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Presents ~

Proceeding of the 4th International Conference on Recent Trends in Computer Science and Electronics 2019

Jason Levy, G. S. Tomar, Bishwajeet Pandey

Chair Message ....

As a chair I have the honor to welcome you with great respect and enthusiasm to the 4th International Conference on Recent Trends in Computer Science and Electronics 2019 (RTCSE'19) to be held at University of Hawaii (Manoa campus) in Honolulu, Hawaii, USA on 03-06 January 2019. It is the 8th conference 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'19 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 400 papers. In order to maintain publication ethics and practices of various Journals, we accepted only 96 papers (24% acceptance rate). All accepted papers will be submitted to Scopus/Thosmon Reuters/Springer/Crossref Index Journals (see list on conference website) and hopefully these papers will be available online by middle of 2019.

As a chair and on behalf of the organizing committee I sincerely hope that RTCSE'19 will offer a great venue at Hawaii 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'19 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 Hawaii, USA.

Best wishes.

PROF. JASON LEVY, Ph.D.
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Professor of Disaster Preparedness
and Emergency Management
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RTCSE'19 Schedule

03 January 2019 (Satellite Session)

Satellite Session **13:30-16:30 (Indian Time)** **09:00-12:00 (European Time)** **11:00-14:00 (Malaysian Time)**	**We are going to organize a satellite session in India** **@** **The Oxford College of Engineering, Bangalore, India.** **Chair: Prof Preeta Sharan**, The Oxford College of Engineering, Bangalore, India **Paper ID- 60, 62, 108, 150, 158, 236, 238**
Video Presentation	Available 24x7 on YouTube Channel of Gyancity Research Lab: https://www.youtube.com/channel/UCHtdIuXB1evhmQb3zQ82uCA **Paper Id : 54, 86, 98, 99, 100, 110, 128, 129, 130, 131, 143, 146, 147, 149, 151, 161, 166, 177, 182, 183, 185, 186, 187, 190, 197, 198, 201, 202, 212, 213, 221, 222, 223, 224, 232, 233, 234, 237, 239**

04 January 2019

08:30-09:00	**Reporting at Registration Desk & Breakfast**

04 January 2019

09:00-09:15	**Welcome Speech** by **Chair Prof Jason Levy,** University Of Hawaii, USA
09:15-09:30	**Keynote talk** By **Prof Pardeep Kumar,** QUEST Nawabshah, Pakistan
09:30-10:30	**Session 1:** **Chair: Prof. Ross Prizzia, University of Hawaii, USA** **Location:** Room 105A, Information Technology Center (ITC) building, 2520 Correa Road, Honolulu, HI. **Presentations: 51, 53, 55, 59, 63**
10:30-10:45	**Coffee Break**
10:45-11:15	**Second Keynote** by **Prof D M Akbar Hussain**, Aalborg University, Esbjerg, Denmark
11:15-12:30	**Session 2:** Chair: **Prof Bhawani Shankar Chowdhry,** DEAN, MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY (MUET), JAMSHORO, PAKISTAN **Location:** Room 105A, Information Technology Center (ITC) building, 2520 Correa Road, Honolulu, HI **Presentations**: **77, 87, 111, 114, 115**

12:30-13:00	**LUNCH**
13:00-13:30	**Welcome to Computer Visualization Lab**
13:30-14:00	**Third Keynote** by **Prof Jason Levy,** University of Hawaii, USA
14:00-15:45	**Session 3:** Chair: **Prof Dr Syed Hyder Abbas Musavi**, Indus University, Pakistan **Location:** Room 105A, Information Technology Center (ITC) building, 2520 Correa Road, Honolulu, HI **Presentations**: 112, 113, 141, 184, 188, 191, 205, 211
15:45-16:30	**Demonstration of Ongoing Project in Hawaii By PhD Students of University of Hawaii, USA**
16:30-17:00	**Closing Speech by Prof Jason Levy, University of Hawaii, USA**

Chair

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**Abhishek Kumar,
Gyancity Research Lab, New Delhi, India**

Abstract of Papers Accepted in RTCSE'19 USA Conference

Paper Id	Paper Title
51	**Tutorial for Deaf – Teaching Hindi Alphabet using Synthetic Animations**

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Abstract- Developing an automatic tool for providing education to the people has become essential in today's world of computerization. For differently abled people especially in India where the resources are scarce for their education, it becomes essential to develop technologies which give the opportunity to each and every individual to get the education online and free of cost. Research work has been done to provide the online tool for learning Hindi language alphabet in their own Sign Language (language used by deaf people using hands, face expressions) which in India is Indian sign language. HamNoSys notation (written form of three dimensional sign) of atleast two words corresponding to each alphabet of Hindi Language is created. This HamNoSys notation when used in JASigning animation tool produces the synthetic animation rather than human video. The synthetic animations are better as compared to human videos in terms of memory consumption, standardization, and flexibility. Synthetic animations can be modified as per the requirement whereas the human videos cannot be modified. The only drawback that seem is, these synthetic animations may lack the natural non-manual com¬ponent of sign. The research work has been incorporated to produce the web portal that displays the Hindi alphabet along with the picture related to that alphabet and the synthetic animation with which that word is signed in Indian Sign Language. The research work is the first of its kind for Indian Sign Language.

Keywords- ISL, HamNoSys, SiGML, Hindi Alphabet, Synthetic Animation.

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Comparative Analysis of Modular Multilevel Converter with Cascaded H Bridge Inverter using Five, Seven and Nine levels

Jahangeer Soomro, Farah Shah, Sohail Ahmed Soomro, Faheem Akhtar Chachar and Sadaqat Ali

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Abstract- Inverters are power electronic converter that converts DC input to an AC output waveform. These inverters are used to operate sensitive loads so they require better power quality and lower harmonic content. As all the power electronic converters are considered as switches so suitable PWM technique plays a vital role in powering these inverters. This paper attempts to compare the two very popular topologies of inverters like Cascaded H-Bridge Multilevel inverter and Modular Multilevel converter. Performance of Cascaded H-Bridge Multilevel Inverter is viewed by using modulation techniques like In-phase deposition (IPD), Phase opposite deposition (POD) and Alternate Phase opposite deposition (APOD) while Modular Multilevel Converter is viewed under nearest level Modulation (NLM) technique. These are compared in order to have lesser switching losses and lower total harmonic distortion by using MATLAB/SIMULINK simulations.

