFO abbreviated as First in first out, is a kind of buffer which is used for holding data. For achieving the high integrity and reliability of data in FIFO for Processor, we are going to implement it with VHDL language which can be integrated into FPGA. For the power analysis we use differentdifferent voltages & fixed frequency and different-different Frequencies at Fixed Voltage (2.3Volt). All the analysis we have done in 28nm FPGA AIRTX-7.After the analysis we have concluded that when the frequency is fixed then we save 95.79% power and when the voltage is fixed then we save 4.38% power in the case of AIRTX-7. *Keywords*: FIFO, HDL, Voltage Scaling, High Performance Design, FPGA
Paper ID 75	## Disaster Management through Delay Tolerant Networks [1]Muhammad Nasar Jamal, [1]Raheel Asif, [1]Fawad Nawaz Khan and [2]Muhammad Zia ur Rehman [1]School of Electrical Engineering and Computer Science (SEECS) National University of Science & Technology (NUST), H-12, Islamabad, Pakistan. [2]Department of Robotics & Artificial Intelligence, School of Mechanical & Manufacturing Engineering (SMME), National University of Sciences & Technology (NUST), H-12, Islamabad Pakistan. Email: {mjamal, rasif and fkhan}.msee15seecs@seecs.edu.pk, ziaurrehman@smme.edu.pk **Abstract** Natural disasters take place all over the globe thus results in a lot of destruction and loss. The preexisting telecommunication networks mostly collapse during such conditions and the disaster stricken areas are left with no contact with the outside world. As soon as the crisis occurs the response services come in action but due to unavailability of telecommunication network it becomes very difficult to ensure efficient relief services. As a well-managed recovery operation requires proper contact between different entities of the operation, due to unavailability of network, communication can be made possible with Delay Tolerant Network architecture (DTN). DTN is the opportunistic network designed to operate with no or very less connectivity, without any communication infrastructure that is deployed in extreme environments, this makes it suitable to operate in disaster situations. This paper discusses the DTN architecture and gives a survey that explores DTN with specific applications of Disaster Management and also give insight of the disaster mobility management applications (i.e. DTN applications for Proactive Disaster Management which can predict the mobility pattern of people and response vehicles) which could greatly enhance the disaster relief operation. This paper also highlights the problems in deploying the DTN in challenging environments. *Keywords:* Critical Response Networks, Delay Tolerant Networks, Reactive and Proactive Disaster Management, Routing in DTN

Paper ID 76	## A Survey of SCADA Testbed Implementation Approaches Qais Qassim[1], Norziana Jamil[2], Izham Zainal Abidin[3], Mohd Ezanee Rusli[4], Salman Yussof[5], Roslan Ismail[6], Fairuz Abdullah[7], Norhamadi Ja'afar[8†] , Hafizah Che Hasan[9†] Centre of Information and Network Security Universiti Tenaga Nasional (UNITEN) Kajang, Selangor, Malaysia †CyberSecurity Malaysia Selangor, Malaysia [1]qaisj3@gmail.com, [2]norziana@uniten.edu.my, [3]izham@uniten.edu.my, [4]ezanee@uniten.edu.my, [5]salman@uniten.edu.my, [6]roslan@uniten.edu.my, [7]fairuz@uniten.edu.my, [8]norhamadi@cybersecurity.my, [9]hafizah@cybersecurity.my **Abstract** SCADA systems are turning into the central nerve system of the electric power system critical infrastructure. With the increasing availability and use of computer networks and the Internet as well as the convenience of cloud computing, SCADA systems have increasingly adopted Internet-of-Things technologies to significantly reduce infrastructure costs and increase ease of maintenance and integration. However, SCADA systems are obvious targets for cyber attacks that would seek to disrupt the critical infrastructure systems thus are governed by a SCADA system. Cyber attacks exploit SCADA security vulnerabilities in order to take control or disrupt the normal operation of the system. Analyzing security vulnerability and loopholes are critical in developing security solutions for such systems. It is also equally important to test security solutions developed to protect SCADA systems. Experimenting on live systems is generally not advisable and impractical as this may render the system unstable. Such situation calls for the need of an experimental setup equivalent or quite close to the real scenario for developing and testing security solutions. This paper reviews common SCADA implementation approaches utilized in previous related works. *Keywords:* SCADA Systems, Power Systems, Industrial Control, Testbed, Cyber Attacks, Security.
Paper ID 80	## IT Trends and Practices for e-learning Development in Higher Education Samaneh Asgari[1], Azadeh Mehrpouyan[2] [1] Institute of Higher Education MehrAlborz, IT Department, Tehran, Iran [2]Department of English Literature, Central Tehran Branch, Islamic Azad University, Tehran, Iran and Young Researchers and Elite Club, Central Tehran Branch, Islamic Azad University, Tehran, Iran s.asgary@hotmail.com, Dr.mehrpooyan@gmail.com **Abstract** This study focuses on hot, key and top recent trends of e-learning and its developments. The principles of eLearning are investigated. A framework for eLearning Quality Assurance is designed in order to continue interest and investment in online learning. This paper examines how to apply adult learning theory to eLearning in higher education level. This paper reports principles for effective eLearning for postgraduate students. The results show postgraduate students as adults can learn best in an environment when they are given only the essential pieces information needed to understand a concept; non-ambiguity simplicity and clarity are key. *Keywords*: e-leaning, Principle, Trend, Higher education, Development

Paper ID 81	**Improving IT Infrastructure Capabilities through IT Personnel Capabilities: Thai Industry of Software and Services** ☐Waraporn Jirachiefpattana[1] and Nachanok Bonmanit[2] [1]School of Applied Statistics, National Institute of Development Administration [2]Siam Systems Development, Ltd. [1]waraporn@as.nida.ac.th, [2]asakuraking@hotmail.com **Abstract** There are many researchers studied organizational information technology (IT) infrastructure capability. The results of these studies indicated that IT infrastructure capability contributes to the performance of organizations and competitive advantages. However, there still lacks of the study related to the specific industry. This research, therefore, aims to find which capability of IT personnel influence on IT infrastructure capability, especially enterprise software and mobile application software firms. We collected data from project managers and users of 96 participated firms. The findings of the research show that IT infrastructure capability of the overall Thai software industry and mobile application software firms are impacted by technical and business capability of information technology personnel influence. In case of enterprise software firms, IT infrastructure capability is influenced by only business capability of IT personnel. *Keywords:* information technology infrastructure capability, information technology personnel capability, Thai industry of software and services, enterprise software, mobile application software
Paper ID 83	**Software Defined e-Health Grid Networking Design Based on Referral Hospital in Indonesia** Ummi Azizah Rachmawati[1], Sri Chusri Haryanti[1], Hermawan Agung[1], Heru Suhartanto[2] [1]Faculty of Information Technology, YARSI University, Indonesia [2]Faculty of Computer Science, Universitas Indonesia ummi.azizah@yarsi.ac.id; sri.chusri@yarsi.ac.id; hermawan.agung@students.yarsi.ac.id heru@cs.ui.ac.id **Abstract** Indonesia is an archipelagic country that needs a model of e-Health Grid for connecting and sharing its resources in the health area. The use of Information and Communication Technology (ICT) for health purposes is growing fast as people need for better services in healthcare. Grid computing technology has proven for large parallel data computation process. Health practitioners and researchers can use it to find new invention and to improve services. Our previous research has proposed a topology of Indonesian eHealth Grid based on referral hospital. This paper is the advanced research of our e-Health Grid model. We design a Software Defined Network for Indonesia e-Health Grid. Software-Defined Network (SDN) allows applications to control the network. SDN is expected to be able to facilitate e-Health grid management. We set some scenarios with different link bandwidth and packet rates to evaluate the performance of the system. The result of this research is a design of e-Health Grid networking that can be used to model e-Health Grid in the country based on referral hospital. *Keywords*: e-Health, Topology, Grid Computing, Software Defined Network

Paper ID 84	## IOT Application of a Remote Weather Monitoring & Surveillance Station Gaurav Verma[1], Aayushi Gautam[2], Akshay Singh[3], Ramneet Kaur[4], Apoorva Garg[5], Manya Mehta[6] Department of Electronics & Communication Engineering, [1,2,4,5] Jaypee Institute of Information Technology, A-10, Sector-62, Noida (U.P.), India. [3] Amity University, Sector-125, Noida, (U.P.), India. **Abstract:** Numerous critical weather occasions have influenced humanity throughout the years. For quite a while climate checking was to a great extent a leisure activity of eager beginners. Yet in the course of the most recent century, it has advanced into an efficient and expert worldwide action that mirrors its vital significance for an extensive variety of economic, natural, civil assurance and farming exercises. Present day climate observing frameworks and systems are intended to be developed in a financially savvy way. This requires the aggregate life-cycle cost of an observing framework is minimized, and one approach to do this is to minimize the maintenance of the weather monitoring framework. Utilizing a solid-state system to quantify the weather, including the wind speed and bearing, is principal to minimize hardware adjusting and costs. The conventional weather monitoring framework comprised of individual sensors to quantify one meteorological variable, each associated with a data collection gadget or recorder. Modern day innovation has permitted the combination of a few sensors into one coordinated weather station that can be for all time situated at one site, or transported to a site where localized climate is required. The fundamental aim of this paper is to design a remote weather monitoring system which allows the monitoring of weather parameters and provides continuous surveillance at the same time. IOT based Remote Weather Monitoring Station is a fully-fledged open source weather station which is effective in measuring temperature, humidity, and light intensity with high precision and the values of measured parameters are plotted on open cloud "ThingSpeak". The system is also equipped with a camera to provide the live streaming of the area to be monitored. The controlling action is accomplished using an Embedded- PC (Raspberry Pi) or Arduino board with WIFI extension interface. In this paper the weather station is currently controlled using Raspberry Pi board and programming is done in python language. **Keywords:** Internet of things, Putty, Raspberry Pi, ThingSpeak, Remote monitoring, Weather Station
Paper ID 103	## Design of PV/Wind Hybrid System with Improved Control Strategy for Rural Area: Case study of Sandakan, Malaysia Pang Siew Yong, Agileswari Ramasamy, Yew Weng Kean and V.K. Ramachandaramurthy Power Quality Research Group, Department of Electrical Power Engineering, University Tenaga Nasional, Kajang, Malaysia E-mail: pangsiewyong2518@gmail.com **Abstract** Many villagers in East Malaysia are still depending on diesel generator as their electric source. Due to the high transportation fees for the diesel, the cost to operate the diesel generator are more expensive compared to the market price in urban areas. Hybrid renewable energy systems are being implemented in the rural areas to replace the diesel generators. The hybrid system will not only reduce the cost of power, but the carbon dioxide emission as well. In this paper, an AC bus off-grid Pv/Wind hybrid system is designed using PSCAD to be used for rural electrification. This project designed a solar-wind-battery hybrid renewable energy system with a capacity of 13kW and 3kW for solar and wind respectively. The design includes an improved control strategy that does not require any dump load. The off grid hybrid system is designed and simulated for the typical load of 20 houses in Sandakan. Sandakan was selected as it has the required wind speed for wind energy. The simulation results clearly indicate that the proposed controller is able to regulate the voltage and frequency within limits for various environmental and load conditions. *Keywords:* Hybrid system, rural electrification, solar, wind, battery, control strategy

Paper ID 104	**Design of a Simple Inductor-less AC-AC Converter Realizing High Input Power Factor**

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Abstract
Switched capacitor (SC) techniques is used in order to design a simple inductor-less ac-ac converter with small size and high input power factor. Comparing conventional inductor-less ac-ac converters with the proposed converter, an input/output (I/O) terminal is connected alternately to one of capacitors to achieve ac-ac conversion. To realize the new topology, the new designed converter is composed of two capacitors and four switches in the conversion ratios of 2 and 1/2. For this reason, as well as high input power factor, the proposed converter can achieve small size. To explain how the proposed converter is operated with the conversion ratios of 2 and 1/2, operation's law, analysis in theory, and results of circuit simulation are written on this paper. The validity of the proposed converter is confirmed by circuit simulations using SPICE simulator.

Keywords: AC-AC converters, switching mode power supply, switched capacitor techniques, direct ac-ac converters

Paper ID 105	**New Smart nodes distribution using Kmeans Approach to enhance Routing in WSN**

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Abstract
Wireless Sensor Network is an advanced technology, applied to many fields of research. However, it still limited due to some drawbacks, the energy consumed is one of them, which presents a critical issue. So that, our objective in this paper is to decrease the energy consumed during communication and prolong the network lifetime in GAF protocol.

Methods/Statistical analysis: The Kmeans method was been exploited for improving the energy consumed in the network during routing data, which permit extending the network lifetime. It aims at distributing the sensor nodes. Where, the gravity center is determined as an active node, considering the least distance to the center of gravity and respecting the multihop communication between Active nodes.

Findings: Simulation results confirmed that our new improved protocol reduces significantly nodes energy, which improves the network lifetime. Application/Improvements: By introducing our enhanced version Kmeans GAF, we can improve localization systems.

Keywords: WSN, routing protocols, location-based, GAF, Grid, Kmeans algorithm, center of gravity

Paper ID 106	## A New Improved Algorithm of AODV Protocol based on F-Lipschitz Optimization Layla AZIZ[1] , Said RAGHAY[1], Hanane AZNAOUI[1] and Abdellah JAMALI[2] [1]Computer Science Department, Cadi Ayyad University-FSTG,Morocco [2]Computer Science Department, EST-Berrchid-Hassan1st ,University,Morocco E-mail : (layla.az1, s.raghay,h.aznaoui,ab.jamali)@gmail.com **Abstract** With the rapid development and the daily appearance of the new tiny materials, the new technology attracts more and more the research community. Mobile Ad Hoc Networks offer various applications to users. However, This technology still suffer from routing problems. The main goal of this paper is to present a new enhanced algorithm of AODV protocol which is based on optimizing the number of RREQ messages using the F- Lipschitz optimization. The novel proposed approach focus on two parameters: distance and energy for enhancing routing performances. Simulation results show that the new protocol outperforms the basic AODV. *Keywords:* We AODV,F-Lipschitz Optimization, MANET, Routing.
Paper ID 107	## Regenerate the Shredded Documents by using Memetic Algorithm Fozia Hanif Khan[1*], Rehan Shams[2], Dur-e- shawar Agha[3] and Rabia Noor Enam[4] [1,] Department of Mathematics, [2]Department of Telecommunication, [3,4]Department of Computer Science, Sir Syed University of Engineering and Technology Karachi, [1]ms-khans2011@hotmail.com, [2]r.shams@hotmail.com, [3]engr.dureshwaragha@gmail.com, afaq_rabia@yahoo.com **Abstract** It seems quite interesting to reconstruct the destroyed documents. On the other hand it is possible that documents might be mistakenly destroyed by someone. Another useful application of this type is in the field of forensics and archeology for the restoring of the ancient documents. To reduce the availability of information documents are shredded. The advent of new and effective ways has developed a convenient way for the people to get rid of important information so that it could not get into the hands of others. It includes the use of shredder to render the information on the pages useless and usually eliminating of proof is been practiced. The same scenario has been dealt hereby and an efficient way of rearranging those strips, known as shreds, to recreate the original document is been designed. This paper presents an efficient way of reconstructing the documents by genetic algorithm which is an extended version of memetic algorithm by emerging the variable neighborhood search (VNS). This computer based algorithm deals with an input of multiple shreds of a single page, which are to be rearranged in order to make the text on it understandable. A few Image Processing techniques are been used to get back what was intended to be destroyed. This consumes less time as compared to manual rearranging with promising results in a form of Image. Recommendations are also indicated to improve the algorithm. **Keywords:**Shred, Pixels, Xoring, memetic algorithm, image processing.

Paper ID 108	**Enhancing the Security of Communication Using Encryption Algorithm Based on ASCII Values of Data** Farheen Qazi[1], Fozia Hanif Khan[2*], Khurram Nawaz Kiani[3], Dr. Shakil Ahmed[4], Sadiq Ali Khan[5] [1,4]Department of Computer Engineering, Sir Syed University of Engineering and Technology Karachi [2]Department of Mathematics, Sir Syed University of Engineering and Technology Karachi [5]Department of Computer Science, University of Karachi [3]Trafix LLC Karachi, Pakistan engr.fq@gmail.com, ms_khans2011@hotmail.com, kkiani@trafix.com, atshakil@yahoo.com, msakhan@uok.edu.pk **Abstract** The best way of exchanging the information is communication, due to this security of communication system become more challenging and typical day by day. Cryptography plays a major role in giving the data security which is transmitted over the internet work. The process of transforming the plain text is called encryption. Plain text is supposed to be the input of every encryption process and the corresponding cipher text is the output, whereas in the process of decryption the situation is opposite. As the process of decryption is converting cipher text in to plane text. This study presents the algorithms based on *ASCII* values of characteristics in the plane text for the encryption and decryption process. Since this effort has already been done by many researchers, but here we are trying to enhance the security by modifying the previously used string keys for the data encryption and decryption. The algorithm is presented for the symmetric cryptosystem in which same key will be used for the encryption and corresponding decryption process. *Keywords:* Encryption, decryption, cryptography, 32-bit, 64- bit, transposition, shifted bit, plain text, cipher text, ASCII values
Paper ID 109	**A Comparative Performance Analysis of Feature Extraction Techniques for Hyperspectral Image Classification** Diwaker, Manoj Kumar Chaudhary, Praveen Tripathi, Ashutosh Bhatt, Abhay Saxena, Department of CSE, Uttarakhand Technical University, Dehradun Department of CSE, Uttarakhand Technical University, Dehradun Department of Computer Sc, SGRRITS Dehradun Department of Computer Sc, Birla Institute of applied Sciences, Bhimtal, Nainital Department of Computer Sc, Dev Sanskriti University, Haridwar dkmouurya01@gmail.com, jbit.manoj@gmail.com, praveen.engi@gmail.com, ashutoshbhatt123@gmail.com, abhaysaxena2009@gmail.com abhaysaxena2009@gmail.com **Abstract** Obtaining thematic maps from hyperspectral data using image classification methods is a challenging image processing task. In hyperspectral image analysis dimensionality reduction is one of the challenging tasks. Feature extraction is an important pre-processing task to reduce the dimensionality of hyperspectral data while preserving most of the essential information. This paper investigates some of the frequently used feature extraction techniques to obtain accuracy analysis by performing experiments on real dataset. This research work presents a comparative performance analysis of some of the mostly used feature extraction techniques including Decision Boundary Feature Extraction (DBFE), Non-Parametric Weighted Feature Extraction (NWFE), Discriminative analysis feature extraction (DAFE) and Principal Component Analysis (PCA). The classification is carried out using two most widely used classification techniques including Gaussian Maximum Likelihood (GML) and neural network classifiers. The experimental results indicate that DBFE has provided best accuracy among the investigated techniques. *Keywords:* NWFE, DAFE, DBFE, PCA, GML, Hyperspectral Imagery, Neural Network.

Subthreshold FinFET SRAM at 20nm technology with improved stability and lower leakage power

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Abstract

To overcome the limitations of scaling of the CMOS technology, FinFET technology has been chosen. In this paper, FinFET SRAM cells have been proposed in three different configurations for better stability and reduced leakage power in subthreshold region at 20nm technology. A comprehensive analysis has been made for Read margin, Write Margin and leakage current for all the proposed circuits and has compared with the previous work and it has been found that the proposed circuits serves better in terms of stability and reduced leakage current.

Keywords: FinFET, SRAM, Leakage current, Read Margin, Write Margin.