Keywords- Modular Multilevel Converters MMC, Cascaded H Bridge inverters, THD, MATLAB/Simulink

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Efficient Energy Utilization in Wireless Sensor Networks: An Algorithm

Muhammad Nasir Khan, Syed Omer Gilani, Mohsin Jamil and Ali Raza

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Abstract- In the era of latest technologies, wireless sensor network (WSN) is becoming more popular in many applications: e-health, e-commerce, banking, farming and many others. However, WSNs have limitations in the sense of processing power, life time and data gathering. Among the above said issues, energy efficiency is the main hindrance of WSN deployment. Different data gathering schemes such as low energy adaptive clustering hierarchy (LEACH) and power efficient gathering in sensor information systems (PEGASIS) have been proposed. However, LEACH and PEGASIS do not provide optimal results for the energy consumption problem and are not feasible to implement. In this research paper, energy efficiency in terms of data gathering in WSN is presented. In this research work, a combined flavor of particle swarm optimization (PSO) with simulated annealing (SA) is given. A novel algorithm is proposed in which best chain formation procedure is adopted. Using the proposed algorithm, a balance energy utilization occurred between nodes, which results in increasing the network performance. Simulation results are obtained and compared with other schemes, which shows better performance as compared to LEACH and PEGASIS.

Keywords- Wireless sensor network (WSN), low energy adaptive clustering hierarchy (LEACH), Base station (BS), sensor nodes (SN)

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Design and Implementation of TCSC for 500kV Power Transmission System

Ali Raza, Haroon Farooq, Manzoor Ellahi, Waqas Ali, Shahid Kaleem and Muhammad Nasir Khan

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Abstract- Power transmission capability of a transmission line (TL) depends upon the impedance of the TL, the magnitude and the phase angle difference of the end voltages. Series capacitor largely employed in the transmission lines to increase the transfer capability but create instability problems. Flexible alternating current transmission systems (FACTs) enhance the power transfer through the existing transmission lines with stability intact. Thyristor controlled series compensation (TCSC) is considered in this paper. Impedance of the transmission line is regulated by changing the firing angle of the thyristor. A 500kV transmission line shunted with TCSC is dynamically implemented in Matlab/Simulink and tested for different sending end voltage and, by changing the impedance of line. Results show the significance of designed control under transient conditions of power system.

Keywords- Flexible alternating current transmission systems (FACTS) devices, transmission lines, thyristor controlled series compensation (TCSC) stability enhancement

Smart Audit using Information Technology

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Abstract- Smart audit using Information technology, is assessment of the management with the help of information technology (IT) infrastructure. The evaluation of obtained evidence determines the integrity and provide fair and true image of the concerned organization. The assessment is made in conjunction with the financial statement audit and internal audit.

Keywords- Information technology, auditing, management, documentation, artificial intelligence.

IaaS Level Private Virtual Cloud Security using "VCPHCF-RTT" Security Agent

**Ritu Maheshwari, Dr Anil Rajput, and
Dr Anil K. Gupta**

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Abstract- Internet and Cloud Services are open to Distributed Denial of Service Attacks while running on a network. Physical & Logical security is required for both virtual servers as well as applications in IaaS cloud infrastructure. Security in Cloud is a challenging issue that obstructs in Cloud services provisioning at various levels for its clients. Private Virtual Cloud Infrastructure security has been be proposed against IP-Spoofed Distributed Denial of Service attacks. Private Virtual Cloud Infrastructure Model will be used. Security Agent VCPHCF-RTT has been proposed for virtualization concept enhancement in cloud infrastructure.

Keywords- Distributed Denial of Service(DDoS)
Cloud, Virtual Machines(VM), Filter, Hop Count Filtering(HCF)
IP Spoofing, Round Trip Time(RTT)

Cloud Economics and Enterprise Strategy: A bird eye's view

**Lubna Luxmi Dhirani, Thomas Newe
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Abstract- Cloud Computing has enabled enterprises to focus on their core business by shifting their IT processes and operations on vendor managed public/hybrid clouds. Since the cloud offers numerous benefits such as: IT operational competence, flexibility, increased global reach, reduced cost, efficiency, customized applications and services making cloud computing the prime alternative in comparison to maintaining in-house operations. Migrating enterprises existing applications and services to a cloud if not properly managed may be susceptible to compatibility and orchestration-based risks. Cloud shifting may also lead to issues related to aligning enterprise strategy with IT and cloud services. This paper focuses on distinct aspects of Cloud Economics, aligning enterprise strategy with IT and Cloud Strategy and suggests the best methods to maintain Quality of Service and avoid Vendor lock-in and Service Level Agreement (SLA) based issues in the cloud ecosystem.

Keywords- Cloud Computing, Cloud Strategy, Service Level Agreements

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TouchMetric: A Machine Learning Based Continuous Authentication Feature Testing Mobile Application

Saeed Samet, Mohd Tazim Ishraque, Mahdi Ghadamyari, Krishnaben Kakadiya, Yash Mistry and Youssef Nakkabi

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Abstract- The rapid and ubiquitous adoption of mobile device use has propagated our dependence on their ability to keep individuals within our society connected. Mobile devices are now a primary method of communication and connecting to the internet for many. As with any technology, with wide-adoption comes many challenges. Due to the nature of mobile communication, data transmission is the fundamental method of connecting users on the network. As with any form of data transmission, data security is a key concern which must be taken into account. Several methods of user authentication and authorization exist for the purpose of privacy preservation and security and are widely used in mobile systems. One such method is the Continuous Proof of Presence (CPoP) authentication. CPoP has the potential to provide an extra layer of security to users in data sensitive industries, such as the security sector, government and corporate administration, and healthcare. In this work we present TouchMetric, a mobile application developed for Android and iOS, used for the purpose of testing a machine learning model for the development of a CPoP feature.

Keywords- Data Privacy, Continuous authentication, Biometric authentication, Identity management, Mobile Security

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Towards the implementation of Internet of Things

Pardeep Kumar, and Saleemullah Jamali

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Abstract- The Internet of Things (IoT) is a fast-expanding innovation that aims making several things / objects communicate with each other in a large heterogeneous environment. Lately, several ideas and schemes have been proposed by researchers in order to move further towards the realization of such a complex and challenging network. This paper discourses the overall requirements, challenges, merits, demerits and comparison of different operating systems, simulators, testbeds and architectures that have been proposed specifically for IoT. Additionally, a novel IoT architecture that intends to deal with standardization, interoperability, integration, security, etc., related issues of IoT has also been proposed in this paper.

Keywords- IoT, architecture, security, intelligence layer, management layer

Degradation of Magnetic Properties of Non-Oriented Silicon Iron Sheets Due to Different Cutting Technologies

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Abstract- The magnetic properties of non-oriented silicon iron alloys are strongly influenced by the cutting technology. Medium quality electrical steel M800-65A samples were cut through mechanical punching, laser, water jet and electroerosion technologies and were characterized with an industrial Single Strip Tester at the peak magnetic polarization Jp of 0.5, 1 and 1.5 T, in the frequency range starting from 10 Hz to 200 Hz. The influence of the cutting technology on the energy losses and magnetic permeability was investigated.