Enhancing Energy Consumption in Wireless Communication Systems using Weighted Sum Approach

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Abstract

Collaborative communication technologies have known a great development that allows achieving various communications. However, the uncontrolled selection of the communication technology spent more energy. The main goal of this paper is minimizing the energy consumed in accessing to data by users. To do so, we propose to integrate an efficient weighted sum selection approach in order to choice the suitable communication system that can be used by user. This smart selection considered a number of essential criteria. Implementation results confirmed that the proposed approach is more efficient than the traditional process of communication.

Keywords: Green communication, 4G, multi-criteria selection, wireless, weighted sum

Ramifications of Machine Learning in the Manufacturing Sector

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Abstract

The manufacturing sector in present India faces more complex, dynamic and chaotic behaviour to satisfy the demand for high quality products in an efficient manner. Machine learning has been around for some decades now, but its impact and significance in this domain is still impugned. The two sectors, though being ends apart, surprisingly have the potential to collaborate and enhance performance and productivity of the endresult manufacturing. Experimental analysis and research using machine learning algorithms with manufacturing under consideration has been on-going and the results undoubtedly prove that the combination of the two sectors will be inevitable in the near future. The fact that machine learning is data-driven and prediction is its sub-domain enables the smooth introduction of manufacturing in its grasp. This paper provides insight to how machine learning could disrupt the manufacturing development in India and could result in better production yield and revenue generation. In the next 20 years, automation would be a major factor in yielding profits to large manufacturing corporations and industries and machine learning would have an immense role to play in the rapidly changing scenario.

Keywords: Machine Learning, Feature extraction, Prediction, Manufacturing

Paper ID 115

ChoCD: Usable and Secure Graphical Password Authentication Scheme

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Abstract

Graphical password is said to provide greater usability and security for user authentication. Designing effective graphical password authentication schemes is of vital importance. This paper attempts to address the need by providing a new design and development of hybrid graphical scheme named ChoCD that combines the method of "Click-based, Choice-based", "and "Draw-based". This scheme claims to offer usability and security simultaneously. To get comprehensive evaluations, the questionnaire has been created and distributed to the participants. An evaluation for ChoCD was conducted to measure its viability for alternative user authentication. The comparisons between two authentication schemes are identified. From the initial study, it was found that ChoCD is easy to use and tend to be more secure than existing scheme.

Keywords: Password, Graphical password, User Authentication Security, Usability

ID 116 Paper

A Discussion About Upgrading the QuickScript Platform to Create Natural Language Based IoT Systems

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Abstract

With continuous advancements in computing and networking technologies along with the growing number of portable devices, Internet of Things is becoming an integral part of today's smart living agenda. It has always been a fantasy in movies to have appliances and gadgets work according to our speech inputs in real time. With the advent of AI and IoT, this is converting into a reality. The paper discusses the possibilities and potential of designing IoT systems which can be controlled via natural language, with help of QuickScript as a development platform. QuickScript (or QS) is an open-source, easy to learn tool made by our team of student developers for programming virtual conversational entities. This is a discussion is about how some improvements can be made in the underlying implementation of QS and the resulting uncomplicated and simple platform which can be used to create natural language based IoT systems.

Keywords: artificial intelligence; natural language processing; internet of things; smart devices; quickscript;

ID 117 Paper	**Single Tuned Harmonic Shunt Passive Filter Design for Suppressing Dominant Odd Order Harmonics in order to improve energy efficiency** M.A. Soomro*, A.A Sahito**, I.A Halepoto***, K. Kazi**** Department of Electrical Engineering, MUET, Jamshoro, Sindh, Pakistan engr.masoomro@gmail.com ** Department of Electrical Engineering, MUET, Jamshoro, Sindh, Pakistan anwar.sahito@gmail.com *** Department of Electronics Engineering, MUET, Jamshoro, Sindh, Pakistan irfan.halepoto@gmail.com **** Department of Electronics Engineering, MUET, Jamshoro, Sindh, Pakistan kamran304@gmail.com **Abstract** Power quality refers to the provision of the clean and stable electrical power supplies with least interruptions of current and voltage However, power quality problems arise due to the application of nonlinear loads with end user devices. Electrical installations majorly suffer from adverse effects of harmonic currents and voltages. Though, this problem has been decades long and pattern of investigation for the researchers but due to evolution of semiconductor technology, it has become burning issue with reference to the power system loads. Therefore, it becomes necessary to mitigate these harmonics for the safe operation of electrical appliances. Thus, harmonic passive filters are cost effective and easy to implement. In this work, the mitigation of current harmonics has been accomplished through single tuned shunt harmonic passive filter (SHPF). Furthermore, the application of six pulse multiplication converter technique ensures the mitigation of dominant 3rd harmonic currents and reduction of succeeding 5th and 7th harmonic currents. Furthermore, shunt operation of single tuned harmonic passive filter enables the current to follow the low impedance path. Consequently, the current harmonic distortion becomes less than 5 % according to allowable IEEE 519 - 1992 standards. This reduction in harmonic distortion not only reduces the losses incurred in the system but it also improves the energy efficiency of the electrical power distribution system (PDS). *Keywords*: Power quality, passive harmonic filters, six pulse multiplication converter, single tuned shunt harmonic passive filter, IEEE 519 -1992 standards, Energy Efficiency
Paper ID 118	**Ambiguity Issues with SVD Based Watermarking Techniques** Neha Singh, Sandeep Joshi, Shilpi Birla Manipal University, Jaipur, Rajasthan, India-303007 nneha.singh01@gmail.com, sandeep.joshi@jaipur.manipal.edu, shilpi.birla@jaipur.manipal.edu **Abstract** With the ease of availability and accessibility of the internet and image processing software, it has become difficult to distinguish between the original and manipulated images. To restore this lost trust in digital images, digital image watermarking is widely used. Some owner's information is embedded within the digital image which is not only required to be robust against the various image processing operations but is required to be extracted when required and verify for the ownership of the information. This paper brings to light the issues related to the authentication of the embedded information in Singular Value Decomposition (SVD) based image watermarking techniques with respect to ambiguity attacks. **Keywords:** Digital image watermarking, Watermarking attacks, False positive problem, Ambiguity attack, Re-Watermarking, False cover generation, Unauthorized watermark extraction.

ID 119 Paper	**Study on Non-Thermal Food Processing Utilizing an Underwater Shockwave** Kanji Abe, Ryo Ogata, Kei Eguchi Department of Information Electronics, Fukuoka Institute of Technology, Japan mam15001@bene.fit.ac.jp; s13f2011@bene.fit.ac.jp; eguti@fit.ac.jp Krit Smerpitak, Sawai Pongswatd Faculty of Engineering, King Mongkut's Institute of Technology Ladkrabang, Thailand kskrit@kmitl.ac.th; sawai.po@kmitl.ac.th **Abstract** In this paper, a novel non-thermal food processing system utilizing an underwater shockwave is proposed to process food at high speed. In the non-thermal food processing, target foods are crushed by an underwater shockwave generated by a high voltage. Unlike conventional non-thermal food processing systems, the proposed system has a high voltage multiplier which can generate the underwater shockwave at high speed. Therefore, the proposed system can achieve a high production capacity. The validity of the proposed high voltage multiplier is confirmed by the simulation program with integrated circuit emphasis (SPICE) simulation. Furthermore, the feasibility of the proposed system is verified by demonstrating the proposed system by the experiments. In the experiments, an apple is softened by discharging 3.5kV stepped-up voltage. *Keywords:* non-thermal food processing, high speed operations, underwater shockwaves, high voltage multipliers, step-up voltage multipliers.
Paper ID 121	**A Novel Noise Free Transmission Technique for Designing 100Gb/s Future Generation Optical Communication System** Bhagwan Das[1,a], MFL Abdullah[1,b], Bishwajeet Pandey[2], DMA Hussain[3], BS Chowdhry[4] [1]Universiti Tun Hussein Onn Malaysia, Parit Raja, 86400, Johar, Malaysia [2]GSSI, L'Aquila. Italy, [3]Aalborg University, Denmark [4]Mehran University of Engineering and Technology, Jmashoro. [a]engr.bhagwandas@hotmail.com; [b]faiz@uthm.edu.my; [2]gyancity@gyancity.com; [3]akh@et.aau.dk; [4]c.bhawani@ieee.org **Abstract** Differential Phase Shift Keying (DPSK) techniques are widely used in designing the high-speed communication systems. However, these techniques still need improvement for long haul communication system design. In this paper, high-speed optical signal transmission and reception system is achieved for DPSK system. The system is designed using phase lock loop (PLL) based Non-return-to-Zero (NRZ) modulation scheme. The 100Gb/s DPSK signal is transmitted over single mode fiber (SMF-28) of 300 km distance using PLL based NRZ scheme. The signal is received using direct detection method. It is determined that BER of 10^{-12+}, Q-factor 98 at power penalty of 14 dB is attained using the designed technique for transmitting 100Gb/s at 300 Km. Whereas, existing NRZ technique achieved a BER of 10^{-6}, Q-factor 32 at power penalty of 11 dB for same similar transmission data rate and distance. The designed offers the transmission and reception of data for high-speed long haul communication system without using any amplifier or repeater. **Keywords:** Bit Error Rate; Demodulation; Direction detection DPSK transmitter; High frequency laser; NRZ modulation; Phase locked loop; Single mode fiber.

ID 147 Paper	**"Tenant - Vendor and Third Party Agreements for the Cloud": Considerations for Security Provision** [1]Lubna Luxmi Dhirani, [1]Thomas Newe, [2]Shahzad Nizamani [1]Department of Electronic & Computer Engineering, University of Limerick, Ireland [2]Dept. of Software Engineering, Mehran University of Engineering & Technology, Pakistan lubna.luxmi@ul.ie, thomas.newe@ul.ie, shahzad.nizamani@muet.edu.pk **Abstract** Cloud Computing has an expanding future in both business and Information Technology. With the prospering hybrid cloud model, offering better services and convenience, there are also a number of security problems associated to cloud standardization, multi-tenancy third party privity/sub-contracting, data-controller, outages, availability, monitoring and the service level agreements. This paper focuses on Hybrid Cloud Computing security in the context of a Tenant-Vendor-Third Party environment and service level agreements. Limitations, opportunities and suggestions to mitigate the security risks are discussed and summarized. *Keywords:* Cloud Computing; Security; Cloud Standards; Third-party privity; Datacontroller; Outages; Availability; Monitoring; Service Level Agreements
ID 148 Paper	**Issues and Challenges of Requirements Review in Industry** Siti Osnita Mokhtar, Zalilah Abd Aziz, Rosmawati Nordin, Rashidah Md Rawi Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia. osnita@gmail.com, zalilah@tmsk.uitm.edu.my, roswati@tmsk.uitm.edu.my, rrawi@tmsk.uitm.edu.my **Abstract** Requirements validation is one of the key activities within requirements engineering phase to ensure that the requirements are free of defect before moving to the next phase of software development life cycle. Any error in the requirements which is discovered at the later stage of the project might cause rework in the system design and changes to the source codes. Unnecessary additional effort and resources will be required to rectify the error. One of the most common means of requirements validation technique is requirements review, which has been widely accepted and used by the practitioners. The aim of this paper is to highlight various issues and challenges of requirements review in the industry. Major issues and challenges reported by the researchers and industry practitioners can be categorized into several perspectives, namely: review process, reviewer team, requirements specification, validation tool, organizational culture and governance. These issues and challenges are barriers to successful execution of requirements review, which result in cost overrun and delay in project implementation. *Keywords:* Requirements review, requirements validation, issues and challenges of requirements review, requirements engineering, software development

	Hybrid strategy for nonlinear control of (6 DOF) under actuated trirotor UAV Dao Bo Wang[1], Zain Anwar Ali[1] and Muhammad Aamir[2] [1]College of Automation Engineering, Nanjing University of Aeronautics & Astronautics, Nanjing, Jiangsu, China. [2]Electronic Engineering Department, Sir Syed University of Engineering & Technology, Karachi, Pakistan. zainanwar86@hotmail.com, dbwangpe@nuaa.edu.cn, muaamir5@yahoo.com **Abstract** This paper, proposed a hybrid strategy for nonlinear control of six degree of freedom (6 DOF) underactuatedtrirotor Unmanned Aerial Vehicle (UAV). The hybrid control strategy consists of Nonlinear Disturbance Observer (NDO) along with Proportional, Integral and Derivative (PID) controller to control the model of nonlinear (6 DOF) underactuatedtrirotor UAV. The control model of the UAV is divided in to two sub-models, altitude control and the attitude control such that, the PD controller is used to control the altitude of the UAV and (NDO)with the PID controller is used to control the attitude of UAV. However, the stability of the aircraft is proved by using Lyapunov stability criteria. The robustness of the proposed control strategy is compared with the nonlinear observer design with backstepping control of UAV. It shows that the proposed hybrid strategy have better response less steady state error and good robustness in the presence of continuous disturbance in the model of UAV. *Keywords*: Unmanned aerial vehicle, nonlinear disturbance observer, hybrid controller.
	BLDC multi-motor speed synchronization by leader following multi-agent and hybrid control $Suhaib Masroor^1$, $Chen Peng^2$, $Muhammad Aamir^3$ and $Zain Anwar Ali^4$ $^{1,2}School of Mechatronics Engineering and Automation, Shanghai University, Shanghai, China.$ $^3Department of Electronics Engineering, Sir Syed University of Engineering and Technology, Karachi, Pakistan.$ $^4College of Automation Engineering, Nanjing University of Aeronautics and Astronauts, Nanjing, China.$ suhaibmasroor1@gmail.com, c.peng@shu.edu.cn, muaamir5@yahoo.com, zainanwar86@hotmail.com. **Abstract** In this article, a unique and innovative design for addressing the speed synchronization problem in a multimotor system using Brush less DC (BLDC), motors is presented by utilizing motor back emf equation and rotor position commonly called sensor less technique. In the proposed method, the system is modelled as a consensus problem of leader following multi-agent system (MAS), and a hybrid controller is designed by using Model Reference Adaptive Control (MRAC) along with Variable Structure (VS) control technique of Sliding Mode Control (SMC), herein called Variable Structure Model Reference Adaptive Control (VSMRAC). The consensus algorithm of MAS (reformed w.r.t motor speed data), is fused with the hybrid controller to reach consensus on speed regulated by proposed hybrid controller. The stability of a system is endorse by designing a Lyapunov function. The efficiency of the proposed methodology is proven by simulations performed in MATLAB and the acquired results validate the success of proposed design methodology. *Keywords:*BLDC motor, Hybrid control, Consensus control, Leader following MAS, Lyapunov stability

ID 153 Paper	**Leader following speed consensus in induction motors using multi-agent and hybrid controller scheme** *Suhaib Masroor*[1] *,Chen Peng*[2]*, Ayesha Rafique*[3]*, Zain Anwar Ali*[4] *and Muhammad Aamir*[3] [1,2]*School of Mechatronics Engineering and Automation, Shanghai University, Shanghai, China.* [3]*Department of Electronics Engineering, Sir Syed University of Engineering and Technology,Karachi, Pakistan.* [4]*College of Automation Engineering, Nanjing University of Aeronautics and Astronauts, Nanjing, China.* suhaibmasroor1@gmail.com, c.peng@shu.edu.cn,ayeshajosephian@hotmail.com, zainanwar86@hotmail.com, muaamir5@yahoo.com

Abstract

This paper explores a novel design of utilizing Leader following multi-agent system (MAS) consensus algorithm with Field Oriented Control (FOC), induction motors using a Hybrid control scheme containing regulation, pole placement and tracking (here after RST), controller along with model reference adaptive control (MRAC). To ensure system stability, Massachusetts institute of technology (MIT), rule is incorporated to validate that the cost function gets diminished over time. To follow the speed of leader, a leader following consensus protocol of multi-agent system is merged so that we can control the speed of n induction motors. In this new approach, each motor along with its complete unit (Voltage Source Converter (VSC) and local controller) is considered as a single agent. It is proved that the consensus is reached among leader and its followers not only without delay but also with delay. The communication topology is supposed to be fixed and it is also assumed that every agent can share its information (speed data), with neighbors. The model is simulated using MATLAB and obtained results ensure the effectiveness of the design approach.

Keywords: Induction motor, Leader following multi-agent system, Consensus control, Voltage Source Converter

ID 154 Paper	**MFAC based SMC combine algorithm for the stability of PMDC** Rana Javed Masoood[1], DaoBo WANG[1], Muhammad Aamir[2], Zain Anwar Ali[1] [1]*College of Automation, Nanjing university of Aeronautics and Astronautics Nanjing, China* [2]*Electronic Engineering Department, Sir Syed University of Engineering & Technology, Karachi, Pakistan.* rjmasood786@gmail.com, dbwangpe@nuaa.edu.cn, muaamir5@yahoo.com, zainanwar86@hotmail.com.

Abstract

A discrete time sliding mode control of PMDC motor can be combine with the Model Free Adaptive Control (MFAC) to reduce time, cost and difficultly of nonlinear reliable system commonly used mathematical modeling which is quite difficult to operate. As in system model it does not require any prior data but only depends upon data collected by system Inputs/Outputs. Theoretically, to increase the rate of convergence, pseudo partial derivative (PPD) must be used for MFAC control Algorithms and strict mathematical assumptions can be made to verify the stability of the system. This research proposed a MATLAB based valid control algorithm used for speed and position tracking control of PMDC linear motor. This research also compares analysis between PID and model free learning adaptive control (MFLAC) using simulations and verify the speed and position tracking of linear PMDC motor has a better control performance with robust and precise tracking.

Keywords: Model free adaptive control (MFAC), Sliding mode control (SMC), Model Free Learning Adaptive Control (MFLAC), Permanent Magnet DC (PMDC).

ID 155 Paper

Hybrid Intrusion Detection Method to Increase Anomaly Detection by Using Data Mining Techniques

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Abstract

An Intrusion Detection System is an application which observes movements or action happen on the network and determine it for any kind of harmful activity that can disturb computer security policy. With progress of increase the usage rate of the internet, there is a widely increase in the number of internet attacks as well, so contests arise towards the network security due to the arrival of new approaches of attacks. To classify these attacks, a new hybrid method with the help of data mining based on decision tree C4.5 and Meta algorithm is planned. This method gives a classifier which expands the whole accuracy of detection. Many data mining techniques have been settled for detecting intrusion. For recognition of anomalies a hybrid technique based on decision tree C4.5 with Meta algorithm is offered that provides better accuracy and reduces the problem of high false alarm ratio. The assessment of the given approach is made with other data mining techniques. With this given approach detection rate is improved significantly. KDD Cup 1999 dataset use for experimental work.

Keywords: Hybrid Intrusion Detection System, Data Mining, Decision Tree, Meta Algorithm

Paper ID 161

Assembly of an S-band FMCW Doppler Radar System for improved Pedestrians Detection

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Abstract

A Frequency Modulated Continuous Wave (FMCW) Doppler radar was assembled to detect passing-by pedestrians. Its operating frequency is at 2.4GHz with transmit power of 10.41dBm. Range resolution of the radar is 2.8meters at 53.2MHz signal bandwidth and chirp waveform of 40ms. The radar exploits Doppler principle to acquire the range and velocity information of targets whilst a Moving Target Indicator (MTI) pulse canceller is utilized to filter incoming noise signal. With the use of Chirp period-bandwidth product of Frequency Modulated (FM) waveform and deramping process, the radars' Signal to Noise Ratio (SNR) was improved up to 42dB. The attained maximum range is about 200meters for target with Radar Cross Section (RCS) of 1m2. The constructed radar is capable to measure speed of moving target at 0.645m/s and above with great accuracy. The radar can detect and determine position of pedestrians with 0.18% percentage error.