Keywords- non-oriented electrical alloys,
cutting technology, energy losses, relative magnetic permeability

A Robust Sampling Technique to Reduce Classification Time for Human Activity Recognition

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Abstract- Finding the right machine learning technique for human activity recognition is a tedious task. Especially when there are tens or hundreds of algorithms involved in the testing process. With the demand of analyzing continuous stream of data in a forever increasing data volume, it has become difficult to quickly find reliable classifiers for activity recognition that could adapt to changes or concept drifts. Since traditional techniques are computationally too expensive to make quick judgements on classifier performance, there is a need to develop mechanisms that would yield quick results. This study is an endeavor to provide quick, on-the-go classification of a human activity dataset by using a fraction of sample size. To do so, we propose a sampling scheme that uses as little as 5% of the training dataset samples and produces reliable accuracy results while saving almost 96% of time taken by complete dataset analysis. To confirm the results, we have sampled three popular Human Activity Recognition datasets ShoaibPA, ShoaibSA and USC-HAD with the Normal On-The-Go Sampler and found that the results are also consistent among datasets.

Keywords- sampling, active learning, recommender systems, sub-modularit, data subset selection, supervised data, machine learning, activity recognition.

Comparative Analysis of Facial Expression Detection Techniques Based on Neural Network

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Abstract- Face detection is a critical part of vision and a robot needs to identify a human accurately. A human face undergoes several states of facial expression in a day. Many object detection techniques are applied to identify a facial expression from a digital image or a video frame. Each object detection technique has its own benefits. The overall objective of this paper is to explore the benefits and limitation of existing techniques and provide a comparative analysis. Neural network based facial expression detection technique has demonstrated potential benefits over existing facial expression detection techniques.

Keywords- Object Detection, Robotics, Pattern Recognition, Neural Network, Facial Expression

INCREASING THE ACCURACY OF MEASURING THE RESISTANCE OF THE GROUNDING SYSTEM WITH AN ELECTRODELESS METHOD

Maia Tugushi, Boris Karasiev, Gizo Partskhaladze, Madona Loria and Gocha Chavleshvili

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Abstract- In electrical installations of telecommunication networks of buildings, structures and industrial enterprises, the form of the AC voltage signal of the industrial supply network (~ 220 V, 50 Hz) can be differ greatly from the sinusoidal for short periods of time. The causes of distortions are usually associated with a sudden change in the network load, for example, when you turn on a powerful electric motor, furnace, welding machine, etc. To reduce interference, it is necessary to perform a separate (working) ground loop, the resistance of which must be measured and periodically monitored. There are devices that allow an electrodeless method to monitor and evaluate the resistance of the ground loop. But these devices have a greater measurement error than devices that measure the resistance of the earth electrode method. The article deals with existing instruments (C.A 6410, MZC-303E, etc.) which can evaluate the resistance of the earth electrode and the possibility of increasing the accuracy of the measurement with the help of special current clamps is shown.

Keywords- earthing, grounding, resistance, measurement accuracy.

Wireless Electroencephalography Based Blood Pressure Monitoring

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Abstract- The number of cardiac patients and aged individuals are at a rise all around the world. Taking care of such individuals is a major challenge these days. In many cases, these patients require special care and regular monitoring of vital signs like blood pressure (BP). Focusing a prevalent idea of wireless brain computer interface (WBCI), an innovative research work is considered to meet essential routine monitoring of BP for cardiac patients and aged people without any reliance. The research framework involves the use of wireless electroencephalogram (EEG) headset to control wrist BP and arm BP monitors to determine accurate BP readings in the proposed system. An Android application "Smart Home Monitor" is developed that screens the information from the headset. The research framework is experimented on ten individuals to examine precision in BP readings from two different BP monitors. Results specify that both upper arm blood pressure readings i.e. Systolic BP readings (SBP = 119.6 ±5.1 mmHg) and Diastolic BP (DBP = 79.5 ±7.4 mmHg) were found to be better than the wrist BP readings (SBP = 128.2 ±11.7 mmHg and DBP = 8.6 ±10.3 mmHg). This examination assessed that the designed system empowers the framework to be reliable, remote and compact.

Keywords- Blood Pressure, Wireless BCI, Smart Home, Wireless electroencephalogram, Android Application.

An IOT Enabled Air Quality Measurement

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Abstract- Air pollution is increasing on a alarming rate in India and all over the world. This paper addresses the solution to air quality monitoring. My Enviro is an embedded module that can be placed on the rooftop of any site whose ambient air quality needs to be measured. This module houses the array of gas sensors, Arduino YUN microcontroller, an LCD display and wireless connectivity to send and receive data over the cloud. The data could be accessed by the user and even government authorities to monitor air quality in real time and take precautionary steps. This low cost & portable solution has semiconductor sensors interfaced with AVR microcontroller. It needs very low power & to make it work independently we can include solar energy to power it.

Keywords- air quality monitoring, Arduino, gas sensors, IOT Low power

Security between Dehumidify Dryers and a Monitoring Server in Plastic Manufacturing Control

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Abstract- When moisture over an allowable range is included in material during the plastic manufacturing process, a defective product might be produced, hence management of the dehumidifying dryer process is needed. Therefore, to maintain the material's optimal humidity, a dehumidify dryer measures data in real time and transfers the data to a server; based on the measurement results, it suggests a smart factory model for appropriate control. However, even if the data is accurately measured, if its integrity and confidentiality are not maintained during the transfer process, control data sent to a dehumidify dryer can cause unintended malfunctions. Therefore, this study suggests an overall encryption mechanism that can maintain the integrity and confidentiality of data at the same time during the transfer process. We confirmed through an experiment with this mechanism that when data is damaged or altered during a transfer process, a person can check this. We expect that the method suggested in this paper will help the productivity of the plastic manufacturing process to increase and defective product rate to decrease.

Keywords- secure data transfer, smart factory, dehumidify dryer, data integrity, plastic injection molding

Modeling of lighting load in residential buildings

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Abstract- Energy and electricity consumption models are critical for effective decision making to improve the supply and demand system. On-site electricity generation using PV, energy efficiency strategy, and smart grid technologies have shaped the need for detailed electricity demand modeling. Lighting in the residential buildings is a significant part of total electricity consumption. High variability of lighting makes it a complex modeling problem as it's usage depends on many variables. Occupant behavior, building structure, and environmental conditions have made it more challenging to model electrical lighting consumption patterns. This paper presents a strategy to model lighting using occupancy and measurement data of total lighting demand.

Keywords- secure data transfer, smart factory, dehumidify dryer, data integrity, plastic injection molding

Multiplier-less approach in the neural network trigger algorithm for a detection of cosmic rays

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Abstract- Nowadays astrophysics is focused on understand the origin of the ultrahigh-energy cosmic rays (UHECR). Finding sources of UHECR is difficult, due to deflection of charged particles in intergalactic magnetic fields. This problem can be, however, avoided by detecting electrically neutral particles, such as neutrinos, which are created by the UHECR particles in interactions during propagation. Due to the very low cross section of the neutrinos, the detection technique requires a very sophisticated algorithm. A standard trigger, based on 3-fold coincidence is not efficient in detecting this kind of particle.