Keywords: Doppler, deramping, FMCW, pedestrian safety, pulse-canceller

Paper ID 163	**DESIGN AND IMPLEMENTATION OF A FIVE STAGE PIPELINING ARCHITECTURE SIMULATOR FOR RiSC-16 INSTRUCTION SET** Rashidah Funke Olanrewaju, Fawwaz Eniola Fajingbesi, Sahlu Junaid*, Ridzwan Alahudin, Farhat Anwar, Bisma Rasool Pampori[#] International Islamic University Malaysia *Ahmadu Bello university Zaria, Nigeria [#]Central University Kashmir, India frashidah@iium.edu.my, fawwazfajingbesi@yahoo.com, abuyusra@gmail.com, wanxneo89@gmail.com, farhat@iium.edu.my, bismarasoolhr@gmail.com

Abstract

In modern computing, multitasking is the most favorable aspect as a lot of processes or programs are required to run simultaneously and seamlessly. With un-pipelined instruction cycle (fetch-execute cycle) the CPU processes instruction one after another resulting in larger duration and lesser speed in completing required tasks. However, with a pipelined computer architecture unprecedented improvement in size and speed are achievable. This work investigates the possibility of a better improvement to computer architecture through understanding the inner workings of instruction pipelining in operating system by design of a 5 stage pipelined architecture simulator for RiSC-16 processors using Visual Basic programming. The simulator is built to provide clearer understanding of pipelined instruction cycle and associated hazards. The performance and reliability of the simulator were evaluated based on its closeness to a real time pipelined computer architecture with their possible hazards. Data hazard and control hazard were successfully simulated through the designed simulator program with provisions for implementing solutions to these hazard. Thus the designed simulator becomes an appropriate tool for understanding the concept of pipelining and also providing an additional stage to the existing 4-stage simulators. Hence facilitating a more efficient designs in computer architecture as it provides step by step visualization for understanding the concept of pipelined instruction-cycle processors.

Paper ID 167	**Improved Digital Image Watermarking Algorithm Based on Hybrid DWT-FFT and SVD techniques** Dinesh Goyal Gyan Vihar University, India Dinesh8dg@gmail.com

Abstract

In proposed research, a novel and robust digital watermarking method is introduced in which a mixture of DWT (Discrete Wavelet Transform) and FFT (Fast Fourier Transform) along with SVD (Singular Value Decomposition) is applied. Due to the usage of this combination of three techniques in our proposed work, it increases the robustness and imperceptibility of extracted image. At first DWT-FFTSVD techniques are applied for embedding the watermark then reverse algorithm is applied for extraction. The results are compared with Base Work [1] in which single level DWTSVD combination is taken for watermarking for copy right protection. It is shown through PSNR (Peak signal-to-noise ratio) that it provided a very high imperceptibility.

Keywords—Image Watermarking; DWT; FFT; SVD ;

Paper ID 170	**Flood Estimation Model Derived From Weather Radar: Method and Validation for 2013 Malaysian Flood Event** A.F. Ismail[1], A.B. Basri[1], K. Badron[1], M.H. Khairolanuar[1], N.H.M Sobli[1], Ismail Maszlan[2] [1]Department of Electrical and Computer Engineering, Kulliyyah of Engineering, International Islamic University Malaysia (IIUM), Jln. Gombak, Selangor, Malaysia. [2]National Space Centre, Malaysia atikahbalqis32@gmail.com, af_ismail@iium.edu.my, khairayu@iium.edu.my, haziq@iium.edu.my, hudaa@iium.edu.my, maszlan@angkasa.gov.my ***Abstract*** During the year 2013, Malaysia encounters the worst flood event as the results of the heavy rains initiates by the monsoon winds. A massive flood begins to hit multiple states which mainly affected Kuantan, Pahang. The location of radar data to be validated is chosen based on the report that Pahang is unanimously the most adversely affected states during the flood tragedy on December 2013. A reliable and accurate flood estimation technique is needed to be integrated into the radar system and present the degree of extremity for the upcoming flood event. The flood estimation model was derived from the radar data of the 2014 flood event that hits Kelantan. This model then being used to validate the flood event in Kuantan. Based on the rainfall rate, cloud thickness value and the size of the cloud during the flood disaster, the value represents the flood or non-flood event that can be characterized. Such procedure for the flood estimation model were tested with radar data during two situations i) rain cloud that cause flood and ii) rain cloud does not cause flooding. The result from the model acquired in this research is very useful to forecast the flood tragedy in the future. **Keywords:** Radar, Flood Model, Flood Estimation Model, RHI, CAPPI.
Paper ID 171	**Development of Desktop-based River Basin Monitoring and Flood Warning System for Malaysia** A.F. Ismail, Nor Bazilah Bopi, K. Badron and Suriza A. Zabidi, Ismail Maszlan[2] Electrical and Computer Engineering Department, International Islamic University Malaysia bazilah_2307@yahoo.com, af_ismail@iium.edu.my, khairayu@iium.edu.my, suriza@iium.edu.my **Abstract** Floods have been one of the major disasters that occur in most countries all over the world. A flood can wreck homes, infrastructures, buildings, properties and even lead to the spread of diseases such as cholera and dengue. The river basin monitoring and flood warning system was developed based on a main objective of to develop an interactive, informative and user-friendly monitoring and warning system which can act as an information channel for the related authorities and experts to take adequate actions in order to reduce the risk of hazards and loss due to floods. Information such as river stage and rainfall rate at river basin as well as tidal forecasts are important in predicting the floods. This system aimed to be a useful and reliable flood monitoring and warning system which serves as a one stop information center by providing those essential information. This first prototype was built using Visual Basic as the main tool and other open-source software and tools which include QGIS and PostgreSQL. **Keywords:** Flood, River Basin, Rainfall Rate, Real-time Monitoring,

Paper ID 172	### Development of Web-based River Basin Monitoring and Flood Warning System in Malaysia A.F. Ismail[1], Nor Bazilah Bopi[1], K. Badron[1], Suriza A. Zabidi[1], Ismail Maszlan[2] Electrical and Computer Engineering Department International Islamic University Malaysia [2]National Space Centre, Malaysia bazilah_2307@yahoo.com, af_ismail@iium.edu.my, khairayu@iium.edu.my, suriza@iium.edu.my **Abstract** Floods are one of the major and common problems in the world. In 2014, Malaysia experienced the worst flood disaster ever recorded since 1969. Almost all parts of the country were hit by the massive tragedy. The affected states included Kelantan, Terengganu and Pahang, which are the east coast states, as well as Perak, Johor, Kedah, Perlis and Sabah. A great number of buildings, properties and infrastructures were damaged and the economic losses were assumed to be over RM1billion. Eventhough rain and storm predictions can always be done using meteorological data that are available through the satellites images, monitoring the hydrological data is also essential as it may assist in deciding necessary decisions and actions to be taken in the state of emergency. Web-based 'Kelantan River Basin Monitoring and Flood Warning System' was developed with an aim to provide an interactive and user-friendly GUI to display reliable and useful information that can guide the public to take any necessary actions. This first prototype was built using PHP, Javascript and HTML and other open-source software and tools which include PostgreSQL. **Keywords:** Web-based, Flood, Real-time Monitoring, Open-source
Paper ID 173	### VLSI Implementation of Low power and High Speed architecture of DWT-IDWT using Lifting based Algorithm Chetan H, VTU,Belgaum, India Indumathi G CiTech,Bengaluru, India **Abstract** With the increasing growth of technology and the entry into the digital age, we have to handle a vast amount of Information every time which often presents difficulties. The datas like image and video are transmitted in the form of signal. Because of limited channel bandwidth the data has to be compressed and this reduces the quality of the image. Wavelets provide a mathematical way of encoding information in such a way that it is layered according to level of detail. This layering facilitates approximations at various intermediate stages. These approximations can be stored using a lot less space than the original data. Hence in this paper we discuss about improving performance of DWT by transmitting data and compressing it using a lifting based DWT algorithm in which we reduce multiplication blocks to show increase in speed at the channel and minimize power consumption of overall transmitted data. The DWT-IDWT architecture is designed and studied ***Keywords:***IDWT, DWT, OWDM

Paper ID 174	**OFDM-System Design Using Adaptive Modulation and Channel Estimation for Underwater Acoustic Communication**

Ravi Kumar M G[1] and Mrinal Sarvagya[2]
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[2]Department of ECE, REVA University, Bengaluru, Karnataka, India-560064 *e-mail: ravimg9591@gmail.com and mrinalsarvagya@gmail.com

Abstract

Underwater Acoustic (UWA) channels are known as some of the most challenging communication media. Since the Underwater acoustic channels are time varying multipath channel achieving the high data rate, a low latency and an high throughput which often is a very difficult objective. In this work, we designed an OFDM transceiver system which is suitable for underwater acoustic communication with limited bandwidth to enhance the data rate at the receiver. To enhance the data rate at the OFDM receiver we have used efficient adaptive modulation scheme, channel estimation and channel equalization schemes for UWA communication. We have focused on the efficient modulation schemes like QPSK, DPSK and 16-QAM which is best suited for adaptive techniques based on the SNR of the Rayleigh fading channel to enhance the data rate. The simulation results shows that the performance of the OFDM system with the use of Adaptive modulation is better when compared to the OFDM system without Adaptive modulation schemes. Also we have used the Kalman filter for channel estimation which minimizes the mean squared error and gives us the best estimation even in the presence of noise. From the simulation results, we have found that these modulation techniques and channel estimation method are best suited to achieve high data rate for underwater acoustic communication.

Keywords: UWA, OFDM, Adaptive modulation, Kalman filter, channel estimation, Channel equalization.

Paper ID 175	**Detection of the Source of the Incipient Faults Produced by Single Phase Inverter using Feed-Forward Back-Propagation Neural Network**

Najlan Ismail, Farah Hani Nordin, Ammar Ahmed Alkahtani, Z.A.M Sharrif
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Abstract

With the increasing usage of solar Photovoltaic (PV) system in Malaysia, the condition aspect of solar PV system especially inverter system needs to be given full attention. Detection of faults at earlier stage is very important in order to avoid the extended period of down-time caused by inverter failure. Thus, this paper aims to detect the source of the incipient faults produced by a single phase inverter of a PV system. The incipient faults were generated by modifying the pulse wave control signal. A total of 100 incipient faults and one set of normal condition waveform are collected at the output of the single phase square wave inverter. These waveforms are then used to train the feed-forward backpropagation neural network. One hidden layer feed-forward backpropagation neural network of 9 neurons was trained and MSE of 1.73×10^{-9} was obtained. tt was shown that the trained feed-forward backpropagation neural network was able to detect which tGBT of the single phase square wave inverter produced the incipient faults.

Keyword: PV inverter, Fault detection, Solar system, tncipient faults detection, Neural Network.

Paper ID 176	### SNR Based Predictive Packet Scheduling in LTE with Varied CQI Suganya.S, Ramesh.C Department of Electronics and Communication C.M.R. Institute of Technology Bangalore, India suganya.senthil2005@gmail.com, crameshmail@gmail.com **Abstract** Internet is an autonomous, uncontrolled, network of networks comprising entities including but not limited to switches, routers, servers, clients, hubs, and links. In order to create a network which can sustain itself (self-controlled), deployments of schemes and methods are required everywhere. One such scenario which is prevalent in LTE is CQI reporting on which complete packet scheduling is directly dependent. While CQI does change the way the network is ordered, an imperfect or lost CQI value makes the packet scheduling difficult and unimaginable. Therefore, in this work a method is proposed to schedule the resources while considering SNR values along with CQI in a view to provide a better packet scheduling. A threshold based method is also proposed with multiple packets scheduling algorithm and it is shown that the same would improve the link level performance. Furthermore, the effect of improving quality is highlighted on user experience and applications are suggested which might change the way we will use Internet in near or far future. *Keywords:* LTE, Imperfect CQI, packet scheduling, fair queuing, proportional fair, channel allocation, resource blocks.
Paper ID 178	### Analysis of Timing and Frequency offset estimation of OFDM system using scaled precision model [1]V Janakiraman, [2]Dr. M Kannan, [1]Dept. Of ECE, Apollo Engineering College, , Chennai – 602105 [2]Dept. of Electronic's Engg, MIT, Anna University, Chennai-600044, janakiraman.g.v@gmail.com mkannan@mitindia.edu Abstract Orthogonal frequency-division multiplexing (OFDM) is a robust multi carrier modulation system most commonly used in many wireless communication standards. The overall OFDM system performance is stable over signal distortions caused by multipath fading channels but synchronization problems caused significant quality degradation at receiver side. Though several methods have been proposed to overcome this synchronization problem still the accuracy level of synchronization is getting worsened due error caused by fixed point arithmetic. In this paper we evaluated the impact of the fixed point arithmetic on the performance of the coarse timing and frequency offset estimation and its performance in terms of error rate. Here we carry out both analytical approach and statistical results obtained through numerical simulations bit length of floating point IEEE 754 standard single precision formats is optimized according to the required degree of accuracy for low complexity. Also, a unique floating point precision model for error less FFT computations for all possible modulation types is obtained. The proposed scaled floating point precision model is compared against IEEE standard single precision model and its efficiency over fixed point model in OFDM synchronization process is proved through MATLAB simulations. Finally through FPGA hardware synthesis the complexity reduction of proposed scaled precision model is proved in basic arithmetic models such as adder and multiplier against single precision format. Here we proved that more than 50% complexity reduction is achieved as compared to standard precision models without compromising quality. The computational error free nature of proposed scaled precision model in both timing and frequency offset estimation process and its overall OFDM system performance in terms of BER rate is proved. *Keywords:* OFDM, Fast Fourier transform, Floating point arithmetic, Synchronization, Customization

ID 179 Paper	**Design and Modeling of Substation Time Critical Information Dissemination Model using Publisher-Subscriber Communication Service Mapping** Irfan Ahmed Halepoto[1], Anwar Ali Sahito[2], Mansoor Soomro[2], Sania Khaskheli[1], Bhawani Shankar Chowdhry[1] [1]Department of Electronic Engineering, Mehran UET, Jamshoro, Sindh, Pakistan [2]Department of Electronic Engineering, Mehran UET, Jamshoro, Sindh, Pakistan Corresponding author: irfan.halepoto@gmail.com

Abstract

Traditional power grid substations are facing infrastructural, operational, automation, systematic, monitoring and control issues. The smart grid concept and advancement in instrumentation and automation has open up the potential of substation automation system through which substation automation, intelligence and control is achieved, but devices interfacing, interoperability, time critical information exchange, substation devices status monitoring and data dissemination type issues are still in research phase. For the efficient and reliable operation, the substation IEDs status must be monitored consistently and event information must be disseminated timely between substation levels. In this research work, substation bay level IEDs time critical data information dissemination model is designed by IEC 61850 standard using publisher subscriber communication. Based on IEC 61850 substation devices data object and interfacing models, a novel substation communication service mapping is proposed for the time critical data information dissemination. The proposed communication service mapping is based on abstract service communication interface technique by which an object oriented data and object models and communication service is directly mapped at Ethernet data link layer. To disseminate the data message using the proposed communication service an IEEE 802 based Ethernet frame structure is designed and configured using abstract syntax notation one technique.

Keywords: Substation, IEC 61850, Data Dissemination, Publisher-Subscriber Communication, IEEE Ethernet fram

Paper ID 180	**Modification of Zipf -Mandelbrot Law for Text Analysis using Linear Regression** S.Lakshmi sridevi, R.Devanathan Hindustan Institute of Technology and Science , Chennai, India lakshmi@hindustanuniv.ac.in

Abstract

The application of Zipf's law is ubiquitous in linguistics and other fields. Mandelbrot proposed a modification of the law called Zipf-Mandelbrot law(ZM). In this paper, we propose a modification of the ZM law for modeling rank frequency- data of linguistic text . Our model generalizes ZM law into a linear regression model involving arbitrary order of Zipfian rank of words in a text .The performance of the proposed model is shown to compare favorably with that of Z-M law using Chi-Square goodness of fit test. Though the present work addresses mainly the lower ranks, we propose to extend the work to higher order ranks using LNRE model in the future.

Keywords: Zipf-Mandelbrot law , Quantitative linguistics, linear regression , Goodness of fit

ID 181 *Paper*	**Controlling the dynamics and stabilization of the altitude and attitude of an underactuated tri-rotor UAV** Zain Anwar Ali[1] , Muhammad Aamir[2] , Dao Bo Wang[1] , Muhammad Anwar Ahmed[2] , and Suhaib Masroor[3] [1] College of Automation Engineering, Nanjing University of Aeronautics & Astronautics, Nanjing, Jiangsu, China. [2] Electronic Engineering Department, Sir Syed University of Engineering & Technology, Karachi, Pakistan. [3]School of Mechatronic & Automation Engineering, Shanghai University, Shanghai, China. zainanwar86@hotmail.com, dbwangpe@nuaa.edu.cn, muaamir5@yahoo.com, engr_anwar_ahmed@outlook.com, suhaibmasroor1@gmail.com.

Abstract

In this article, an Adaptive Sliding Mode Control (ASMC) method is proposed for controlling the dynamics and stabilization of the altitude and attitude of an underactuated tri-rotor Unmanned Aerial Vehicle (UAV). The model of UAV is highly nonlinear and complex in nature with the six degree of freedom (6-DOF) and subdivided in to fully actuated and underactuated subsystems which is controlled by the sliding surface of ASMC. Furthermore, the stability of a system is validated using Lyapunov stability theory. Simulation results showed that the proposed control scheme enabled the tri-rotor UAV to fly effectively when compared with Adaptive Robust Backstepping (ARB) control. Lastly, an external disturbance is added in the system to check the effectiveness of the proposed scheme in which a wind disturbance test is done with the proposed controller that shows the robustness, fast error convergence and good transient behavior.

Keywords: Tri-rotor UAV, underactuated system, Adaptive Sliding Mode Control (ASMC).

ID 182 *Paper*	**Intrusion Detection by Using Hybrid of Decision Tree And K-Nearest Neighbor** Bilal Ahmad[1], Wang Jian[1], Muhammad Shafiq[2] [1]Department of Computer Science and Technology, Nanjing University of Aeronautics and Astronautics, Nanjing, China. [2]Electronic Engineering Department, Sir Syed University of Engineering & Technology, Karachi, Pakistan. ahmad@nuaa.edu.cn

Abstract

In the modern age of information technology security of valuable asset become much important issue. Intrusion detection system plays a most important role in this area. It protects the system by attacks or threats by unauthorized access or person. The previous study have identified the need for more enhancement in the research of intrusion detection. This study gives the outline for intrusion detection and proposed a hybrid classification based method based on Decision Tree and K-Nearest Neighbor. This experiment perform on the bases of cross-10 fold validation techniques on the basis of decision tree and KNN classifiers and proposed hybrid classifier by using KDD cup dataset. Experimental result shows that the proposed idea gives good result as compared to individual base algorithms

Keywords: Intrusion detection,, decision tree, k nearest neighbor, Net
work security

ID 184 Paper	**Super-Resolution Image Reconstruction with Improved Sparse Representation**

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Abstract

In this paper, we present a new approach to reconstruct a high resolution (HR) image from a low resolution (LR) input image based on a two dimensional (2D) sparse method. The new method consists of three phases. Firstly, the nonlinear feature of the input LR image is divided into the linear subspace, and then LR-HR dictionaries are learned to reduce the blurred artifacts of the image. Secondly, 2D sparse representation and self-similarity are developed to strengthen and enhance the image structure. Finally, the final HR image is achieved by reconstruction of all HR patches. Simulation results demonstrated that our proposed method achieved superior results on real images, and shows various improvements in terms of PSNR and SSIM values as compared with some other competent methods.