Our trigger algorithm is based on analysis of signal shapes by an artificial neural network (ANN). This approach can efficiently separate air showers which started at the top of the atmosphere ("old" showers) from air showers initiated very close to detection level, which can be potentially initiated by neutrinos ("young" showers). The main disadvantage of our algorithm is high resource usage. Optimizing the size of ANN and a multiplier-less approach can decrease used resources, especially digital signal processing blocks, which are used in fast multiplications.

Keywords- multiplier-less, artificial neural networks, FPGA, trigger cosmic rays.

Variable Amplification Input Zero Delay Least Mean Squares Adaptive Filter for RFI Suppression in AERA Radio Detectors of Cosmic Rays

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Abstract- Extensive Air Showers (EAS) generate the radio emission mainly in geomagnetic and charge excess processes. The Auger Engineering Radio Array (AERA) focuses on the coherent radio emission, generated in the frequency range of 30 - 80 MHz. However, this range is contaminated by human-made and narrow-band radio frequency interferences (RFI). At present, AERA uses non-adaptive IIR filter tuned to four strongest narrow-band carriers. The efficiency of the RFI suppression is very good, but for only well-known sources. In the near future, the 200 MW solar farms with 250 kV power line is planned to be built in the Southern part of the Pierre Auger Observatory. The non-adaptive filter will not suppress probably much more sophisticated RFI spectrum coming from high-power low-to-high voltage converters. A development of the adaptive very efficient filter seems to be a crucial issue. The Zero Delay Least Square Filter (ZDLMS) developed recently is a very promising solution. It allows extracting real cosmic rays signals totally hidden in the background. However, its efficiency is extremely high for very strong contaminations. For lower RFI levels its efficiency drops down. The paper presents an optimization of the ZDLMS filter introducing a dynamical signal amplification to use in a maximal way the efficiency of the ZDLMS. The additional FPGA segment controls the range of the detected signals and adjusts the 14-bit filter to remain only three MSBs for a safety margin of the potential cosmic rays events. This approach allows practically fully RFI elimination even from not strongly contaminated radio stations. Tests performed on real AERA data fully confirmed the high efficiency of this approach.

Keywords- trigger, FPGA, Pierre Auger Observatory, Auger Engineering, Radio Array

Opportunistic Offloading Scheme in Heterogeneous Vehicular Network

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Abstract- A Heterogeneous Vehicular Network (HetVNET) is a promising network infrastructure that integrate various network technologies ranging from IEEE802.11p Dedicated Short Range Communication to the Third Generation/Fourth Generation cellular networks. In such network environment, wireless fidelity access points (Wi-Fi APs) can be utilized by vehicle users to stabilize the Long-Term Evolution (LTE) 4G networks through offloading. However, it can be observed that utilizing the opportunistic Wi-Fi APs to offload the LTE networks in a HetVNET environment is relatively easier said than done. This condition is due to the short coverage of Wi-Fi APs and weak deployment strategies of APs. Many studies have proposed that offloading schemes depend on the historical Wi-Fi connection patterns observed by an interest vehicle in making an offloading decision. However, depending solely on the historical connection patterns affects the prediction accuracy and offloading ratio of most existing schemes even when AP location information is available. This paper proposed the offloading opportunistic offloading scheme (OOS) based on historical connection patterns and vehicular trajectory computation to predict the next available AP. The proposed scheme is decentralized and focuses on urban scenarios whereby the likelihood of the interest vehicle to encounter Wi-Fi APs is high. The complexity of the proposed OOS scheme is analysis and the result shows that OOS is linear dependent on the amount of the information available for the prediction.

Keywords- Heterogeneous Vehicular Network, Vehicular, Communication, Markov predictor, LTE, Wi-Fi

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Comparative Analysis of ZigBee Based Wireless Sensor Networks (WSNs)

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Abstract- This paper focus on the comparative analysis of ZigBee Based Wireless Sensor Networks (WSNs) on network topologies basis. The topologies under consideration are Star, Tree and Mesh. The comparison is made against different network parameters like End to End (ETE) delay, No. of Hops, and throughput for small, medium and large scale sensor networks. Different parameters have their role in network performance. Simulation results in a table that consists of comparison of different sizable networks on parameters and topological structure basis. From the results and conclusion it is feasible for us to select the topology according to the network size and parameter in consideration.

Keywords- WSN, ZigBee, Network Topologies, ETE Delay, Throughput

Harmonic Analysis of Multi-pulse Converters under Varying Conduction Angles

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Abstract- Today, it is fact that Power Quality assures the fitness of electrical power that is being consumed by the devices interacting to it. This paper presents the modeling, simulation and harmonic analysis of multi pulse converters. Hence analysis has been done to observe the voltage and current harmonics of 6 and 12 Pulse controlled and uncontrolled converters. MATLAB (Simulink) is used for Simulation and analysis. Obtained results are compared to one another to get an authentic conclusion. Analysis is carried out with the help of Fast Fourier Transform (FFT) and THD results are obtained at different pulses with brief overview of waveforms generated in conversion process. Results of simulations pertaining to Harmonics for each condition is explored

Keywords- power quality, Converters, MATLAB, THD, FFT

WSN Based Smart Advertisement in Intelligent Transportation System using Raspberry Pi

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Abstract- In this current era of technology, intelligent Transportation Systems (ITS) are helping different cities around the globe to becoming smart cities, while advertisements always played a vital role on any product's sale ratio. Besides security, transportation data, and traffic management, the field of advertisement through (ITS) still needs attention for researchers. According to current literature, a huge amount of budget has been invested on the field of advertisement as well as numerous deaths are caused due to roadside billboards. In this paper, we have developed a system which helps to advertise content digitally on LEDs installed on vehicles by incorporating Raspberry Pi. In results, an advertisement can be remotely controlled from the client's mobile phone and Raspberry Pi will act as a server which collects, manage and displays ads digitally. This system is a good addition towards low cost, efficient and user-friendly solutions.

Keywords- Intelligent Transportation System, Smart Cities, WSN Client-Server Architecture, Raspberry Pi, GPRS

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Design of Robust & Predictive Controller for Altitude Stabilization and Trajectory Tracking of a Quad-copter

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Abstract- Controlling the non-linear dynamics of the quad-copter has stimulated many control engineers to investigate & design the variety of controllers in order to control and stabilize the various aspects of quad copter such as the attitude, altitude, heading, xy position and even in trajectory following in the presence of disturbance. This is because of the quad-copter's application and importance in the variety of fields such as military, rescue, agriculture, surveillance, investigation, etc. Altitude control & stabilization problem of the quad-copter is the main focus of this research study. A dynamic and predictive controller is designed for the said problem based on Model predictive controller. In order to deal with the uncertainties & dynamics of the model during the flight operation and to ensure the robustness for the designed system, the sliding mode control technique is presented. Proportional-Integral-Derivative controller is also implemented for the system to make a comparative analysis with the rest of the designed controllers. Apart from controlling & stabilizing the altitude, these controllers are also capable for the trajectory tracking of the quad-copter. The six degree of freedom coupled model of quad-copter is taken into account and the same is then de-coupled for quad-copter hovering. In order to confirm the asymptotically stable state of the system, stability analysis of the proposed controller design is also done. The designed system is simulated in MATLAB/SIMULINK and also the comparison for robust and predictive controller is presented in order to depict the degree of potency of the proposed controller.

Keywords- Quadcopter, robust & predictive controller
Altitude, trajectory tracking,

Performance Analysis of a Universal Circuit for Reversible ALU using QCA & CMOS Technology

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Abstract- The reversible logic and gates are one of the promising and upcoming technologies which are capable of overcoming the limitations of the design and applications based on the CMOS technology. In this technology, the schematic arrangement of the device is implemented in such a way that every input terminal has been provided with individual output terminals. The author has used the technology which is based on quantum computations with a basic feature of loss of energy in small amount. It has many advantages like very high operating speed, low energy dissipation, and high device density. An adder/subtractor is heart of arithmetic units of processors i.e. acts as universal circuit for carrying out the mathematical computations in the quantum processors. The author has put forward a novel reversible adder/subtractor circuit using reversible logic & QCA. The QCA based circuit reported by the author has been compared and analyzed for the performance on the basis of number of gates, size, delay, power dissipation etc. The experimental work has been completed with the use of the most suitable and reliable software i.e. QCA and the performance of the proposed circuit has proven to be quite useful for this circuit to be used in some promising applications. These results are also compared with those obtained with the use of CMOS Technologies.

Keywords- Reversible Logic, CMOS, QCA, Universal Circuit, ALU Quantum Computing.

AutoMerlin Mobile Robot's Bilateral Telecontrol with Random Delay

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Abstract- The main focus of this work is to design a bilateral telecontrol of a mobile robot AutoMerlin through the Internet. The Internet has an inherent delay, packet drop, out of order data transmission, duplication, and other impediments as a communication channel. These factors cause the system to become unstable and difficult to control through the Internet. The velocity tracking becomes really hard and the force feedback also rises to an unacceptable level due to delay and other impediments. In order to address these issues, a power based TDPC (Time Domain Passivity Control) approach has been utilized in this work for the development of stable telecontrol. This approach is based on energy. The energy has been classified as positive and negative energy to make passivity analysis independent of monitoring of net system energy in real time. Thus, monitoring the net energy output at each port enables the extension of TDPC for delayed systems called TDPN (Time Delay Power Network). TDPN helps in velocity/force tracking. It transmits velocity/force unaltered by rejecting the active energy. PO (Passivity Observers) indicate the active behavior of the system and the PC (Passivity Controllers) dissipate it to keep the system stable and passive all times. The performance has been tested and plotted to show the effectiveness of the bilateral controller under random delay and other limitations.

Keywords- telecontrol, haptic force, unstructured environment, slave robot, time delay power network.

Analyzing Site Suitability for Solid Waste Disposal through GIS Multi-Criteria Decision Making Hierarchy Process

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Abstract- Currently the human beings are encircled by multiple types of problems, out of those the environmental degradation issue is one of the major problem which is caused by over population, rapid increase of urbanization and industrialization which result in production of huge quantity of solid wastes. Thus the effectual solid waste management and its disposal arrangements are required. Another major problem being faced globally is to locate an appropriate area for the disposal of hazardous wastes by overcoming main constraints including environmental, economic and political for spotting of a suitable site. In this study our focus is to spot a proper landfill site for the disposal of hazardous wastes for which we have selected industrial (radioactive) wastes of the district of Karachi East as a area for research.This district has wide range of Korangi Industrial Area and small portion of Landhi Industrial Area. In this research we have used methods of Decision Support System (DSS) based on Geographical Information System (GIS) and Remote Sensing (RS)concerning all supportable measures. With the assist of Analytic Hierarchy Process (AHP) and Multi-Criteria Decision Making (MCDM), suitable alternative site for dumping solid waste has been selected on the basis of different factors performed on Arc Map 10.3, Erdas Imagine, e-Cognition developer by considering the decision maker's expectations. The results show that after performing different investigations on the suitability indexes, the analyzed area which is most suitable for solid waste dumping is 200m away from Malir River.

Keywords- Decision support system (DSS), Landfill site, Hazardous wastes, Multi-Criteria Decision Making (MCDM), Spatial Decision Support System (SDSS), Analysis Hierarchy Process (AHP).

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Creating hi-detailed heart 3d model based on MRI and contour data and it's representation in augmented realityS

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Abstract- This article describes a simple and effective approach for creation of highly detailed model of the heart. The approach of creating a three-dimensional model based on the use of data ventricular contours obtained by MRI study. This solution allows you to create a heart model with all internal structures, which simplifies the process of visualization and assessment of cardiac structures before and after surgery.

Keywords- MRI, Counter Data, ventricular contours.

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Fuzzy Logic Trust Based Routing in Wireless Sensor Network

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Abstract- Wireless Sensor nodes are usually equipped with the computationally limited abilities. The low computational powered and low memory nodes are also equipped with smaller batteries. This prevents them from performing the larger computations as well as handling the large volumes of data in the runtime memory. The route discovery in WSNs is based upon the route request (RREQ) and route reply (RREP). The fuzzy logic system (FLS) mechanism is developed for the proposed fuzzy routing mechanism along with Dijikstra's shortest path selection based routing algorithm. The Dijikstra's algorithm is incorporated to compute the shortest and best paths between the sensor nodes Evaluation in the performance of the proposed model has been taken place in the form of throughput, energy consumption as well as packet delivery ratio (PDR), which is compared with the existing model. Proposed model outperformed existing methods.

Keywords- WSN, Fuzzy logic system, FRTB.

Performance Improvement of Buck Converter with Sliding Mode Controller

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Abstract- This paper proposes a Sliding Mode Controller to improve the dynamic performance of buck converter. Proposed controller comprises of a linear part and a nonlinear part. Linear and non-linear parts of the controller consist of PID and hysteresis control respectively. PID controller is applied to the output voltage loop of buck converter and hysteresis control is implemented through inductor current ripple, which is used to select ON and OFF points of the hysteresis control. Proposed controller for buck converter is simulated using MATLAB®/SIMULINK® software. Simulation analysis shows improved response with proposed SMC. Little and no overshoot in output voltage and inductor current is observed respectively for initial transient, however settling time is drastically improved and there is negligible overshoot in output voltage during line and load variation.

Keywords- Buck converter, Nonlinear controller, Sliding mode controller, transient response, supply and load variation.