Keywords: image super-resolution, image enhancement, sparse representation, visual resolution

ID 185 Paper	**Directivity Gain Improvement in Phase Array Antenna via a Novel L2-Norm Adaptive Beamforming Algorithm**

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Abstract

The performance of phased array antenna radiation pattern can be enhanced either by employing the optimum logical weights to each segment of the array, or by optimizing the physical geometry of the array. Intensive works have been presented in the literature to optimize physical geometry of antenna array. However, because of complexities and high computational overheads; optimization of antenna weights (or adaptive beamforming) got relatively less attention. A severe issue of adaptive beamforming is the directivity gain. The paper proposes a new adaptive beamforming algorithm that is more effective in improving the directivity gain of phase array antenna in comparison with the existing adaptive beamformers. The algorithm shows further effectiveness when number of radiators is increased in the array. The comparative results are very promising.

Keywords: Phased array antenna, antenna geometry optimization, antenna array weighting, mobile and wireless communication, antenna radiation pattern, beamforming, adaptive antenna array, adaptive beamforming.

A Novel Two Dimensional Adaptive Filtering Algorithm for Image De-Noising via Fractional Gradient

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Abstract

In the recent decade it has been witnessed that raster images are the primary source of information for numerous applications such as bio-medical, law enforcement, geographical information system (GIS), photography, astronomy, etc. Primarily, the quality of raster images compromises due to the surrounding factors of these applications. Because, it is very difficult to control surrounding parameter (light, motion, distance) while acquiring images. Therefore, the image acquisition in these applications is very much prone to the noise. In the literature, researchers have targeted this issue and have already devised classical image filters for image denoising. Afterwards, in the recent years the performance of classical filtering was further improved by employing two dimensional adaptive filters (2-DAF) for image de-noising and enhancement. In the literature, researchers have reported the performance comparisons of various 2-DAF specifically for image restoration, enhancement, estimation, and de-noising. In this paper an extended version of one dimensional fractional least mean square (1-DFLMS) to two dimensional fractional least mean square (2DFLMS) is presented. Moreover the performance of the proposed algorithm has been rigorously compared with the existing and most employed 2-DAF algorithm namely, two dimensional least mean square (2DLMS), two dimensional variable step size least mean square (2-DVSSLMS). The simulation results illustrate the notable performance edge of the proposed algorithm with the existing approaches.

Keywords: Image de-noising, two-dimensional adaptive filtering, least mean square (LMS), variable step size least mean square (VSSLMS), fractional least mean square (FLMS).

Modeling and Simulation of Predictive Maintenance Scheme for High Speed Railway Vehicles

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Abstract

In railway transport wheelset maintenance is usually scheduled based. However the wheel treads do not wear down consistently over the same period of time. Flat wheel treads pose threat of derailment. Therefore, it is dangerous for the vehicle safety if the wheel treads wear down before the maintenance is performed. In this paper work a predictive maintenance strategy is proposed to continuously observe the condition of railway wheelset to continuously monitor the condition of in-service vehicle so as to anticipate when maintenance must be carried out. The proposed system monitors the condition of the railway wheels by continuously inspecting the dynamic changes in the railway wheelset and indicates if it requires maintenance.

Keywords: Predictive maintenance, railway vehicle, wheelset.

ID 188 Paper

Design and Development of Hexapod using Nitinol Actuator Wire

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Abstract
Hexapod robots from decennium have gained considerable attention in various research and development sectors. This research work involves the design and implementation of Hexapod robot which is a small, inexpensive, six-legged robot intended to replace huge and heavy robotic that are used in space applications, industries for lifting purpose containing solenoids and servo motors. Initial stage of research work involves design and construction of the structure of Hexapod. Plastic material is used for the construction of body and a Nitinol actuator wire is used to drive the Hexapod's legs. The final stage involves Hexapod interfacing with Arduino and H- Bridge module for supply to achieve proper locomotion of the Hexapod. Specifically, real element like mechanical structure, legs arrangement, impelling, payload, movement condition and waking walk are considered in proposed system design. In this work, a novel robot is constructed and found that conservative, and lightweight Hexapod robot demonstrates guarantee for use in space, therapeutic, and other large scale robotic applications. Due to the unique actuating mechanism of nitinol wire the proposed and developed model has the impact significance in many application fields.

Keywords: Hexapod, Stiquito, Flexinol wire, Arduino

Paper ID 190

A Defence Mechanism against Hardware Trojan Insertion by Third Party IP in AES-based Secured Communication System

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Abstract
The available hardware Trojan insertion techniques in IC design and the prevention methods against these hardware Trojans are reviewed. The focus of the paper is on the hardware Trojan insertion by the third-party IP and its prevention method. The AES-based secured communication system codename Alpha is demonstrated to be susceptible to the hardware Trojan insertion that is induced by the third-party IP. In order to prevent this hardware Trojan to manifest in Alpha system, the Alpha system is modified and redesigned. The Trojan-infected Alpha system and modified Alpha system codename ModAlpha are implemented on the ATLYS board. The area utilization and timing information of both systems are extracted and analyzed. The hardware implementation results for both systems are also observed on the UART terminal after the message is inputted by the keyboard. It is proven that the Trojan-infected Alpha system leaks the encryption key on the UART terminal while the modified Alpha system produces the correct cipher text.

Keywords: Hardware trojan; insertion; third-party IP; trus

Paper ID 191	**Evaluating the readiness to adopt CMMI in Malaysian software SME** Ammar, Mutahar AL-Ashmori, Babak, Bashari Rad, Ahmed Salem Saeed AL-Ameri, Zahra Ahanin* Asia Pacific University of Technology & Innovation (APU), Technology Park Malaysia, Bukit Jalil, Kuala Lumpur 57000 Malaysia University of Malaya (UM), Jalan Universiti, 50603 Kuala Lumpur, Malaysia ammar014@hotmail.com, dr.babak.basharirad@apu.edu.my, ahmd_171@yahoo.com, zahrahnnx@gmail.com

Abstract

Over the last one decade, software development industry has rapidly grown. It is a worthy economic activity for the SMEs in countries like Malaysia. Unfortunately, most of SMEs in Malaysia cannot afford or successfully implement CMMI because of its financial requirements and the difficulties and constraints related to experience, hard work and time. The objective of this research is to evaluate the readiness of SMEs in Malaysia in adopting the CMMI with consideration of agile methods and principles . A quantitative research survey was conducted with a company's employees, i.e. developers, quality engineers and managers. This survey is about the software developing practices in the company and the questions were related to the CMMI KPAs and series of agile methods and principles. Statistical data analysis was used to evaluate the company's readiness to adopt the CMMI. The results show that the company had not adopted the agile methods and principles of the CMMI KPAs practices to deal with the day-to-day software-development activities. Furthermore, a combination of CMMI KPAs and agile methods can be well formed professionally as integrated framework for the company software development projects.

Keywords: Readiness, integrated-framework, agile SPI CMMI, SMEs Methodology, Malaysia,

Paper ID 192	**Preliminary Studies of Predictive Analytics Algorithm for Anticipating Mobile Network Performance Behaviour** Wahidah Hashim[1], Muhammad Idham Bin Abdul Halim[1], Ahmad Fadzil Ismail[2], Kok-Lim Alvin Yau[3], Mohammad Kamrul Hasan[2], [1]College of Science Computer & Information Technology, Universiti Tenaga Nasional, Kajang, Selangor, Malaysia [2]Department of Electrical and Computer Engineering, International Islamic University Malaysia, Gombak, Selangor, Malaysia [3]Department of Computing and Information Systems Sunway University, Selangor, Malaysia wahidah@uniten.edu.my, iddy93@gmail.com

Abstract

In this article, we propose the use of predictive analytics to monitor connection speed in mobile networks. Predictive analytics reduces switching delay which occurs when a network device disassociates and associates itself from one network to another. Using predictive analytics, historical data are recorded and a model is created to assist in formulating a suitable algorithm to predict the best network speed while reducing process complexity. We highlight the significance of the predictive analytics concept using multiple network devices. Real time data is collected by numerous speed measurements on a daily basis. The data is collected by recording the downlink and uplink speeds of network at a regular interval at a specific location. The predictive analytics technique is applied on the collected network dataset using WEKA tools to visualize the pattern of the network speed. The predicted network speed is calculated based on the visualizer classifier error known as J.48.

Keywords: Predictive analytics, cognitive network selection, multiple network, switching algorithm, WEKA

Paper ID 193	**Indoor Cooling System Using Measurement of Human Body Temperature**

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Abstract

IOT can increase process efficiency while reducing operating costs through smart and intelligent system as well as reducing asset utilization, i.e. energy. Given the current shortage of energy resources and their use proportional exponent, then there must be a way of "smart" to optimize its cost. Air conditioning system for example, requires a smart cooling that can give optimum comfort to the user but at the same time save energy costs. Adjusting a room air conditioner by considering human's temperature and their comfort level is more energy efficient. This is due to the level of comfort and individual body temperature are different from each other. Surrounding temperature either hot or cold perhaps will not give the same effect to individuals, thus a prototype that can control air condition based on human body temperature and room temperature is developed. This prototype is to control the air conditioning based on the human body temperature as well as surrounding temperature. This prototype using a programmable Digital Thermometer which capable to measure room temperature and human body temperature. Reading from each individuals and surrounding will be recorded, calculated and average value will be taken in order to control the room air conditioner without the need for users to adjust manually. This prototype development can improve the efficiency of energy use towards green environment.

Keywords: Cooling system, human body temperature, energy saving, equal comfort

ID 195 Paper	**Smart Phone based Fall detection using Auto Regression modeling in a non-restrictive setting**

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Abstract

Fall detection is an important aspect of the field of accident prevention, ambient assisted living as well as care of the elderly. To address this issue, researchers have employed several approaches including vision based systems, setups that require deployment in a special environment and inertial sensors. Inertial sensors have the advantage of being deployable in mobile systems such as wearable devices and smart phones. An important consideration in using inertial sensors for fall detection is the need to develop techniques that would work without enforcing positional requirements of the sensor device. This paper presents a method for the detection of falls using inertial sensors readings of the smart phone, a tri-axial accelerometer, tri-axial gyroscope and orientation data. We consider inertial sensor data for two falls and three activities of daily living. Using AutoRegressive (AR) modeling to characterize the measurements from the sensors, we compare Support Vector Machines (SVM) and Neural Networks for use in classifying between these five events. Results indicate that the Neural Network provides better classification accuracy compared to SVM for the purpose of differentiating between falls and the activities of daily living.

Keywords: Fall detection, Inertial sensor, Mobifall, Machine Learning

ID 196 Paper	**Motion simulation table control using Improved ZPETC Approach**

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Abstract

The conventional feed forward controller design method for motion simulation could cause the unstable tracking control because of the phase and gain error that affected by Non-minimum phase (NMP). Thus, improved zero phase error tracking controller (ZPETC) approach is introduced to overcome NMP zero problem. After introducing the basic components of the servo system, load model systems established for motor simulation of motion simulator table and proposes an improved ZPETC. Finally, the actual motion simulator turntable system is successfully applied the approximate ZPETC and improved ZPETC, and the test results were compared and analyzed. Based on the theoretical and simulation analysis, the actual motion simulator turntable successfully implemented. Improved approximation ZPETC broaden the bandwidth of the system and satisfy the required performance of the system. The simulation results of the proposed algorithm satisfy the overall tracking performance of the motion simulation turntable.

Keywords: Zero phase error tracking controller (ZPETC), Non-minimum phase (NMP), Feedforward control, Feed-back control.

ID 197 Paper	**Automatic and Invariant Recognition of Traffic Sign with Color-HMAX and Deep ELM based Classifier**

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Abstract

One of the several challenges in the development of an automatic traffic sign recognition system is the invariant recognition of various traffic signs irrespective of the occlusion and changes in position, size, orientation, illumination and viewpoint. An automatic traffic sign recognition system usually consists of two constituent parts, namely features extractor and features classifier. Most popular Traffic Sign Recognition (TSR) systems usually comprises of a CNN (Convolutional Neural Network) based features extractor and classifier, which achieve significant results but at the cost of a very complex and huge network. Furthermore, since classical NN (Neural Network) based classifiers are trained by Gradient Descent for weights tuning, therefore their generalization capability is limited. To improve the performance further, in this paper we make use of the hierarchical feed-forward model HMAX for the feature extraction and deep extreme learning machine based classifier for the classification of the traffic signs. HMAX model generalizes well and facilitates the features extraction invariant to position, size, orientation, viewpoint and luminance. This robust feature representation is then fed to the deep ELM based feature classifier for the classification of the traffic signs to the respective class category. The recognition and classification accuracy of the developed algorithm was experimentally tested on German Traffic Sign Recognition Benchmark (GTSRB). Achievement of excellent recognition performance is demonstrated with improved generalized, invariant and robust feature representation.

Keywords: Traffic Sign Recognition, hierarchical feed-forward neural network, HMAX, deep extreme learning machine.

GiFi: A Revolution in Wireless Communications

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Abstract

GiFi or gigabit wireless technology embodies the dream of home wireless next quickly and they do not need to combinations complex nor expensive nor TRXs. They used technique dual division of time that separates the incoming signals from emerging. They SIM abbreviated shortly so the arrival of the video time and is working to balance speed with each other. In this paper, exposed to the research published about Gi-fi in international journals from 2013 to 2016 and compared them with Bluetooth and Wi-Fi, WiMAX and clarified the most significant GI-Fi features to be the dream of current technology.

Keywords: GiFi, WiFi, WIMAX.

GPU Based Deep Learning to Detect Asphyxia in Neonates

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Abstract

This paper has composed a machine-based example framework that identifies designs in the voices of known suffocating babies (and typical newborn children) while crying. It then utilizes the created model to predict if the newborn is affected by asphyxia or not. An accuracy of 92% was achieved. The project uses machine learning in building up a minimal effort symptomatic arrangement. This will serve as a valuable apparatus in diminishing death rate everywhere throughout the world if accuracy can be improved.

Keywords: Asphyxia, Newborn, Database, DIGITS

Analyzing the Impacts of Wind Generation on Distribution System Performance

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Abstract

Generation demand gap is major cause of load shedding being faced by electricity consumers in Pakistan. Generation through renewable energy resources is increasing worldwide owing to environmental aspects and generation mix. Pakistan is blessed with renewable energy resources especially solar and wind. Hyderabad Electric Supply Company (HESCO) is one of the distribution utility in Pakistan where consumers are facing frequent supply interruptions and long duration load shedding. Jhimpir wind farm is first large scale commercial generation facility in Pakistan. In this research work, impacts of 49.5 MW wind generation at Jhimpir are analyzed on 132 and 66 kV networks of HESCO through simulation.. Simulation results for bus voltages, short circuit level, active power flows and power losses are compared for the selected system with and without wind generation. Improvement in bus voltages are observed for almost all buses. Power flows in lines have changed resulting in reduced power losses. Slight increase in short circuit level is also observed after integration of wind generation with elected network.

Keywords: Wind generation, voltage regulation, power losses, short circuit level, HESCO

Investigation of imbalance faults in horizontal axis WTGs through analysis of generator current signal

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Abstract
This paper presents imbalance faults investigation of wind turbine system through generator's current signal. A simulation model of wind turbine generator is developed in MATLAB and FAST (fatigue, aerodynamics, structure and turbulence) to carry out simulation. Various imbalance faults are introduced in wind turbines mechanical system using FAST. Simulink is further used to feed turbine data in permanent magnet synchronous machine and capture current signal. Using windowed FFT, current signal is analyzed for imbalance fault excitations. Through all simulations it has been strongly observed that when aerodynamic asymmetry or blade imbalance fault is introduced in system, excitations in current signal of generator appear at turbine's fundamental rotating frequency. Multiple scenarios like altering mass or pitch of one or multiple blades of three-bladed turbine are simulated. All of which have shown same pattern of excitations as stated earlier.

Keywords: Imbalance faults, FAST, aerodynamic asymmetry, blade imbalance & wind turbine

Paper *ID 203*	**Data Hiding technique using Catalan-Lucas Number Sequence** Shilpa Pund-Dange[1], Dr. Chitra G Desai[2] [1]Department of Computer Science, Modern College, Shivajinagar, Pune-5. [2]Department of Computer Science NDA, Khadakwasla, Pune, India shilpashlok24@gmail.com, chitragdesai@gmail.com **Abstract** In this paper, a novel data hiding technique is proposed which is an improvement over an existing data hiding techniques. Generally, a pixel intensity value of an image is represented by 8-bit binary sequence. In the proposed technique, a pixel is represented by using 16-bit Catalan Lucas sequence. By using bit plane slicing, 16 virtual planes are generated for each R,G and B component respectively. This paper introduces a new approach for hiding data within few bit planes among 48. Data means a secret message is also decomposed into 16 bits to get 16 bit planes. First 6 bit planes of the secret message are embedded into the middle planes of R using XOR operation and the result is stored in LSB planes of R. Next 6 bit planes of the secret message embed similarly within G plane. The last 4 planes are embedded into the middle planes of B using XOR operation and the result is stored in LSB planes of B. Three keys are generated in the embedding phase. Extraction is carried out by using keys in a reverse way by XORing the respective bit planes. This method greatly increases the security as a secret key is known to the authentic user only. The hiding capacity is 16 bits/pixel with the acceptable PSNR value. *Keywords:* Steganography, Stego image, Zeckendorf's Theorem, Catalan ,Lucas
ID 204 *Paper*	**An analysis of RDF view maintenance using Jena** Syed. M. Shehram Shah*, John Wilson**, Vijdan Khalique*, Hira Noman* *Department of Software Engineering, Mehran University of Engineering & Technology, Pakistan, **Department of Computer & Information Sciences, University of Strathclyde, United Kingdom shehram.shah@faculty.muet.edu.pk, john.n.wilson@strath.ac.uk, vijdan.khalique@faculty.muet.edu.pk, hira.noman@faculty.muet.edu.pk **Abstract** Resource Description Framework is a next generation technique to create web content. This has given rise to the need to develop efficient and effective techniques to manage high volume RDF structures. This paper deals with Semantic Web technologies and presents an analysis of JENA based updation of RDF structures. The view maintenance of RDF structures (varying sizes), i.e. updating RDF structures using views is performed through JENA constructs and performance of insertion and deletion operations is measured. After analysis, Insert operation time was observed to increase proportionally however time remained the same for delete operations performed on the RDF data. *Keywords:* Resource Distribution Framework, JENA, Semantic Web, View Maintenance

ID 205 *Paper*	**A hierarchical approach to Home Energy Management Systems**

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Abstract

This paper depicts an execution strategy of a HEMS (Home Energy Management System) in light of Wi-Fi and RF Communication. Electricity shortage is a persistent problem that is faced by many countries today, especially in the developing world and energy conservation is thus a priority. An important strategy in this regard is to better manage the available resources. This paper presents architecture of HEMS keeping in view the Smart City infrastructure. Through proposed HEMS the user can remotely control their home appliances using an android app. This system also has features for scheduled controlling of devices. The user can set the device to turn ON and OFF at specified times. The proposed system is of lesscost, robust in operation while providing an easy to use interface for saving energy. The system is found to be reliable in tests conducted and upgradability provision allows for its adaptation for the control of any number of home appliances.

Keywords: Home Energy Management System (HEMS), Scheduled control, Wi-Fi, Smart Cities

ID 207 *Paper*	**PLC based Automatic Distillation and Collection of EthanolWater Solution**

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Abstract

The accurate working of process control can lead to smooth operation of the system, preventing unwanted failures and shutdowns thus providing notable cost saving and reliability. The PLC based distillation and collection of the liquids is one of the innovative industrial automation projects. The design contains a PLC based automated model of liquid distillation and collection systems, where PLC (SIMATIC S7-300) is used as the controlling brain of the system and distillation and collection are the two main units of the designed system. The distillation system separates the homogeneous mixture of water and alcohol (ethanol) and collection system collects the separated solvents into the bottles placed on the conveyor belt. The monitoring and controlling of the whole systems are evaluated on the basis of temperature and level of the specific units.

Keywords: PLC SIMATIC S7 300, Ethanol-Water Mixture, Distillation, Collection

| *ID 208* *Paper* | **Economic and Environmental Analysis of Converting Grid Supplied HPS Lights to solar PV powered LEDs in Street Lighting at Khairpur Mirs' Pakistan** |

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Abstract
This paper presents the economic and environmental evaluation of replacing grid powered 250W High Pressure Sodium (HPS) lights with solar powered LED lights in streets lighting system at khairpur Mir's Sindh Pakistan. Initial cost, energy consumption cost and maintenance cost of both lighting schemes are explored and compared with each other to get the total cost of operation for specified period of time which is 25 years in this case study. To find the attractiveness of auto-switched solar powered LED lighting project investment, various economic measures like simple payback period and internal rate of return are explored. Furthermore, the cash flow study for the investment has been carried out for the specified period of time which provides the information about per year saving and total saving for the complete project. Finally the reduction in the carbon emission are explored as a result of replacing old HPS lights to new LED lights.

Keywords: Solar Powered LEDS, HPS Lights, economic & environmental analysis, street lighting system.

| *Paper* *ID 209* | **Security Issues in Wireless Sensor networks** |

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Abstract
Due to the nature of deployment in Sensor networks, the network limitation, and the nature of wireless communication between nodes, wireless sensor networks are highly vulnerable and more likely to be compromised when there is a lack of enough security. This paper discusses the limitations in sensor networks and some other issues in wireless sensor networks, including the different security classes and the different kind of possible attacks.

Keywords: Wireless sensor, network, security

ID 210 Paper	**Smart Communication Network design with application of Energy Efficient Digital Clock for Monitoring of Time -To-Live (TTL)**

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Abstract
We are using term smart in two contexts, one context it is able to monitor Time to Live (TTL) with integration of digital clock in network and other context is energy efficiency that comes with design of energy efficient digital clock using HSTL IO standards available on Virtex-5 FPGA. Digital clock will trigger alarm when it current value reaches nearer to TTL and alarm will continue when it goes beyond TTL. This work also deals with a research gap that electronics designer never bother about selection of Input Output Standards. Current researcher focus only on efficient coding but never focus on selection of energy efficient IO standards. After testing and implementation phase of digital clock, we conclude that HSTL-II is the most efficient in term of energy efficiency and HSTL-III18 is the least efficient in term of energy efficiency.

Keywords: Energy Efficient, Digital Clock, Time-To-Live (TTL), Communication Network, HSTL IO Standards, FPGA

ID 212 Paper	**Comparative Analysis and Accuracy of a Devised Automated Non Invasive Blood Pressure Monitor Based On Oscillometric Method**

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Abstract
Hypertension being one of the major causes of death worldwide has increased the need for self monitoring of blood pressures at home and offices. As a solution, automated non invasive blood pressure devices have prevailed. The principle behind the development and working of such a device is an integral part of bioinstrumentation curriculum. Consequently, an oscillometric non invasive blood pressure (NIBP) measuring device was previously designed to train and educate undergraduate students in a laboratory setting. Current work, however, focuses on the evaluation of accuracy and reliability of previously designed NIBP instrument by means of a comparative analysis with the standard cuff mercury sphygmomanometer based on auscultation. Thirty healthy subjects between the ages of 18-23 were examined by successive application of both devices having identical cuffs and site of measurement. The analysis of means and bias values demonstrated that our designed oscillometric NIBP monitor under-read all blood pressure values compared to mercury manometer. The mean oscillometric NIBP readings (systolic blood pressure (SBP) 119.65 ± 8.25, diastolic blood pressure (DBP) 76.82 ± 6.12 and mean arterial pressure (MAP) 91.1 ± 4.76) were significantly lower than its auscultatory counterpart (SBP 127.03 ± 8.7, DBP 81.4 ± 6.2 and MAP 96.6 ± 4.95). F-test showed that the devised prototype is precise and comparable to a reference mercury manometer.

Keywords: Hypertension, Non invasive blood pressure, Oscillometric method, Auscultatory method, brachial artery, Sphygmomanometer.

Paper ID 213	## An Empirical Analysis on the Effect of OFDM Parameters to the Performance of Wireless Communication System via USRP-based Transceiver [1]J.Muslimin, [1]AL Asnawi, [1]AF Ismail, [1]MH Khairolanuar, [1]AZ Jusoh, [2]R.Hamid [1]Electrical and Computer Engineering Department, Kulliyyah of Engineering International Islamic University Malaysia,Kuala Lumpur, Malaysia [2]Faculty of Electrical & Electronics Engineering, University Malaysia Pahang (UMP) jusnainimuslimin@gmail.com, aniliza @iium.edu.my, af_ismail@iium.edu.my, haziq.khairolanuar@yahoo.com, azamani@iium.edu.my, rosyati@ump.edu.my **Abstract** The configuration of parameters for OFDM scheme in standards such as the 802.11, WiMAX and LTE are varied accordingly to each system specifications. This paper offers findings from an experimental analysis carried out using wireless OFDM transceivers set-up. Experimental evaluations are indeed very useful in order to guesstimate the likely performance of any said system. Among particular system performances of interest include throughput and errors. This can be noteworthy attempt as it provides fundamental understanding and knowledge in justifying what should be the best configuration. The study had examined and quantified the effect of varying select parameters namely the modulation schemes, FFT length, and sampling rate. The use of USRP hardware as the communication testbed was extensively explored during the study. USRP sets can certainly be emerging tools for students and researchers alike to realize proof of concepts by exploiting programmable software-defined radio platforms. *Keywords:* OFDM; USRP; GNU Radio; Wireless Communication; Modulation; FFT; Sampling Rate
Paper ID 214	## Social Network Applications' Trend for Future Business Competitive Advantages Nithinant Thammakoranonta[1], Nuntaporn Keandoungchun[2] School of Applied Statistics National Institute of Development Administration Bangkok, Thailand 10240 [1]nithinan@as.nida.ac.th [2]moon_koy15@windowslive.com **Abstract** Social Network Applications is now popular in Thai Society. The number of Social Network Application's users increases rapidly. The applications support social activities, meanwhile collect a lot of data which may be used to generate a lot of knowledge about culture, ways of life, and history. Not many people consider Social Network Applications as a source of knowledge, and not even as a collaborative systems used in their business. This means that a lot of knowledge will be lost if people change to use any new Social Network Application. The experts mentioned that differentiation concept must be considered to lengthen Social Network Applications' life cycle. Most applications used predefined tools and functions to develop. Users use only the provided functions or services. No policy, regulations, and funds clearly support developing Social Network Applications which may be used as a competition weapon for business, and for support knowledge management activities in Thailand. **Keywords:** Social Network Application, Business Competitive Advantages, Knowledge.

Paper ID 217	**Quantum Cryptography: A Review** Seema S. Kute[1], Chitra G. Desai[2] [1]Department of CS & IT Dr. B.A.M.U.,Aurangabad, India [2]Department of Computer Science NDA, Khadakwasla, Pune, India seemak0518@yahoo.in, chitragdesai@gmail.com **Abstract** The preferment from conventional computing to quantum computing has created new challenges in the field of cryptography. The cryptographic algorithms which ensured intractability in conventional computing surfaces serious challenge in quantum computing. By applying the quantum mechanics quantum cryptography can be used to unrestrictedly for reliable data communications. The cryptography currently in use, known as conventional cryptography, depends absolutely on the hardness of the mathematical concepts. Elliptical curve cryptography today known as modern cryptography is used extensively for securing financial transactions. Advances in quantum computing, can easily break this security by reverse computing keys faster than the conventional computers. This paper is an attempt to review fundamentals of quantum cryptography to as to represent it in easiest possible way for a novice demonstrating quantum onetime pad. **Keywords:** Conventional Cryptography, Quantum Cryptography, Density matrix, quantum one time pad
Paper ID 219	**An Authenticated User and Service Trust Evaluation Framework for Cloud Computing** Ashish Singh, Kakali Chatterjee Department of Computer Science & Engineering National Institute of Technology, Patna-800005 Bihar (India) ashish.cse15@nitp.ac.in, kakali@nitp.ac.in **Abstract** The new cloud computing model faced many security challenges, including authentication, access control, authorization, trust, data security, etc. Among all the security issues the "trust issue" is one of the important concerning security issue in the cloud. It is a challenging issue because trust is an emotional and logical phenomena, which cannot define/write into an agreement. Lots of articles are presented to solve the trust issue in the large and distributed cloud environment, but traditional trust models cannot build a secure trust relationship between cloud user and cloud services. In order to solve the current trust issue in the cloud, we introduced a novel authenticated trust evaluation framework, which establish a dynamic trust value for both cloud user and cloud services. In the proposed work to construct the service trust value for a new cloud customer, Trust Evaluation Center (TEC) takes feedbacks of a service from the previous cloud service usage customers. Based on these calculated trust value, user can decide the service is trusted or not. To evaluate the user trust value for a cloud service, the TEC takes the history of the user behavior and compare with the current user behavior. Based on the comparison user behavior user trust value is determined. Additionally, we also proposed a reliability weight calculation concept for each cloud customer feedbacks. The proposed authenticated user and service trust evaluation framework overcome the current trust issue present in the cloud. The detail presentation and experiments show that the framework more effective and accurate for trust evaluation. *Keywords:* Cloud Computing, Trust Evaluation Framework, Trust Evaluation Center, User Behavior Model, Customer Feedback

Paper ID 220	**Adopting Predictive Analytics Model for Mitigating Network Evaluation Delay in Best Connection Selection Mechanism** Muhammad Idham Abdul Halim[1], Wahidah Hashim[1], Ahmad Fadzil Ismail[2], Kok-Lim Alvin Yau[3], Mohammad Kamrul Hasan[2], Rajina M. A. Raj Mohamed[1] [1]College of Computer Science & Information Technology, Universiti Tenaga Nasional, Selangor, Malaysia [2]Department of Electrical and Computer Engineering, International Islamic University Malaysia, Selangor, Malaysia [3]Department of Computing and Information Systems Sunway University, Selangor, Malaysia iddy93@gmail.com, wahidah@uniten.edu.my, af_ismail@iium.edu.my, **Abstract** Predicting for best network connection with highest accuracy of prediction deems to be a desire for anticipating most reliable network communication. Besides the ordinary function of any predictive mechanism to understand certain behaviour and trends, we have adopted such mechanism to mitigate network evaluation delays that occur every time switching to other network. In this paper, we propose a predictive analytics mechanism based on existing network selection models. The mechanism uses connection speed as main parameter to determine the network behaviour before a selection being made. We conducted a few predictive models that are able to predict the network speed based on the input data that we have recorded daily at an interval of 15 minutes. The root mean squared error (RMSE) and squared error (SE) values were calculated for each predictive model used. It was found that, the W-M5Rules and W-M5P have the lowest error difference amongst other tested predictive models. For our sample size dataset, it is appropriate to say that the W-M5Rules and W-M5P show the best accuracy that resembles the actual collected data. *Keywords:* Predictive analytics, W-M5Rules, network speed, best connectivity access, mobile data, RapidMiner
Paper ID 221	***OFDM Transmission Technique to Minimize PAPR*** Ahmad Fadzil Ismail[1], Sofia Pinardi[1], Mohammad Kamrul Hassan[1], R.M.A Raj Mohamed[2], and Wahidah Hashim[2] [1]Department of Electrical and Computer Engineering, International Islamic University Malaysia, [2]College of Computer Science and Information Technology, Universiti Tenaga Nasional Malaysia sofiapinardi@yahoo.com, af_ismail@iium.edu.my, hasankamrul@ieee.org, Wahidah@uniten.edu.my **Abstract** Multi-carrier phenomenon Orthogonal Frequency Division Multiplexing (OFDM) is considered to be one of the most significant developments in wireless communication. It is now becoming somewhat a critical important standard. However, high Peak Average Power Ratio (PAPR) is a key issue in OFDM systems. It resulted the lowering of power efficiency. Conventionally OFDM can be implemented using Discrete Fourier Transform (DFT) technique that usually adopts modulation either Binary Phase Shift Keying (BPSK), Quadrature Phase Shift Keying (QPSK) or Quadrature Amplitude Modulation (QAM). In the study, OFDM systems employing DFT, Discrete Wavelet Transform (DWT) and Discrete Cosine Transform (DCT) had been investigated by means of computer simulation. The main aim is to assess the enactment of the Bit Error Rate (BER) and PAPR in OFDM system. The performance of the system was assessed in the occurrence of Additive white Gaussian noise (AWGN) as well as incorporating multipath fading as the channel impairments. The acquired preliminary findings show that the DWT technique outperforms DFT and DCT. It is therefore deemed that DWT based OFDM has the potential to significantly reduce PAPR. *Keywords:* OFDM, PAPR, BER, DFT, DWT, DCT

Paper ID 223	**Preliminary Evaluation of Temperature Performance Using Empirical Eco-Friendly Approach in Reducing Energy Consumption** Wahidah Hashim[1], Amirul Haziq Ahmad[1], Ahmad Fadzil Ismail[2], Kok-Lim Alvin Yau[3], Mohamed Kamarul Hasan[2], Noor Azlin Yahya[4] [1]College of Science Computer & Info Tech, Universiti Tenaga Nasional, Malaysia [2]Faculty of Engineering, International Islamic University Malaysia, Malaysia [3]Dept of Computing and Information Systems, Sunway University, Selangor, Malaysia [4]Forest Research Institute of Malaysia, Kepong, Malaysia wahidah@uniten.edu.my, amirulhaziq18@gmail.com

Abstract

The aim of this research is to quantify the percentage (%) of reduction for indoor temperature by emulating a modelled house surrounded by plant in comparison to an identical model without any encircled plants. The motivation behind this study is to identify possible ecological means of passive cooling. It is a fact that there is a huge increase of air conditioning cooling system usage by consumers in order to keep the temperature down. Air conditioner can emit over a half billion ton of carbon dioxide into atmosphere, thus causing global warming to the earth. In our research, we hypothesize that, the trees manage to reduce the indoor temperature of a house through the evaporation process and shading. The studies measure the temperature reading using a programmable microprocessor acting as the temperature sensor. The result of this research show that there was a temperature decrease in the range of 0.5-3 degree Celsius in comparison to the house without the surrounding plants. The experiment was conducted at an open space to ensure there was no effect of other trees except the one meant for the study. This finding perhaps can assists the government to start promoting the awareness of reducing carbon footprint by an eco-friendly technique to reduce indoor temperature with less cost on energy consumption.

Keywords: Climate change, eco-friendly technique, natural cooling technique, energy conservation, temperature sensor

ID 225 Paper	**A Hybrid Monitoring Technique for Diagnosis of Mechanical Faults in Induction Motor** Ayaz Ahmed Soomro[1, 2], Imtiaz Hussain Kalwar[2] , Kamran Kazi[2], Sarang Karim Khoso[2], Shahzeb Ansari[1] [1]Quaid-e-Awam University College of Engineering, Science & Technology, Pakistan [2]Mehran University of Engineering & Technology, Pakistan ayaz.soomro@quest.edu.pk, imtiaz.hussain@faculty.muet.edu.pk, kamran.kazi@faculty.muet.edu.pk, sarangkarim@hotmail.com, shahzeb.ansari@quest.edu.pk

Abstract

Induction motors possess one of the most important roles industrially and commercially. The developing faults in the motors can become catastrophic, if remain unanalyzed. The paper presents an effective solution to diagnose the major mechanical faults at the early possible stage by utilizing two efficient condition monitoring techniques to effectively deploy the strategies for the predictive maintenance. Primarily it employs the MCSA (Motor current signature analysis), in which the faults are located by the spectral analysis of the particular harmonic components in the line current at specific characteristic frequencies generated by specific faults as the unique rotating flux. Fuzzy logic system has also been utilized, which assesses severity of the fault and operating condition of machine. The induction machine's modular Simulink implementation has been presented that unlike other approaches provides the access to almost all parameters of the machine for analysis and control purposes.

Keywords: Condition Monitoring, Fault Diagnosis, MCSA, Fuzzy Logic, Bearing faults, Eccentricity.

Modeling of an Integrated Energy Efficient Conveyor System Model using Belt Loading Dynamics

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Abstract
Conveyor belts are the material handling equipment that is widely used in industry to move the material from the one place to another or from one process to next process. Conveyors are generally driven with electric motors. From an industry specific perspective, there is continuous pressure on manufacturing companies to reduce the operating expenditure by reducing the electricity cost by developing the energy efficient equipment and products. Conveyor systems are the one of the major consumers of electricity industries, which consumes up to 40% electricity of the total operating cost, while the remaining 60% is due to operational costs and maintenance. The concept of improving the energy consumption and system efficiencies by controlling multiple drive units is of great interest recently. In this work, efficiency of a conveyor system is evaluated by integrating all the factors that have an influence on the electricity costs of the conveyor system. Using variable speed drive mechanism, an energy efficient conveyor system is developed by physically modeling the speed of the belt and conveyor loading dynamics mechanism under no load, marginally loaded and full loaded conditions. For the energy efficient conveyor system, different start-up of conveyor methods are evaluated as a baseline reason of generating the motor torque in comparison to rated voltage as an optimal energy management tool to develop a relationship across the power consumption, conveyor belt speed and belt loading dynamics.

Keywords: Conveyor system, Energy efficiency, Conveyor loading dynamics, Variable speed drive.

High Resolution Image Reconstruction with Compressed Sensing based on Iterations

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Abstract
This paper proposes a new method of efficient image reconstruction based on the Modified Frame Reconstruction Iterative Thresholding Algorithm (MFR ITA) developed under the compressed sensing (CS) domain by using total variation algorithm. The new framework is consisted of three phases. Firstly, the input images are processed by the multilook processing with their sparse coefficients using the Discrete Wavelet Transform (DWT) method. Secondly, the measurements are obtained from sparse coefficient by using the proposed fusion method to achieve the balance resolution of the pixels. Finally, the fast CS method based on the MFR ITA is proposed to reconstruct the high resolution image. The proposed method achieved superior results on real images, and demonstrate qualitative improvements in terms of PSNR and SSIM values. Furthermore, achieved good reconstruction SNR in the presence of noise.