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A Reliable and Secure AODV Protocol for MANETs

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Abstract- The adhoc on demand distance vector (AODV) protocol is a reactive protocol for mobile adhoc networks. Resource consumption attacks are frequent in these networks; if it is not detected timely, it can severely deplete the system resources and degrade the performance of the network. In this paper, we have proposed a scheme to detect as well as overcome black hole attacks using an Intrusion Detection System (IDS).The proposed scheme is implemented using network simulator 2(NS2) to compare its performance against the standard AODV with and without attack. The results of the simulation show that proposed scheme optimises the end-to-end delay, normalised routing load, packet delivery fraction and average throughput in comparison with AODV protocols under black hole attack.

Keywords- Energy aware, AODV, relative velocity, black hole attack, Intrusion Detection System.

MAKING SELF-HELP VIRTUAL REALITY EXPOSURE THERAPY ACCESSIBLE: HARDWARE AND DESIGN CONSIDERATIONS

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Abstract- Virtual Reality Exposure therapy has proven to be as effective as cognitive behavioral therapy with in vivo exposure [1]. Since it is an efficacious and cost effective alternative to in vivo exposure therapy, it can be offered to the clients via software packages containing educational material and self- report questionnaires considering the present state of Virtual Reality technology. This paper aims to identify design considerations and constraints, knowledge of which is highly useful in developing the applications that are accessible user-friendly, require minimal or no therapeutic contact and provide self-help solution to the inaccessibility of anxiety treatment which leads to a massive number of patients being left untreated.

Keywords- Anxiety, Phobia, Virtual Reality, Exposure Therapy, Vivo Exposure

HSTL and Frequency Analysis Based High Speed and Energy Efficient UART design on Spartan-6 FPGA

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Abstract- UART recognised as Universal Asynchronous Receiver Transmitter. It is a trendy two-wire communication interface. It is one of the essential element in Communication System to communicate two micro-based system. It is widely used if there is a short distance, for cost data exchange, high-speed transmission is not required, computer & peripherals, also. The implementation of UART's with VHDL can be unified into FPGA for the achievement of reliable, and compact data transmission. In this paper, we have discussed the HSTL(High-Speed Transceiver Logic) IOSTANDARD based energy efficient Asynchronous Receiver Transmitter UART. HSTL (High-Speed Transceiver Logic) IOSTANDARD is used to achieve speed and high performance. In this paper, HSTL family consists of HSTL_I, HSTL_II, HSTL-I_18, HSTL_II_18 and our analysis has done on these IO Standards. Frequency Scaling techniques are one of the best energy efficient technologies for FPGA based VLSI designs, and which is used in this paper In this paper, it has been analysed the demand for total power of different IO Standard at different frequency level. We have explained that the Leakage power is the main reason for power consumption at different IO standards. And at different frequencies

Keywords- HSTL, FPGA, Spartan, UART

Design and analysis for the presence of Bacillus cereus in blood using Plasmons

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Abstract- The Photonic Waveguide biosensors are used for detection and analysis of bio-analyte. These photonic waveguides use Plasmon vibrations technique for detection of the analyte by combining biological components with physicochemical detector. FDTD which stands for finite difference time domain is used for designing a 2- D Surface Plasmonic Resonance based photonic waveguide-based biosensor for detection of the Micro-bacteria named Bacillus cereus in order to find the toxicity in the blood. For modelling and designing the photonic waveguide sensor, Rsoft CAD simulation tool is used. Monitor values, wavelength and Frequency spectrums have been observed and by using these parameters Sensitivity is calculated. A slight variation in the refractive index leads to a substantial change in the frequency which can be seen in the band structure, therefore the designed structure behaves as sensor. Therefore, designed sensor is greatly sensitive to the modifications in RI and hence it discriminates among the dissimilar constituents of the analyte.

Keywords- Biosensors, Bio-Analyte, FDTD, SPR

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Hot Swapping Capability Analysis of Multi Modular Input-Series Output-series DC-DC Converter

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Abstract- Converters either supplying power to vital loads (communication centers, hospitals, protection devices etc.) or connected with the generation systems especially renewable types, are such sophisticated units that their failure can lead to financial as well as life losses. This paper focus on the capability of the multi-modular DC-DC converter to successfully replace the faulty module of the converter with the healthy one without the load being disturbed (Hot-swap). Using modular converters has been proved a better substitute in terms of cost-efficiency and reliability while improving the overall efficiency of the converter. The proposed model is simulated in Matlab and the results validate the statement during the hot-plug of any module without disturbing voltages at load terminals.

Keywords- DC-DC modular converter, Hot Swapping, input voltage sharing, output voltage sharing.

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Computer Simulation Approach to Interdisciplinary Research of Crowds Behavior in Regular and Emergency Situations

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Abstract- Behaviour of massive assemblies of people – large crowds or dense (intensive) pedestrian flows occurring in confined spaces (public buildings, shopping malls, airport terminals, public transport stations, concert halls), or in the open grounds (squares, streets, sports arenas) – attracts growing attention as a specific pressing sphere of urgent diverse multidisciplinary scientific research.

Keywords- Computer, Simulation, Research

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Hybrid Mobile-App. on Multi-MEC Platforms in NFV Environment

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Abstract- In recent times, practicality of web applications has become more reliant upon big-data orientated materials such 4K videos, hi-def. resolution images, lossless audios and massive texts. Structured Query Languages (SQL) faces compatibility issues with large scale databases. Because of this data storage problem, NoSQL databases are used for storing big-data. NoSQL databases have been recently gaining traction with many options such MongoDB, CouchDB, Redis and Apache Cassandra. One of the major restrictions companies, enterprises and developers encounter during developing an application is multiplicative cost of building a native programing across different platforms. Besides, network Function Virtualization (NFV) plays a vital role for providing services for utilizing such applications in larger and more effective scale. Hence, in this paper, we discussed our main motivation behind selecting Iconic Framework, a hybrid system for rapid development real-time application based on Firebase in the NFV environment cooperating with Mobile Edge Computing (MEC). As a result, this approach provides comparatively flexible features.

Keywords- Multi-platform, Firebase, Social Network, Hybrid Mobile Application, Big Data, NFV, MEC

Visualization of Crime News Sentiment in Facebook

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Abstract- Facebook has become a popular platform in communicating information. People can express their opinions using texts, symbols, pictures and emoticons via Facebook posts and comments. These expressions allow sentiment analysis to be performed by collecting the data to obtain the public's opinions and emotions toward certain issues. Due to a huge amount of data obtained from Facebook, proper approaches are required to cater the texts and symbols used in the comments. There are also limited amount of dictionary on Malay texts which make it more challenging to process and classify the positive and negative words used in the comments. Thus, hybrid approach is applied during the data processing to visualize the results. In this work, a combination of lexicon-based approach and Naïve Bayes are used. This study focuses on analyzing the public's sentiments on crime news in Facebook by using word cloud visualization. The visualization displays important words used in a form of a word cloud. Moreover, the percentage of positive and negative words existed in the comments is also shown as part of the visualization results.