Keywords: Compressed Sensing, Image Reconstruction, Multilook, MFRITA, Thresholding

Paper ID 229	**Hierarchical Route Optimization Scheme Using Advanced Binding Update List (BUL+) for Nested Mobile Networks** Shayma Senan, AishaHassan A. Hashim Faculty of Engineering, International Islamic University Malaysia, 53100 KL, Malaysia shay_sinan@yahoo.co.uk, aisha@iium.edu.my *Abstract* Supporting networks that roam as one unit is needed to provide the transparency of Internet in mobile frameworks, like cars, trains, planes, buses, etc. To accomplish this, NEMO (NEtwork MObility) Basic Support protocol has been proposed and developed by Internet Engineering Task Force (IETF). Although, it achieves continuous, optimal and secure communication to and from all nodes, it still suffers from many drawbacks, especially when the level of nesting increases. To overcome these limitations, this paper presents a new route optimization scheme for nested mobile network using hierarchical structure with Advanced Binding Update List (BUL+). From performance evaluation, it shows that this scheme reduces packet overhead, handoff latency, packet transmission delay, and achieves optimal routing. **Keywords:** Mobile IPv6, Network Mobility (NEMO), Nested mobile networks, Route Optimization.
Paper ID 236	**Topic Modeling for Clustered Textual Documents in Relational Database** Wael M.S. Yafooz[1] , Siti Z.Z. Abidin[2], Sharifah binti Aliman[2], Nasiroh Omar[2], Amelia Binti Zolkefli[2] [1]Faculty of Computer and Mathematical Science Al-Madinah International University 40100 Shah Alam, Selangor,Malaysia [2]Faculty of Computer and Mathematical Science Universiti Teknologi MARA (UiTM) Shah Alam, Selangor Darul Ehsan, Malaysia waelmohammed@hotmail.com, zaleha@tmsk.uitm.edu.my sharifahali@tmsk.uitm.edu.my, ameliazolkefli92@gmail.com Abstract The massive volume of textual data in databases, web pages, and document files are usually regarded as unorganized. Such data will be meaningless and unclear for users if it is difficult to realize the relationship between its contents. Such information requires organization and management before it can be useful. This information is often stored in a Relational Database Management System (RDBMS) due to its robust structure that manages, organizes and retrieves data. Nonetheless, the RDBMS can contain a huge amount of unstructured textual data, such as textual documents, and these can remain in their original format within the data structure. Therefore, this study will be based on an available technique called Textual Virtual Schema Model (TVSM) that performs data organization by using semantic textual data linking and clustering (on unstructured textual data in RDBMS). However, these data clusters are not represented by appropriate topics or titles for future references. Thus, this paper proposes a topic modeling technique for textual data clusters in a relational database in order to give a proper title for each data cluster. This study will help developers and researchers in managing unstructured textual data as well as text mining such as online news agencies to keep, search and retrieve their data efficiently. *Keywords*-Database; Data clusters; Textual Document; Topic modeling; TVSM

Paper ID 237	**Packet Loss Simulation for Context Delivery in Proxy Network Mobility Management**

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Abstract

This paper investigates multicast context delivery in multicast only fast reroute network mobility management using NS3. Proxy network mobility management has the capacity to lessen mobile IPv6 problems. Therefore this paper implements multicast context delivery to the standard mobility management. This implementation also supports multicast fast reroute procedures. In this work, the simulation is done using context delivery for multicast fast reroute proxy network mobility management to solve the packet loss problem. This paper assumed that packet loss is described as the number of packets that are lost in a multicast communication. Packet loss is unescapable particularly in mobile multicast communication. It is a network system requirement to meet the threshold value of acceptable packet loss rate that is estimated to be around 5%. The packet loss value is extracted from the trace-file produced by the simulation process in NS3 simulator. The analyses of the packet loss is hereby presented.

Keywords: NS3, Packet Loss, Mobile Multicast.

Paper ID 238	**An Intuitive Link Budget Tool for Military Satellite Communication**

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Abstract

Nowadays the Malaysian Royal Army is using their own transponder using X-band frequency. Satellite – Earth communication system in tropical regions such as Malaysia are limited by attenuation due to rain. Due to this rain attenuation, the military communication affects heavily. In tropical areas such as Malaysia where rain occurs in unpredictable way it is difficult to focus on data which is always not actual. The existing tools are partially fulfilled the requirement since, all of them are not based on information from real-time weather condition. Therefore, this study will propose an intuitive model to be use by the Royal Malaysian Army.

Keywords: Intuitive link budget, Military X-band, Satcom

Paper ID 239	## Application on Pervasive Computing in Healthcare – a review [1] Paramita Sarkar, [2]Ditipriya Sinha [1]Calcutta Institute of Engineering and Management Kolkata, India. [2]National Institute of Technology - Patna Patna, India [1]paramita_sarkar@yahoo.com, [2] ditipriya.cse@nitp.ac.in **Abstract** Application of pervasive computation in healthcare is an interdisciplinary research domain which attracts scientists from both the medical and computer domains. Such systems are used to provide support to remote patients and to disaster affected people as well. This has proved to be much useful in case of elderly people living alone or patients undergoing post-operative recovery phase. The literature studies in this field are found to concentrate on specific applications of pervasive healthcare, such as remote patient monitoring, fall detection, etc. In this paper, we exhibit a descriptive study of different features of pervasive healthcare in recent years. Finally, a comparative analysis table of the respective techniques has been presented. *Keywords:* pervasive; healthcare; remote patient monitoring; daily activities; decision making; classification; clustering; prediction; access control
Paper ID 240	## A Computational Model For Resolving Arabic Anaphora using Linguistic Criteria Abdullatif Abolohom, Nazlia Omar FTSM ,University Kebangsaan Malaysia, 43600 Bangi, Malaysia allatif4@yahoo.com, mo@ ftsm.ukm.my **Abstract** Anaphora resolution is one of the most challenging and important problems in Natural Language Processing. Most Natural Language Processing applications, such as those used for information extraction, question answering, and text summarization, require the successful identification and resolution of anaphora. Even though a significant amount of work has been done in English and other European languages, work specifically addressing the field of anaphora resolution in Arabic is limited. In this paper, we present a new model for resolving Arabic pronominal anaphora. the model consists of a set of steps. Firstly, we identify the pronouns and remove non anaphoric ones. Secondly, we identify the list of candidates from the surrounding context of the anaphora. Finally, we choose the most plausible candidate for each identified anaphoric pronoun. In this work we determine the appropriate rules to be used in this task. The linguistic rules are based on lexical, morphological, syntactic, heuristic, and positional constraints. We evaluate the performance of the proposed method using the corpus of the Quran, annotated with pronominal anaphora. The experimental results show that the proposed model has yielded satisfactory results and is able to select the correct antecedent with an accuracy of 84.43%. *Keywords:* anaphora resolution; rule based method; linguistic rule

Paper ID 241	**Dynamic Frequency Reuse: A Method for Interference Mitigation in OFDMA Based LTEA Networks** Asif Reza[1], Khaizuran Bin Abdullah[2], Ahmad Fadzil Bin Ismail[3], Farah Raisa[4], Hudah Adibah Bt. Mohd. Ramli[5] and Wahidah Hashim[6] [1,2,3,4,5]Department of Electrical & Computer Engineering, International IslamicUniversity Malaysia, 53100 Kuala Lumpur, Malaysia [6]College of Computer Science and Info Tech, Universiti Tenaga Nasional Malaysia asif.a.reza@ieee.org[1], khaizuran@iium.edu.my[2], af_ismail@iium.edu.my[3], f.r.farah@ieee.org[4], hadibahmr@iium.edu.my[5], wahidah@uniten.edu.my[6] **Abstract** Spectrum scarcity is one of the most discussed restraining aspects in wireless communication system. To solve this issue Frequency Reuse (FR) concept is introduced. It is a promising development to fulfil the requirement of Long Term Evolution Advanced (LET-A). With the introduction of FR comes the problem of Inter Cell Interference as the neighboring eNodeBs (eNB) which uses the same frequency band that will act as an interference source. In this paper, a Dynamic Frequency Reuse (DFR) method is anticipated. Continuous optimization of resource allocation of each cell is considered in this method. The important focus of the paper is to expand the capacity of the users placed in cell edge areas by reducing out of cell interference. Simulation has been done to prove that the proposed scheme leads to efficient resource management. **Keywords:** FR, LTE-A, DFR, ICI, capacity.
Paper ID 242	**Hybrid MMSE Precoding for Millimeter-Wave (mmW) Multi-user Massive MIMO Systems** Farah Raisa[1], Khaizuran Abdullah[2], Ahmad Fadzil Bin Ismail[3], Asif Reza[4], Hudah Adibah Bt. Mohd. Ramli[5], Wahidah Hashim[6] [1,2,3,4,6]Department of Electrical and Computer Engineering, International Islamic University Malaysia, Kuala Lumpur, Malaysia. [5]College of Computer Science and Info Tech, Universiti Tenaga Nasional Malaysia f.r.farah@ieee.org[1] , khaizuran@iium.edu.my[2], af_ismail@iium.edu.my[3], asif.a.reza@ieee.org[4], hadibahmr@iium.edu.my[5], wahidah@uniten.edu.my[6] **Abstract** Millimeter-wave (mmWave) cellular systems is considered to be the key enabling technology for the future 5G wireless communication systems because of its high data rates, low latency, high system capacity, and huge available bandwidths. However, in order to meet the increasing demand, mmWave communications need to overcome certain challenges including high path loss and interference which can be reduced by applying large antenna arrays to achieve high beamforming gains. Although multi-user beamforming can improve spectral efficiencies, full digital beamforming strategies used in the conventional microwave systems increase the hardware cost and consumes high power for large number of antennas in mmW systems. In this paper, a multi-user hybrid precoding structure is proposed for mmWave massive-MIMO channels utilizing MMSE precoders at the BS with perfect channel knowledge. Simulations show that the sum-rate obtained by the proposed hybrid precoding scheme is nearly similar to the single-user rate and also performs better compared to other hybrid precoding approaches. *Keywords:* Millimeter-wave; mmWave; Hybrid Precoding; MMSE;

An Electrical Perspective of the Baroreflex Feedback Mechanism for Heart Rate Control

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Abstract

In this research paper an electrical frame work model of baroreflex feedback mechanism is developed. The model proposed can observe and predict the changes in the baroreceptor firing rate as a function of varying blood pressure. It will also follow the changes in the sympathetic and parasympathetic output with varying firing rate of baroreceptor. The new and note worthy in our research paper is the representation of the overall baroreflex mechanism by an electrical circuit having active and passive components which is never discussed before. The baroreceptor is modeled using a combination of linear derivative and a sigmoid function where as the CNS is modeled using combination of first order derivatives and PID controller. The results obtained from the proposed model are validated from the existing physiological data and Joint National Committee (JNC) 8 guidelines for the management of hypertension in adults.

Keywords: Baroreceptor mechanism, electrical equivalent, cardiovascular system, central nervous system, modeling and simulation

Cost Minimization Technique in Geo-Distributed Data Centers

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Abstract

Everyday more number of data is produced, therefore cloud service providers are under pressure to provide not only higher quality of service, but also lower their prices. Meanwhile the challenge for the service providers is increasing further more as they have more data to be processed and managed. Storage, computation and communication cost are amongst these factors to be considered. Therefore, the popularity of this research area is rising. There are some proposed methods to minimize the cost of geo-distributed data centers, however each of these proposed method were able to cover only limited cost factors. This paper presents new technique for cost minimization. In this technique four main factors are included: storage cost, task placement, data assignment and data flow. The proposed joint optimization technique considers data transportation and computation cost. A mixed-linear programming is presented and it is evaluated. The evaluation was performed using Gurobi solver and it was compared to non-joint techniques. The results show significant reeducation of cost in the geo-distributed data centers.

Keywords: data flow, data placement, geo-distributed data centers, cost minimization, task assignment.

Paper ID 246	## Enhancement of Spectrum Detection in 5G Heterogeneous Network Ahmad Fadzil Ismail[1], Mohammad Kamrul Hasan[1], Shayla Islam[1], Wahidah Hashim[2], and Rashid A. Saeed[3] [1]Department of Electrical and Computer Engineering, International Islamic University, Jalan Gombak 53100, Malaysia [2]College of Information Technology, University Tenega Nesional, Malaysia [3]College of Electronics Engineering, Sudan University of Science and Technology, Khartun, Sudan hasankamrul@ieee.org; af_ismail@iium.edu.my, wahidah@uniten.edu.my, iium19612@hotmail.com, eng_rashid@hotmail.com ***Abstract*** Modern advancement of Long Term Evolution Advanced (LTE-A) in wireless communication industry is revolutionary to fulfill the high order expectations through extending the high system throughput and capacity. This is mainly due to the effects of the Orthogonal Frequency Division Multiplexing (OFDM), where both frequency and time division are employed in order to exploit the system capacity. However, in LTE-A heterogeneous Network (HetNet), femtocells (HeNBs) are optimal choice to extend the coverage in indoor environment, whereas the deployment of such base station creates cross-tier and co-tier interferences with the macrocell users (MUE) becomes critical challenge. Therefore, the unutilized/idle spectrums reallocation is one of the solution to mitigate such challenges. However, the Enhanced Spectrum Detection (ESD) in such typical network is challenging. Trendy DSS networks, licensed secondary users (SUs) be able to gain assigned licensed spectrum band without any interference with primary users (PUs).This paper enhances the spectrum detection in LTE-A based Heterogeneous Networks (HetNets) using ESD mechanism. In ESD false alarms and missed detections are considered the performance metric. The result suggests that the performance of the spectrum detected is enhanced over existing method. **Keywords:** Spectrum Detection, Power allocation, OFDMA, HeNB
Paper ID 247	## RSSI Measurements of a GSM Signal within an Indoor Environment A.F. Ismail[1], M.J. Jakpar[1], , N.F. Za'bah[1], K. Badron[1], and W. Hashim[2] [1]Kulliyyah of Engineering International Islamic University Malaysia, [2]College of Computer Science & Info Tech,, Universiti Tenaga Nasional Malaysia muhamadjamiljakpar@gmail.com, af_ismail@iium.edu.my, adah510@iium.edu.my, khairayu@iium.edu.my, and wahidah@uniten.edu.my **Abstract** Studies has suggested that the association between Received Signal Strength Indication (RSSI) and measured distance between the transmitter and receiver can be one of the key elements for ranging and localization technologies. In this study, measurements of RSSI and the distance between 1800MHz receiver and transmitter within an indoor environment were acquired, recorded and analyzed. Using the data, correlation for a select indoor environment was derived. By comparing the recorded distance values acquired at set RSSI with values calculated based on the Free Space Path Loss equation, provisional estimation of the indoor signal fading can be established. The experiment was the initial part of a threestage work that will later entail the comparison to that of outdoor as well as clean room environments. The final result of the study hopes to achieve a simple yet improved indoor fading model experienced by mobile communication signals. *Keywords: RSSI, GSM1800, Indoor fading*

Paper ID 248	**The rise of Fog Computing on Cloud Computing for the use of internet of things**
	Laouratou Diallo, Aisha Hassan Abdalla Hashim, Sara Babiker Omer Elagib, Abdullah Ahmad Zarir Electrical and Computer Engineering International Islamic University Malaysia Kuala Lumpur, Malaysia laouratoulelouma@gmail.com, aisha@iium.edu.my, sarelagib@hotmail.com, abdullahzarir@gmail.com

Abstract

Huge growth in the scale of data generated through cloud computing has been led to Internet of Things (IoT). Fog computing has been recently adopted to improve some features of cloud computing and makes cloud computing more attractive to users. Furthermore, it comes to improve some parameters such as latency, security and load network. The combination of cloud and fog computing is seen a new progress in distributed computing and the appropriate platform for the data. Fog computing is defined as a new paradigm that works at the edge of the network to improve the quality of the network. In this paper, the use of fog computing in cloud computing is reviewed in this work. The characteristics, architectures and discussions and the relationship is further elaborated. Additionality, recommendation for further research is discussed.

Keywords: Fog Computing, Internet of Things, Cloud Computing, Big Data, Edge Computing, CloudSim.

Paper ID 249	**Tropical Flood Estimation Model Derived From Weather Radar Information**
	A.F. Ismail[1], A.B. Basri[1], K. Badron[1], M.H. Khairolanuar[1], N.H.M Sobli[1], Ismail Maszlan[2] [1]Department of Electrical and Computer Engineering, Kulliyyah of Engineering, International Islamic University Malaysia (IIUM), Jln. Gombak, Selangor, Malaysia. [2]National Space Centre, Malaysia atikahbalqis32@gmail.com, af_ismail@iium.edu.my, khairayu@iium.edu.my, haziq@iium.edu.my, hudaa@iium.edu.my, maszlan@angkasa.gov.my

Abstract

Floods are among the most frequent and costliest natural disasters. Conditions that can cause floods include heavy or/and long-steady rain for several hours or days where excess water saturates the ground. Long term precipitation forecast may not be totally dependable, therefore a new estimation method capable of predicting upcoming flood events with high degree of accuracy is required. The information from rain gauges and radar data can be critical inputs for the new flood warning system. A flood estimation method was developed incorporating an algorithm that processes inputs namely the rainfall rate information, horizontal and vertical profile of radar reflectivity values. The rainfall rate data, cloud thickness values, and the sizes of the clouds during the 2014 flood disaster were acquired and analyzed. The periods of measurement involve rain events before, during and after the flood tragedy. The study was carried out using 14 days of precipitation phenomena observed in Kota Bharu, Kelantan, Malaysia from 13 December 2014 until 26 December 2014. The derived flood estimator algorithm acquired in this research can be very useful to predict flood tragedy in the future. This can also be the development model that to be integrated into the radar system.

Keywords: Radar, Flood Model, Flood Estimation Model, RHI, CAPPI.

Paper ID 250	**Methodology to Solve Severe Load Curtailment at Pakistan's Wind Corridor and Cost Effectively Utilizing Maximum Wind Energy** Saddam Hussain[1], Sonia Bibi[2] [1]National Power Control Center, NTDCL, Pakistan, [2]Pakistan Tele Communication Limited, Pakistan Corresponding Author: saddam@ntdc.com.pk **Abstract** From lightening a house to functionalizing industry energy plays a significant role. Generating energy is not the only issue but generating and then utilizing it appropriately is the main issue. From 2011, Pakistan has shifted its sight on renewable energy to cut its power starved national grid's dependency from fossil fuel power plants. Since then a number of solar parks and wind power plants have been initiated and few of them are already operational. Focusing just on wind energy, by August 2016 total six wind power plants are fully functional capable of producing 300MW of generation as per availability of wind. But this 300MW of wind energy is facing regular load curtailments due to overloading or unavailability of the dispatch circuits. There are ups and downs in generating energy depending upon the speed of wind. In this paper, impacts of generating energy when wind speed is normal that is 7 meter per second and when it is at maximum have been discussed and analyzed accordingly. The maximum dispatch generation capacity at the national grid is not more than to 259MW. When the generation is a lot more than that of the capacity of lines then this extra generation is wasted deliberately. This research suggests the solution to these current circumstances at the wind corridors. Number of solutions have been introduced like constructing 220kv grid station, upgrading existing 132kv THT-SJW-BSK-TMK(O)-TMKR, all SLM lifted at wind corridor and connected circuit or constructing direct circuitry in between Jhampir and TM Khan Road with a capacity of 400A while the other in between Nooriabad and Jamshoro New with the capacity of 500A. After comparing and analyzing all the solutions constructing two 132kv transmission lines between Jhampir and Thatta and other between Nooriabad and Jamshoro New is the best solution. ***Keywords:*** Common Dispatch Point, Scheduled Load Management, Independent Power Producers
Paper ID 251	**Integration of Context Transfer and Multicast Fast Reroute to Enhance Network Mobility Management** Azana Hafizah Mohd Aman, Aisha-Hassan A. Hashim, Huda Adibah Mohd Ramli Kulliyyah of Engineering, International Islamic University Malaysia, Jalan Gombak 53100, Kuala Lumpur, Malaysia aisha@iium.edu.my, **Abstract** Internet applications such as web based monitoring; live internet video, online video, video conference, webcam viewing and internet video to TV are highly used in today's IP communication. The trends of these applications are that they are played on mobile devices and distributed to many end users. Multicast communication over IP contributes to the end users applications distribution. It has been discovered by a CISCO research that mobile multicast traffic will soon reach zetabyte in 2019. The aim of this paper is to introduce new method that integrates context transfer and multicast fast reroute to provide high performance network mobility management. The proposed method is quantitatively evaluated in terms of packet loss and service recovery time. ***Keywords:*** Context Transfer, Fast Reroute, Mobile Multicast, Network Mobility.

Paper ID 252	**Simulation Analysis for Multicast Network Mobility Management**

Azana Hafizah Mohd Aman, Aisha-Hassan A. Hashim, Huda Adibah Mohd Ramli, Shayla Islam
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Abstract

This paper simulates and analyses multicast network mobility management using NS3 to verify the proposed network architecture and its activities. NS3 is a network simulator that implements virtually network prototype that is close to real implementation. Network mobility management has become a popular topic in networking research due to its ability to mitigate mobile IPv6 problems. However the standard network mobility management only introduced to support unicast traffic. Hence this paper integrates context transfer and multicast fast reroute, and implements this integration to the standard network mobility management. This implementation enables multicast to network mobility management with high network performance support. The analyses focus on the handover performance. The analyses of this simulator are hereby presented.

Keywords: Multicast, NS3, Mobility, Handover.

Paper ID 257	**Border Gateway Protocol To Provide Failover In Multihoming Environment**

Muhammed Zaharadeen Ahmed[1], Aisha Hassan Abdallah Hashim[1], Othman Omran Khalifa[1]. Momoh. J. E. Salami[2]
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Abstract

Nowadays Internet access across the globe is very crucial because of the huge size of useful data that the Internet stores. This stimulates most ISPs to choose a reliable routing protocol in order to preserve the security and guarantee of customer's data on the Internet. By multi-homing a network using BGP, a more control of balancing the traffic load and achieving redundancy becomes possible. This will enhance network performance, quality throughput and better routing policies on the Internet. Singlehomed Internet communication link between networks' Internet Service Provider does not inspire with confidence because of excessive traffic and device or human error that may arise. We use BGP because of its ability to choose the best path to a destination particularly in a Multihoming environment. Our simulation results are achieved using GNS 3 emulator and Wireshark network analyser. We carried out two simulations to run BGP Multihoming to the same service provider and to different service provider. In both scenarios we run the simulations in failover mode and in load-shearing mode. Simulation results shows that BGP Multihoming to different service providers provides failover to ISP networks. For a home and enterprise network to have a certain level of failover or redundancy, there is a need to employ the use of BGP Multihoming to different service provider.

Keywords: ISP, BGP, GNS3, Emulator Wireshark Multihoming, Failover, Load-shearing

Paper Id 258	**Development of Gateway Discovery and Selection Scheme for MANEMO (MGDSS)** Zainab S. Mahmod, AishaHassan A. Hashim Faculty of Engineering, International Islamic University Malaysia, 53100 KL, Malaysia Zainab48@hotmail.com, aisha@iium.edu.my *Abstract* To achieve the requirement of the improvement applications and guarantee the Internet access for mobile hosts and networks, the Internet Engineering Task Force (IETF) proposed Mobile Ad Hoc NEMO (MANEMO) architecture. However, the integration of NEMO and MANET introduces many challenges such as the redundant tunnel problem and Exit Router selection when multiple Exit Routers to the Internet exist. This paper aims to propose a scheme that discovers and selects the gateway which improves the performance and the robustness of the network regardless of routing protocol used. This is done by extending the Tree Discovery Protocol (TDP) used by NEMO BSP and the Neighborhood Discovery protocol used by MANET and the gateway selection is based on multiple criteria: the hop count, the nested level, the stable time and the number of nodes registered at the intermediate nodes. The OPNET Modeler 14.5 is used to evaluate the proposed scheme and compare its performance with the standard NEMO BSP and the Multi-homed MANEMO (M-MANEMO) approach. The results show that the average data packets dropped of the proposed scheme is 28.6% less compared to the NEMO BSP and 63% compared to the MMANEMO. And in a larger scale MANEMO with high traffic load and fast mobility, the proposed scheme outperforms the M-MANEMO with reduced end-to-end delay around 21.6%. Whereas NEMO BSP has 68.7% more end-to-end delay in compare. These delays cause that the proposed scheme has 66.6% less voice jitter compared to M-MANEMO. *Keywords: Mobile Ad Hoc NEMO, MANEMO, Network Mobility, MANET*
Paper Id 261	***The Feature Parallelism Model of Visual Recognition*** Marwa Yousif Hassan*, Othman O. Khalifa*, MOMOH JIMOH EYIOMIKA SALAM[#], Aisha Hassan Abdalla* *Department of Electrical and Computer Engineering, IIUM, Kuala Lumpur, Malaysia [#]Department of Mechatronic Engineering, IIUM, Kuala Lumpur, Malaysia aisha@iium.edu.my **Abstract** In this work, the Feature Parallelism Model of visual recognition, which addresses the parallel nature of the human brain compared to the hierarchal (serial) brain model, was studied. First, its accuracy rate and training time were compared to those of DeepFace, a leading industry algorithm for face recognition. Both models were trained using ImageNet object recognition dataset. Accuracy rates were almost the same, around 57% top-1 error rate and 33% top-5 error rate. Training time for feature parallelism model has dropped to 21% less than that of DeepFace. Second, we have investigated feature parallelism model under depth, i.e., when adding more layers along the horizontal axis. We have tested the model with 5, 6, 7, and 8 layers respectively; we found that the best results both in terms of accuracy rates and training time were obtained with the six- layered model. Although the training time enhancement was only a few milliseconds when going from 5 to 6 layers, it has worsened significantly when going from 6 to 7 layers. In fact the training time has tripled, i.e., training time of the 7- layers model is three times of that of the 6- layers model. It continues to worsen by a fewer rate with the 8- layers model. Similarly, accuracy rate was better with the 6- layers model by about 1% of that of the 5- layers model; however, it has worsened by more than 5% whenever we add more layers above six. We consider those results are biologically plausible, as they conform to the biological fact that the cerebral cortex is organized in 6- layers. We've concluded that the organization of parallel processing units into 6- layers, either in our brains or in artificial vision systems, may enhance both processing time and accuracy rates. **Keywords**— *Feature Parallelism Model; D*eep learning; Neuroscience; Computer vision

Paper ID 262	## Integrating Entrepreneurship into Engineering Education Marwa Yousif Hassan[1], Abdi O. Shuriye[1], Aisha-Hassan Abdallah[1], Momoh J. E. Salam[2], Othman O. Khalifa[1] [1]Department of Electrical and Computer Engineering [2]Department of Mechatronic Engineering Kulliyyah of Engineering, International Islamic University Malaysia. marwayuosif@gmail.com, aisha@iium.edu.my ***Abstract*** Negative economic growth, corrupt governments, and global financial crisis; have attributed to chronic poverty in diverse nations in the world. In fact, this has triggered the Arab uprising, labor strikes and daily common unrest in the west. There must be a solution and not empty promises of creating new jobs and getting people employed that governments have made for ages. To promote entrepreneurship for young generation and integrating these skills into the educational system is one solution. Entrepreneurship is the act of being an entrepreneur, being innovator and introducing new ideas in business. The effort to transform innovation into economic goods and forming new organizations is what we are discussing. The traditional way of engineering education which focuses on technical activities or issues associated with product, service and design has to be reevaluated to include entrepreneurship and business activities. This paper discusses the issue of entrepreneurial engineering education and its importance in economic development in higher learning institutions. Integrating entrepreneurship into engineering education is an imperative domain of technological development for the Muslims' world. The paper proposes general framework for integrating entrepreneurship into engineering educational system. **Keywords:** Entrepreneurship, Engineering Education.
Paper ID 263	## Queuing Theory Approach for Evaluating Rate of Transmission in Wireless Network Using Network Coding Muhammed Zaharadeen Ahmed[1], Othman Omran Khalifa[1], Aisha Hassan Abdallah Hashim[1], Momoh. J. E. Salami[2], Muhanad Babikier[2] Department of Electrical and Computer Engineering, Faculty of Engineering, International Islamic University Malaysia (IIUM) zaharadeen22@yahoo.com **Abstract** Due to the rapid of the transmission in Wireless Network technologies, the need of the rate evaluation is an urgent demand of users's interest. In this paper, an approach of using queuing theory in a wireless network is presented. The idea of network coding in wireless scenario address the transmission of packet in communication system. This means that a source is transmitting packets to a particular destination according to the users's needs. The queuing theory approach is used in other to enhance the rate of transmission within the channel of a wireless network using network coding. In this scenario the user access node is set to 11 number of nodes where the network coding is conducted. The results show an improvements in transmission rate using network coding compared to other scenarios where networks coding are not utilized or the conventional routing. *Keywords:* Wireless, Node, Transmission rate, Network coding

Paper ID 264	**Towards an Ethical Online Payment System Through Cryptography**

Marwa Yousif Hassan[1], Abdi O. Shuriye[1], Aisha-Hassan Abdallah[1], Momoh J. E. Salam[2], Othman O. Khalifa[1]

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Abstract

The Internet has brought tremendous and unprecedented opportunities to new and established businesses. In the business model that uses the internet as a main channel, the operational cost is reduced, as well as time- to- market for new products and services. Those businesses have reached people and places they would have never dreamt about reaching them before the internet era. Unfortunately, widely used online payment systems that have enabled such a revolutionary business model, like the credit and debit cards, embrace the corrupt, immoral, conventional financial system that has been generating catastrophic disasters to humanity. From the great depression in the mid-1930s to the World War II, from the dot com bubble at the beginning of this millennium to the recent global financial crisis, and who knows what it will bring to us in the near future if we keep trusting it. This paper investigates the new fledging online payment system termed "Bitcoin" which embraces intentionally or unintentionally the principle of Islamic finance such as saving, compared to the conventional financial system of borrowing, lending and "Riba" (interest).

Keywords: Online Payment, Cryptography.

Paper Id 265	**Parametric Matrices Performance of Reed Muller Codes**

Khamis Hassan Ali, Othman O. Khalifa, Momoh Jimoh Eyiomika Salam and Aisha Hassan Abdalla

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Abstract

The error correction coding approaches were adopted by researchers in communication systems since the discovery of Shannon theory. Reed Muller (RM) codes are one of the important error correction codes due to the fact that they allowed extra flexibility in terms of the codeword and the capability of correcting errors. This paper will present the parametric matrices performance of Reed-Muller Codes. An overview of ReedMuller codec is introduced. The encoding and decoding operations are discussed. An examples were showed to verify and demonstrate the procedures. The resulted parametric performance are shown. An analysis of Reed Muller codes in terms of its code rate, code length and Hamming distance.

Keywords—Error correcting, Reed Muller; code length; hamming distance; code rate.

Paper Id 266	**Performance of Turbo Code in CDMA Under AWAGN Channel** Mohanad Babiker1, Othman Omran Khalifa1, Aisha Hassan Abdullah Hashim1, Momoh J. E. Salami1 Muhammed Zaharadeen Ahmed2 Department of Electrical and Computer Engineering, Faculty of Engineering, International Islamic University Malaysia (IIUM) Hanode_88@hotmail.com *Abstract* Carrier Division Multiple Access considered as an efficient technique in wireless communication due to its High possibility to serve unlimited number of user using same frequency in the same time. In this paper the performance of turbo codec is presented. Its evaluation in CDMA under AWAGN channel is examined. The simulation is estimated to achieve BER < 10-2 frame size. The results show that the Bit Error Rate is inversely proportional to the size of the frame and directly proportional the number of iteration in the decoder. *Keywords:* CDMA, BER, Turbo codec.
Paper ID313	**Experimental Studies on Hybrid Epoxy Matrix Composite** Dr. Shivaprakash Y.M[1], Gowrishankar M.C[2], Gurumurthy B.M[3], Dr. K.V Sreenivasa Prasad[4] [1, 2, 3] Mechanical & Manufacturing Engineering Department, Manipal Institute of Technology, Manipal University, Manipal, Karnataka, India, [4]Industrial Production Engineering Department, Sri Jayachamarajendra College of Engineering,Mysore, Karnataka, India [1]prakash.ym@manipal.edu, [2]gowri.shankarmc@manipal.edu, [3]gurumurthy.bm@manipal.edu, [4]kvsprasad3@yahoo.com Abstract Jute and sisal fibers are the most potential natural fibers to produce composites currently used for industrial structures and as bio-materials. In the present investigation jute and sisal fibrous mat is reinforced in an epoxy matrix by manual layup technique to produce a hybrid composite. The composite is tested for tensile strength and impact strength. The fabricated composite with [00/00] orientation of fibers exhibited higher tensile strength than that of composite with [00/900] orientation of fibers. The energy absorbing capacity of later was high than the former type of composite. The scanning electron microscopy image of the fractured specimens revealed that de-bonding between fiber matrix interface and void nucleation growth are the major factors influencing failure of the material.

Review of Financial Sustainability in Small and Medium Enterprises (SMEs)

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Abstract
Financial sustainability has become a growing trend and focus around the world. The present focus and analysis highlights the problems and challenges in financial sustainability in Small Medium Enterprise (SMEs). Financial sustainability is vital a part of high performing organizations. Consequently, various studies are conducted to spot determinants of financial sustainability in SMEs. The paper identify and reviews existing literatures related to financial sustainability in general, and particularly on SMEs. This review is helpful for the understanding of the concept of financial sustainability itself and also for relevant parties such as SMEs and policy-makers in enhancing firm's financial sustainability and developing relevant framework for overcoming the financial sustainability performance among SMEs.

Effectives Sources of Aggregates and Two Types Cement on Concert Strength

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Abstract
Both coarse aggregates and fine aggregates are the main constituents of concrete because they not only give the body to the concrete, it also have a significant effect on the fresh concrete based on aggregate's shape, size, texture, grading and sources. Also aggregate's types has the severe effect on physic-mechanical properties of concrete as aggregate covered almost 75 to 80 percent of the total volume of concrete. The Different sources accompanied by a difference in the physical properties where this difference has an impact on the properties of the concrete mixture.in this paper it was uses three sources aggregates in the Garran city to studied and experiments by two kind of cement (Libya and Turkish cement) . This paper investigates the effects sources of aggregates on properties of concrete. Tests have shown that the samples wear prepared using different sources of aggregate's show a clear impact on results especially on the Compressive strength and workability.

Paper ID325	**Influence of solvent-borne intumescent fire protective coating using palm oil clinker as novel bio-filler on steel structure**

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Abstract

The solvent-borne intumescent fire protective coating was prepared using palm oil clinker as a novel biofiller in order to improve fire retardancy, mechanical strength and water resistance to the metallic surfaces. The flame-retardant fillers were formulated in acrylic binder and blended with appropriate additives to produce the intumescent coatings. The coating performances were evaluated by means of fire retardancy, mechanical properties and water resistance using Bunsen burner, thermogravimetric analysis, field emission scanning electron microscopy, static immersion and Instron micro tester equipment, respectively. It was found that the incorporation of POC filler has significantly enhanced the fire protection and thermal stability of the coating. The addition of $Al(OH)_3$ give a better water resistance while addition of $Mg(OH)_2$ enhanced bonding strength of the coating. Moreover, coating with combination of all fillers showed greatest fire protection performance with good thermal stability, water resistance and mechanical properties.

Paper ID346	**Causes of Organizational Cynicism and its Consequence on Teaching Staff in Malaysia**

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Abstract:

Cynicism reveal itself as a new pattern in employer and employee relations. Now academicians are realising the effect that cynicism can have on organisations. This phenomena has widespread in various kind of organisations. This study takes a systematic view in which organisational cynicism considered as a negative attitude, particularly towards the educational sector. The current study aimed to endeavours to examine the mediating role of organisational cynicism on the relationship between workplace incivility and psychological contract violation, with the outcome of organisational citizenship behaviour among teaching staff of the public secondary schools of Malaysia. The current study emphasises the value of working environment and personal characteristics of employees in determining organisational cynicism and will suggest the causes and consequences of cynicism.

Paper ID350	## The Effect of Injection Pressure and Shearing on The Droplet Size Distributions of WaterDiesel Emulsion Using a Common Rail System Hadi A. Ismael, Morgan R. Heikal, A. Alrashid A. Aziz Universiti teknology Petronas xmhadosx@yahoo.com, morgan@petronas.com.my, rashid@pertonas.com.my **Abstract** Emulsion droplet size plays a key role in the micro explosion occurrence as well as the stability of emulsion. In a high-pressure common rail system, the water diesel emulsion is subjected to intense pressure, temperature and shear flow fields in the common rail and injector nozzle respectively which lead to effect on the droplet size distributions as well as the number of droplets. Water in diesel emulsion droplets with 5%, 10% and 15% water by volume at 1, 500, 1000, and 1500 bar was visualized under the microscope before and after the common rail system. The droplets number, diameter and d32 were measured using a developed Mat Lab image processing code. The results indicated that increasing the common rail pressure was significantly effects the droplet size distributions, with a great decrease of droplet sizes and increase the droplets number. The injector shearing of the droplets was significant than the common rail pressure as an increase of the droplets number of 15% water by volume by 55% compared to 28% at 1000 bar in the common rail and for 5%W, the number of droplets increased by 63% compared to 59% in the common rail.
Paper ID369	## Uncertainty Assessment for Updating Platform Decommissioning Alternatives Cost Using Net Present Value Approach Tareq Moqbel Qaid Alghuribi[1], Mohd Shahir Liew[2], Noor Amila Zawawi[3], and Mohammed Abdalla Ayoub[4] [1,4]Department of Petroleum Engineering, Universiti Teknologi PETRONAS, Seri Iskandar, Perak, Malaysia [2]Faculty of Petroleum Engineering and Geoscience,Universiti Teknologi PETRONAS ,Seri Iskandar, Perak, Malaysia [3]Department of Civil Engineering, Universiti Teknologi PETRONAS, Seri Iskandar, Perak, Malaysia [1]utp.tareq@gmail.com, [2]Shahir_liew@utp.edu.my, [3]amilawa@utp.edu.my, [4]abdalla.ayoub@utp.edu.my **Abstract** Most of oil and gas platforms in Asian Pacific Region and Malaysia in particular are approaching the end of their economic and design lives. The decommissioning of these facilities presents a major liability as well as a burden to oil and gas operators due to the tremendous environmental risk and cost associated with these activities. It has also become a controversial issue between operators and governments to initiate a sustainable framework of disposing the obsolete offshore installations. Particularly, in Malaysia there are 3 offshore platforms which have been decommissioned, but none of the project cost has been publicly released. Oil and gas operators have become aware of the cost pertaining decommissioning projects; however the indubitable challenge facing the industry is developing accurate cost estimation which is ambiguous so far. Therefore, this paper is purposely attempting to develop a benchmark model using Net Present Value approach to estimate the decommissioning cost for complete, partial removal, conversation to reef, and re-using platform for wind turbine power generation. Net Present Value approach is carried out based on a case study for an offshore platform that has been previously decommissioned. After all, the calculated NPVs were assessed using Monte Carlo Simulation and the results for complete, partial removal model, conversion to reef model and re-using platform model were USD $92,230,049 USD $29,946,322 USD 37,351,196, and USD $21,555,332 respectively, with insignificant ratio of uncertainty varies between 0.023% and 0.10%.

Categorization of Lean Research and Development Tools and Techniques: A Process-Based Approach

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Abstract

Research and development (R&D) activities have been greatly spread throughout industries due to an increase in industrial competition as the result of trade liberalization and globalization. As such, to stay competitive, Lean R&D tools and techniques (LRDTT) have been introduced to ensure any activity in R&D can overcome the unnecessary cost, waste or procedures, thus improving efficiency. A mass study done by prior researchers' shows that most of the categorization focuses only on the manufacturing environment instead of R&D environment. Additionally, there is limited evidence to show that all LRDTT involved in R&D activity were categorized in a correct group function. Thus, this paper proposes a framework for categorizing the LRDTT that is applicable to R&D activity. The proposed framework is developed based on the activity of the R&D. As such, the proposed framework treats R&D activities individually.