Keywords- Crime news, Emotion, Sentiment classification, Social network, Visualization.

Pseudo-random Number Generators Based on the Collatz Conjecture

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Abstract- In this research, we have studied the applicability of the Collatz Conjecture to pseudo-random number generators (PRNG). The research was motivated by the simplicity of the Collatz function, which makes it attractive as a potential PRNG. We have experimented with several candidate PRNGs based on the trajectory property of the Collatz function and the Collatz graph. The NIST Test Suite (SP 800-22) was used to evaluate the statistical randomness of the output of our PRNGs. In addition, we utilized a method to rank each PRNG by quality of random output. The test results have demonstrated that two of our PRNGs pass the NIST Test Suite, and that there is no significant statistical difference between the outputs of our PRNGs to that of the Mersenne Twister, the built-in PRNG in Python 3.7. To the best of our knowledge, our algorithms are the first to successfully utilize properties of the Collatz function to generate random numbers. Additionally, we have proved that one of our PRNGs generates uniformly distributed output with a period of 232. Finally, we have found that two of our PRNGs perform on par with the Mersenne Twister algorithm. Because our algorithms pass the NIST Test Suite, they are suitable for usage in certain cryptographic applications as well as simulations.

Keywords- Pseudo-random Number Generator, Collatz Conjecture Statistical Testing,

185 # BSCL: Blockchain-Oriented SDN Controlled Cloud Based Li-Fi Communication Architecture for Smart City Network

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Abstract- The Internet of Things (IoT) smart city initiative has transformed technology spectrum into its new era of development. The increasing amount of data generated by millions of IoT devices and the rapid flow of data across distributed IoT devices are transmitting to remotely located cloud infrastructure over the Internet. Unfortunately, these large amounts of data and its flow based on the traditional energy-intensive network infrastructure is neither efficient nor substantially scalable. It is essential to design a comprehensive network infrastructure to handle large amount of high-speed data-processing in an IoT spectrum. Apparently, Blockchain and Software-Defined Networking (SDN) approaches can leveraged the scalability of the environment for IoT spectrum. In addition, the emergence of distributed cloud technology and Li-Fi spectrum can transform the capability of data-processing for IoT devices. The challenge lies in efficiently blend the integration of Li-Fi, Blockchain, SDN and Cloud technologies for IoT environment. To address this challenge, we design a multiaccess communication modulation model for efficient optimization of distributed network with an SDN based controller and integration of robust cloud infrastructure for high-speed data-processing. The proposed model is based on Li-Fi communication architecture which significantly reduced in the utilization of energy for managing large-scale infrastructure. We performed simulation and analysis across multiple dimensions to evaluate the performance and effectiveness of our proposed model. The evaluated output shows that our model significantly improved the overall performance and efficiency of the communication infrastructure as compared with other ultra-modern models.

Keywords- IoT, Light Fidelity, Blockchain, Cloud Computing, Software-Defined Networking.

Cotton Crop Cultivation Oriented Semantic Framework Based on IoT Smart Farming Application

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Abstract- The fact that each technological concept comes from the advances in the research and development, Internet of Things (IoT) grows and touches virtually every area of human activities. This has yielded the possibility of analyzing various types of sensors-environment from any kind of IoT platform. The existing IoT platforms focuses more on the area related to urban infrastructure, smart cities, healthcare, smart industry, smart mobility and much more. In this paper, we are focusing on the architecture of designing the application of IoT based solution in agriculture with more specific to Cotton farming. Our specific approach on farming is relevant to cotton crops cultivation, irrigation and harvesting of yields. In the context of cotton crops cultivation, there are many factors that should be concerned which includes weather, legal regulation, market conditions and resource availability. As a result, this paper presents a cotton crops cultivation oriented semantic framework based on IoT smart farming application which supports smart reasoning over multiple heterogenous data streams associated with the sensors providing a comprehensive semantic pipeline. This framework will support large scale data analytic solution, rapid event recognition, seamless interoperability, operations, sensors and other relevant features covering online web based semantic ontological solution in an agriculture context.

Keywords- Internet of Things (IoT), Smart Agriculture, Smart Farming, Remote Sensing, Precision Agriculture

Rift: A High-Performance Consensus Algorithm for Consortium Blockchain

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Abstract- The emergence of Blockchain have revolutionize the decentralization in distributed architecture. The advances in the consensus mechanism techniques and the development of different variants of consensus algorithms gives a huge impact on its progress. These technologies allow to have a distributed peer-to-peer network in which each external entity can be able to interact with other entities without any trusted intermediary in a verifiable manner. The existing consensus algorithms are mostly concerned with public blockchain having focused on public ledgers in general. The consortium blockchain is least focused as compared with other variants of blockchain (public and private) showing the need to address this vacuum. In this paper, we proposed a consensus algorithm named Rift for consortium blockchain which works on the principle of trust mechanism for achieving consensus in a blockchain. The consensus is achieved by distributed nodes in a consortium blockchain which were controlled by consortium members to decentralize the arbitration by voting and trust metrics. In this paper, we elaborate the comprehensive idea of Rift and discuss the working model for this algorithm. We also perform simulation on the proposed algorithm and determine the performance variables to evaluate the effectiveness of Rift. The evaluated results show the improvement in the performance which is the objective requirement for the evaluation.

Keywords- Blockchain, Consensus Algorithm, Distributed Network, Peer to Peer Network.

Methods and Trends in Natural Language Processing Applications in Big Data

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Abstract- Understanding the natural language of humans by processing them in the computer makes sense for applications in solving practical problems. These applications are present in our systems that automates some and even most of the human tasks performed by the computer algorithms. The Internet and its network of hosted repositories containing the "big data" of structured and unstructured data formats and information are websites, social networks, scientific articles, journals, datasets, etc. The "big data" deals with NLP techniques and applications that sifts through each word, phrase, sentence, paragraphs, symbols, images, speech, utterances with its meanings, relationships, and translations that can be processed and accessible to computer applications by humans. Through these automated tasks, NLPs achieved the goal of analysing, understanding, and generating the natural language of human using a computer application and with the help of classic and advanced learning techniques. This paper is a short survey of the published literature in NLP and its uses to big data. This also presents a review of the NLP applications and learning techniques used in some of the classic and state-of-the art implementations

Keywords- natural language processing,deep learning, artificial neural networks, big data applications.