Crisis Management Model Using Fuzzy Cognitive Map

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Abstract

Managers who enable their organizations to recover from a crisis exhibit a complex set of competencies in each of the five phases of a crisis—signal detection, preparation and prevention, damage control and containment, business recovery, and reflection and learning. Given the importance of crisis management in organizations, this study provided an integrated crisis management model. To provide the model, the crisis management literature was reviewed in detail and crisis criteria were extracted in three pre-crisis, crisis, and post-crisis stages. The relations between criteria were determined by experienced managers using DEMATEL method. The final relation of criteria which was calculated through DEMATEL method was entered into fuzzy cognitive map as an input and the final crisis management model was drawn. In addition to integrated crisis management model, the ranking of crisis criteria was also one of the results of this study that could empower managers to respond threats.

Paper ID372	**Evaluation of HealthCare Service Quality in an Iranian Hospital by using Fuzzy Logic**

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Abstract

In today's competitive environment, service quality is a requirement for organizational survival and development. Good service quality can lead to customer satisfaction and loyalty which any organization needs to be successful. Measuring service quality is complicated and developing suitable instruments for this purpose is essential for active healthcare planners. Thus, the present study is aimed to introduce a framework to determine the service quality gap between expectations and perceptions of customers in healthcare, using Fuzzy logic The Wilcoxon Mann-Whitney fuzzy test was utilized to measure the main outcome of the study which was the service quality gap between expectations and perceptions of customers in healthcare. This gap was measured with the SERVQUAL instrument. Considering the above cases, it is necessary to provide a simple model based on fuzzy logic for dealing with uncertainties. It is important to note that studies conducted in foreign and domestic articles haven't focused on assessing the quality of medical care services with a fuzzy approach. In this regard, according to the research objectives, the hypotheses of the study were tested .In this study, fuzzy linguistic analysis is introduced into the gap theory and SERVQUAL assessments that makes possible more internal consistency and shown Wilcoxon test hypotheses that only in the tangible dimension, the hospital was able to meet patients 'expectations and their officials should put much more effort to improve service quality in other dimensions such as empathy, responsiveness, security and safety .The proposed framework enables hospital managers to know how patients evaluate healthcare quality provided regarding every dimension. Using this framework, the hospitals would discover the critical service quality features and make a value to improve or enhance them.

ID402 Paper	**Detection of the Source of the Short-circuit Incipient Faults Produced by Single Phase PWM Inverter using Artificial Intelligence Neural Network**

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Abstract

Solar photovoltaic (PV) system consists of three main parts which are PV array, PV inverter and utility grid. From the three, PV inverter is considered the weakest link in the solar PV system. Insulated Gate Bipolar Transistor (IGBT) is the most critical component in an inverter and is often blamed for the failure of inverters. If the incipient faults of the IGBT can be detected, the breakdown possibility of the solar PV system can be improved. However, before the incipient faults can be detected, it needs to be first generated before further analysis and improvements can be made. This paper proposes a process on how to generate the incipient faults which are caused by the short-circuit fault of a single phase PWM inverter. The single phase PWM inverter consists of four IGBTs and there is a total of six parameters that need to be observed for each IGBT. The parameter that could cause short-circuit fault to the IGBTs is identified by modifying the parameters of IGBT one at a time. The response at the inverter output is observed and recorded after each modification to the parameter value is done. From the results, it shows that parameter Threshold voltage (Vge(th)) is identified to be able to generate the short-circuit incipient faults. For the application of detection the incipient faults using neural network, a total of 100 short-circuit incipient faults and one set of normal condition waveform are collected at the output of the single phase PWM inverter. These waveforms are then used to train the feed-forward backpropagation neural network. One hidden layer feed-forward backpropagation neural network of 7 neurons was trained and MSE of 3.40×10^{-4} was obtained. It was shown that the trained feed-forward backpropagation neural network was able to detect which IGBT component of the single phase PWM inverter produced the short-circuit incipient faults.

ID403 Paper	**Improvement in Cable Defects Assessment using Time Domain Reflectometry Technique** Tze Mei Kuan*, Azrul Mohd. Ariffin, Suhaila Sulaiman, Maria Madelina Bemmynser Sedau Department of Electrical Power Engineering, College of Engineering, Universiti Tenaga Nasional, Jalan IKRAM-UNITEN, 43000 Kajang, Malaysia *tzemei@uniten.edu.my **Abstract** Time domain reflectometry (TDR) is an electrical measurement technique for localization process which applies the concept of radar. TDR is becoming a common technique these days where its application is no longer limited to engineering field but also serves medical and other fields where localization process takes place. Though this technique has been widely practiced in the electrical engineering field especially for fault localization in cable, however, the output only gives an approximation area of the fault location and the type of fault can never be identified. Hence, this paper explains the research conducted in the effort to improve this TDR technique to locate and identify the fault in a cable more accurately. This study examines the potential of TDR technique in locating fault accurately along a cable due to cable insulation degradation and degradation at cable joint. The results shown in this investigation have proven that TDR technique is able to indicate the degradation in cable insulation and also degradation due to cable joint and at the same time pinpointing the location of the degradation.
Paper ID404	**Implementation of Modified Circular Split Ring as an Alternative Metasurface to Improve Directivity of a Small Transceiver** A.A.M Ezanuddina, A.H Ismailb Fakulti Teknologi Kejuruteraan, Universiti Malaysia Perlis (UniMAP), Aras 1, Blok S2, Kampus UniCITI Alam, 02100 Sungai Chuchuh, Padang Besar, Perlis, Malaysia. amezanuddin85@gmail.com, babdulhafiizh@unimap.edu.my **Abstract** This paper discusses on utilizing circular split ring (CSR) unit cell arranged in a periodic manner and its corresponding electromagnetic bandgap (EBG) character as an alternative approach to redirect surface wave. CSR unit cell was optimally designed using Eigenmode Solver (EmS) and Advanced Krylov Subspace (AKS) algorithm to produce an understandable full wave dispersion diagram. This CSR arrangement produces a stable and good bandgap existing from 5.8 GHz to 5.9516 GHz. Further investigation was done to see if the surface wave from a small transceiver with the incorporation of single layer CSR unit cells acting as a mirror, can be altered. This design was found able to provide an appropriate reflection phase to act as a mirror and is able to enhance the resonator gain, efficiency and redirect surface wave. A linear phase response from 5.8 GHz to 5.9929 GHz that is sufficient for 50 Ω wireless communication purposes can be observed. An improvement of 0.391 to 0.741 dBi IEEE gain over the desired frequency range is also demonstrated. Non IEEE dBi reading will be slightly lower. The transceiver has an initial return loss of -10 dB and radiation efficiency of 0.246. Such efficiency value is incremented to 0.406 once the mirror is inserted.

Paper ID420	## Object Oriented System as Applied to Jack-up Analysis [1]Phuor Ty, [2]Indra S.H. Harahap, [3]Ng Cheng Yee [1,2,3]Universiti Teknologi PETRONAS, Bandar Seri Iskandar, Tronoh 31750, Perak, Malaysia [1]Ty168.itc@gmail.com , [2]indrasati@petronas.com.my , [3]chengyee.ng@petronas.com.my **Abstract** Jack-up is a type of movable offshore structure that comprises of foundation, leg and hull. It requires finite element analyses to generae a reliable structural responses under different geometrical configurations and loading typess, especially in the period of the conceptual phase. During this phase, the goal is to seek a vigorous and conservative basic structural configuration. This paper presents the application of an objectoriented approach in developing finite element software for Jack-up analysis under the Matlab environment. The objective is to update the cycle of data preparation and analysis. With a simple command, any changes in the jack-up element, it will be easily achieved the modification in the system such as material properties of the elements, basic geometrical dimensions, and loading types. This paper also provides a further illustration of the usefulness and potential of the object oriented perspective. A detail discussion of the structural analyzer sub system with regard to structural optimization and structural design has been additionally specified. Jack-up structures are created and presented in examples.
Paper ID421	## A typical design of soil nailing system for stabilizing a soil slope: case study [1]Shamsan Alsubal, [2]Indra S. H. Harahap, [3]Nuraddeen Muhammad Babangida [1,2,3]Universiti Teknologi Petronas, 32610, Seri Iskandar, Perak, Malaysia shamsan2040@gmail.com , indrasati@petronas.com.my, nuraddeenb@gmail.com **Abstract** Slope failures is a common issue in construction industry, such that engineers have to avoid its risk on human lives and properties by an appropriate technical design of stabilizing methods. Soil nail is one of such stabilization methods. In this paper, soil-nailing system was studied in terms of inclination, spacing and length to determine the most appropriate values for effective stabilization of soil slope. To find the optimum soil nail system, different soil nail inclination, length and spacing were applied to a hypothetical homogenous soil slope (with inclination of 30o, 40o, 45o, 60o, 70o and 90o) and the factor of safety (FOS) was evaluated in each case. To validate the results, the optimum soil nail angle corresponding to a slope of 50o was applied to a case study slope, and the FOS of the case study slope was evaluated as well. The case study slope is located at Cadangan Menjalankan Kerja-Kerja Forensik Di Persiaran Endah, Seputeh Wilayah Persekutuan Kuala Lumpur. Results showed that the soil nails inclination, spacing and length have significant effect on the stability of the soil slope. For soil slope with steepness of 30o, 45o, 60o, 70o, and 90o; the best FOS was found with soil nail inclination (to the horizontal) of 50o, 40o, 20o, 15o, and 10o respectively. The effect of soil nails inclination on the stability of the soil-nailed walls is slight when the degree of inclination of the soil nails varies within 5o–20o to the horizontal. The stability of the slope decreases with the increase of spacing between soil nails. Soil nail length has significant effect on the stability of soil slope with deep-seated slip surface and less effect with shallow slip surface. The bond length behind the slip surface should be enough to allow the nail to use its allowable load.

Paper ID438	**Efficiency of Trigonometric and Eigenfunction methods for Simulating Ocean Wave Profile** Ahmad Idris, Indra Sati Hammonangan Harahap and Montasir Osman Ali Department of Civil and Environmental Engineering, Universiti Teknologi Petronas, Bandar Universiti, Seri Iskandar, 32610, Malaysia E-mail: aidris.civ@buk.edu.ng **Abstract** The series representation of ocean wave surface elevation profile using an existing spectral energy density can be achieved by linear superposition of terms in an expansion. This study demonstrates that the use of Karhunen-Loeve (K-L) expansion in which the eigenfunctions of Prolate Spheroidal Wave Functions (PSWFs) are used can be correlated with Fourier and constrained new wave approach in terms of computer cost required (3.225×10^3s, 3.0615×10^3s and 1.3221×10^4s respectively) in the wave simulation (maximum difference of 0.007% and minimum of 0.077%). It have also been demonstrated that the use of K-L with PSWFs can significantly reduce the number of the terms required to represent the wave which can greatly reduce the computational effort required in the statistical analysis of response from large offshore structures.
Paper ID439	**Self-Curing Concrete Using Baby Diapers Polymer** Daud Mohamad[1], Salmia Beddu[1], Siti Nabihah Sadon[1], Nur Liyana Mohd Kamal[1], Zarina Itam[1], Khodrulnadiah Mohamad[1] and Wani Mohd Sapuan[2] [1]Department of Civil Engineering, College of Eng., University Tenaga Nasional [2]Civil Engineering Department, Infrastructure University Kuala Lumpur [1]daud@uniten.edu.my, 1salmia@uniten.edu.my, [1]nabihahsadon@gmail.com , [1]Yana_Kamal@uniten.edu.my, [1]iZarina@uniten.edu.my, [1]khodnadiah@gmail.com, [2]wani@iukl.edu.my **Abstract** Quality of the construction project is very crucial issue nowadays. Sometimes works are carried out in place where there is acute shortage of water and the application of water curing is not possible for reasons of economy. There are several papers studied on internal curing agent and effect to the concrete such as from Polyethylene Glycol (PEG400), ceramic and Super Absorbent Polymer that make them beneficial for engineering and construction applications. Year by year, increasing of waste from disposable diapers will give impact to dumping area. Internal curing agent that used in this research is new diapers contain of super absorbent polymer, which becomes a gel-like substance when wet and absorb the water. Diapers are primarily worn by infants, and by children who are not yet potty trained or who experience bedwetting. In this research, it will be analyzed by investigating the workability and compressive strength impact to the concrete. Design Mix with size of cube 100 x 100 x 100mm has been testing day 3, 7, 28 and 90 days with the ratio from 0% as a control and 1%, 2%, 3%, 5% and 10%. From the result that had obtained, 1% of diapers polymers can conclude that the internal curing process can help to improve the hydration process. When the hydration process occurs, the polymer can transfer the water to all part of the concrete and to the hydration point it results the early age cracking can be preventing and promotes maximization of cement hydration, potentially contributing toincrease the strength and the fluid transport coefficients can be reduced.

Paper ID447	**Signal Processing Techniques and Computer-Aided Detection Systems for Breast Cancer Detection – A Review Paper** Susama Bagchi, Audrey Huong Faculty of Electrical and Electronic, Universiti Tun Hussein Onn Malaysia bagchi.susama@gmail.com, audrey@uthm.edu.my **Abstract** Worldwide report revealed that breast cancer is the second most common cancer in women. Before an individual is referred for clinical detection through biopsy, mammogram is screened by using different computer-aided detection (CAD) systems and breast cancer is diagnosed. The CAD system incorporates image processing, different signal processing techniques, pattern recognition, artificial intelligence technologies and different algorithms of computer science. The recent researches proved that upto 98.59 % classification accuracy can be achieved and diagnosis is possible at an early stage of breast cancer by using different CAD systems which may facilitate the recommendation of refined criteria for biopsy. This paper discusses the commonly used signal processing techniques and other CAD systems for the diagnosis of breast cancer through digital mammogram analysis and provides a comparative overview on few past studies about how these techniques were exploited to obtain maximum classification rate.
Paper ID456	**Radio Frequency Identification (RFID) Tag Antenna Design at Ultra High Frequency (UHF) Band** Wee Fwen Hoon[1], Yew Been Seok[2], Mohamed Fareq Abdul Malek[3], Lee Yeng Seng[4], Siti Zuraidah Ibrahim[1] [1]School of Computer and Communication Engineering, Universiti Malaysia Perlis, Malaysia [2]Faculty of Innovative Design and Technology, Universiti Sultan Zainal Abidin, Malaysia [3]Faculty of Engineering and Information Sciences, University of Wollongong, Dubai [4]Department of Electronic Engineering Technology, Faculty Engineering Technology, Universiti Malaysia Perlis, M alaysia {fhwee,yslee,sitizuraidah}@unimap.edu.my, bseokyew@unisza.edu.my, MohamedFareqMalek@uowdubai.ac.ae, **Abstract** This project is to design a Radio Frequency Identification (RFID) high sensitivity tag antenna which operates at UHF frequency band in Malaysia between 919 MHz to 923 MHz. RFID is a type of wireless and radio wave technology that allows for a small RFID chip to be embedded in certain physical object and uniquely identified by an RFID reader. The major contemplation is that the tag antennas need to have longer read ranges however they should keep small sizes. While reducing the size of these antennas cause gain decrease will cause reduction in the read range. Another challenge in designing passive RFID tags antennas is to have the maximum matching to achieve maximum efficiency and minimal effects of the electromagnetic environment. This project was providing two methods to overcome those problems. Firstly, construct meander line structure to reduce the antenna size and design proposed tag antenna with T-match circuit to achieve conjugate matching with the application-specific integrated circuit so that the reading range of the RFID tag is greatly enhanced. On the other hand, the result show the tag directivity and gain was meets the RFID tag design requirements. This project is useful to be implemented in the RFID industry based on today's technology.

Exploring Cloud Computing Technological Test Debt

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Abstract

Technical debt (TD) arises in web-based cloud computing ecosystems when the stakeholders either intentionally or in advertently formulate and execute their technical choices and decisions in return for the instantaneous gains or profit in the Cloud service project. Among the various dimensions of the Tech debt, important dimension is quality control and tech test debt or test debt. This work gives a general idea of test debt, in the cloud ecosystem, with its causes and issues that are responsible for the test debt. Also, this paper presents some planned approaches for repaying the test debt in cloud business. This work also offers methods to find the "test smells", which cause decay of the computing system and steps to overcome the test debt. In addition, this work presents various case studies to show how re-factoring reduces the test debt in engineering systems. This is done at various stages such as; service level agreements, designs, architecture, code and test script for repaying the accrued technical debt. Test debt is a growing topic and is in its infant stage. This work will be of broader importance for IT industries and academic research in the area of cloud computing service security.

Malaria Parasite Detection Using Histogram Color Space Method In Giemsa-Stained Blood Cell Images

Edy Victor Haryanto[1], M. Y. Mashor[2], R. A. A. Raof[3], H. Jaafar[4]
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Abstract

Malaria is one of the leading causes of death, especially in high-risk groups die infants, toddlers, and pregnant women. In the world of almost 1 million people die because of it every year. Malaria is transmitted by the bite of a female Anopheles mosquito vectors that have been infected by Plasmodium. Identification of Plasmodium in the blood is done by visual observation blood cells using a microscope. To aid this process, some research are carried out to develop identification plasmodium using methods based computer aided diagnosis (CAD) and digital image processing. The infected cells are extracted typically using image grayscale. In this study, image on the pigment color space and color space are compared so that the intensity will be obtained an optimum color channels in the process of the appearance of the parasite plasmodium features. This study used a sample of Giemsa-stained blood cell images which are infected with the malaria parasite. The results of this study stated after the histogram on the image that the results are graphed evenly and no dominant, and the image looks more clear.

Paper ID464

Throughput Enhancement via Wireless Multicast with User Caching in Heavy Mobile Traffic Network

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Abstract

Recently, the fact that just a few popular files account for most amount of traffic is considered as one of the most promising features for mitigating the problems caused by massive amount of mobile traffic. Based on this feature, this paper proposes a multicast system with the user caching in a heavy traffic model. Through the efficient combination of the caching and the multicast, the proposed system can significantly reduce the communication resources for the duplicated requests of the same file from different users, so that the number of the users who get the required file can greatly exceed the user capacity of AP. The simulation result illustrates the effect of system parameters on the network throughput performance in the heavy traffic model where there are a large number of users.

A Review on Coagulating Mechanism of Potential Starch Based Coagulants to Treat Wastewater

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Abstract

Coagulation is necessary part of drinking water treatment as well as wastewater treatment. This review provides an overview of the processes and looks at the latest methods. Human activities cause water pollutant that aims to shape wastewater and discharged into local sewers or into surroundings. Bacteria, toxic elements, hazardous and priority pollutants are widely present in wastewater. These pollutants are aim to treat according to acceptable environmental principles before they are discharged back to environment. The biological oxygen demand (BOD), chemical oxygen demand (COD), total organic matter (TOC), turbidity and pH are lumped parameters usually employed to be measured in wastewater. Disinfection of water using coagulating agents has been practiced from early ages. In these ages coagulation is most active treatment method. Natural coagulants are used nowadays to get optimum results. Its chemical structure presents multiple poly hydroxyphenyl groups, which have a high affinity for the proteins, metal ions and other macromolecules such as polysaccharides. Natural coagulants having high affinity of proteins such as polysaccharides. Natural coagulants carried antimicrobial properties to eliminate pathogenic microorganisms content that are potential for causing health diseases Active colloidal aggregation and consistent floc ability due its higher efficiency than with traditional regents of natural coagulants aim to reduce its cost. Coagulants are generally positively charged that causes compression to neutralize the electrostatics potentials of the particles. In results the particles are destabilized and exchange charges to stick adequately in organized manner. Uniform dispersion can be obtained from rapid mixing (a few seconds) to increase the opportunity for particle to particle contact. Successive and protracted mixing adhesives coagulated particles into larger floes. These floes then are able to unite with suspended polluting matter. Due to the natural origin of these coagulants, its handling is safer for people. Moreover, they improve subsequent biological treatment.

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