Macro-Economic Determinant And Interdependence Of The Stock Markets: Evidence From Emerging Economies

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Abstract- The purpose of the study is threefold. First, is to examine the long-term interdependence between China and the ten emerging economies, including Pakistan, Malaysia, Philippine, Indonesia, India, Hungary, Mexico, Russia, South Africa and Brazil using Johansen co-integration. Second, is to measure the time-varying interdependence between China and the other emerging economies using DDC GARCH model. Third, is to examine the impact of macroeconomic determinants on stock markets conditional correlations using panel regression. Monthly data from 2010 to 2016 is used. Results indicate that there is long-term interdependence between China and the other ten emerging economies. Furthermore, The results of DDC GARCH model support that China has a higher positive significant correlation with Pakistan, India, China, Indonesia, Malaysia, Philippine, Hungary, Mexico, Russia and South Africa. Finally, the results of the panel regression show that macroeconomic determinants have no significant effect on the equity market correlations between China and its companion emerging economies. It this, therefore, we can conclude that there is long run interdependence between the Chinese and the other emerging economies. Furthermore, this interdependence is also dynamic over the time. However, there is no significant impact of the macroeconomic determinants on the stock market interdependence between Chinese and the ten emerging economies.

Keywords- Co-integration, DCC GARCH, Macro-economic determinants, Panel regression

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Network Planning with Terrain Obstacles in LTE-Advanced Networks

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Abstract- Relay technique was proposed to provide better signal quality, however it also accompanies communication interference. In this paper, we tackled the network planning problem with considering terrain obstacles in LTE-Advanced relay network. Multiple eNBs and two types of relay nodes are deployed in the planned field of interest. The planning problem is based on graph theory and formulated by linear programming. A novel algorithm named interference-aware planning algorithm is proposed to conduct an LTE-Advanced relay network with better signal quality. The primary goal is to maximize the signal quality of all served users with less construction cost. Simulation-based results showed that the proposed interference-aware planning algorithm is superior to other planning algorithms in terms of signal quality, number of served users and construction cost in an LTE-Advanced relay network with terrain obstacles.

Keywords- Graph Theory, LTE-Advanced, Network Planning, Relay Technology, Terrain Obstacle

On Convergence of Iterative Method for Determination of Weibull Parameters by Maximum Likelihood Method

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Abstract- The Weibull distribution is frequently used for the assessment of wind energy potential and modeling of wind speed data. The parameters of Weibull distribution are determined by a number of methods; Maximum Likelihood Methods is one of them. The values of scale and shape parameters of Weibull distribution are found by the help of Maximum Likelihood function. Two different techniques are used to find the parameters. One is known as iterative method, in which a start value of 'k' is set and iterations are terminated when given criterion is reached. The second method is Newton Raphson method of finding roots. We report here a problem of non convergence of iterative method. We suggest the Newton Raphson method as the best choice for finding the value of 'k' through Maximum Likelihood Method.

Keywords- Weibull distribution, Weibull parameter, Maximum Likelihood Method

Auto Spruce Trial System(ASTS)

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Abstract- Auto Spruce Trial System (ASTS) is designed to provide a platform in which children's intelligence and cognitive behavior are tested through Wechsler Intelligence Scale for Children (WISC). This test is used for a children assessment and find out their abilities learning and disabilities, as well as a clinical device. ASTS system is an automated testing system which conducts the children test and generates their intelligence result automatically. We automate the system as mentioned above in Pakistan which is taken manually and consumes a lot of time. It does not really matter how much intelligence one has, what makes a difference is the manner by which well one uses his/her intelligence. This test is applicable for those children's whose parents are worried about their mental health's issues and their learning potential. An intelligence test can encourage guardians and instructors make judgments around an individual child's educational course, standard, or in need of special education.

Keywords- ASTS, WISC, mental health, special education.

Arduino Based Radar System

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Abstract- This document is about a Radar System consisting of an ultrasonic sensor attached to a servo motor controlled via Arduino. RADAR frameworks came into noticeable quality, inestimable improvements have happened. RADAR system comes into different field of navigation, positioning, object identification, mapping or tracking and different applications. The investment required in developing RADAR is enormous and for less critical purposes like surveillance in close proximity, automatic parking systems in vehicles, and object detection in small ranges it would be unreasonable to spend capital in large amounts. As scholarly community and industry have focused on the formation of new or modified frameworks for tracking and investigation of obscure spaces keeping in mind the end goal to make propelled manage frameworks for robots and individuals influenced by inabilities. This work goes for planning a unique system, to indiscriminately outline by utilizing ultrasonic sensors. Arduino UNO board is sufficed to control ultrasonic sensor and also to interface the sensor and display device. While researching, we learned about existing navigation and obstacle detection innovations and different systems where ultrasonic sensors are used efficiently

Keywords- Arduino, ultra-sonic, servo, radar, positioning, monitor, Surveillance, obstacle detection, navigation

Smart Patient Room

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Abstract- This document represents a framework that we have designed an automated system which can insight-fully play out the desired control undertaking for various control condition using rising movements connected in the domain of automation and splendid control methodologies. The proposed framework joins the mechanization and control of different transducers and actuators by utilizing quick control systems like Bluetooth based system, Global System for Mobile (GSM) control, and transmission control protocol/Internet protocol (Wi-Fi) control strategies. Our key test is to build up a plan both as far as equipment and programming which underpins the investigation of change frameworks ideas. This paper expands the possibility of condition control connected to clinical practice, by introducing a Smart Patient Room that enables clients to control nature and proficiently utilize the hospitals, while in the meantime helping medical caretakers and specialists via robotizing their clinical schedules. The framework is planned with an easy to use graphical user interface-GUI which empowers the client to control much precisely and easily. This research depicts a generalized form of automation systems and its applications. Technology can do a lot in assisting with medical care. Here, we are also briefly discussing the integration of automation with medication and hospitality.

Keywords- Wireless control, Bluetooth, programmable controller, duplex communication, TCP/IP, GSM, integration, automation, medication, smart patient room, clinical routine, patient, doctors hospitality.

Estimation of Phase Angle Jump(PAJ) For different types of faults and unbalancing In Distribution System

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Abstract- Voltage dips caused by the faults in the power system have serious power quality issues and sometimes lead to interruption of power supply. Voltage sag is characterized by its magnitude and time while phase angle jump (PAJ) is associated with sag. This paper presents the estimation of phase angle jump(PAJ) when different types of faults are occurred in distribution system. Since unbalancing is one of the major issues in distribution system which causes zero sequence currents, overheating in distribution transformer, and huge voltage drops in distributor etc.therefore, method used in this paper also shows the PAJ when distributor is unbalanced due to uneven loading or the line parameters of the distributor is unsymmetrical.Simple radial system is used to analyze the PAJ caused by the different types of faults and unbalancing. Different comparisons are made that are associated with PAJ such as PAJ vs fault impedance, zero sequence current and percentage of voltage unbalance. The research work is performed on MATLAB/SIMULINK to analyze the real time results.

Keywords- Phase angle jump, unevenly loaded lines, unbalancing zero sequence currents, distributor.

Automated Classification of Retinal Diseases in STARE Database

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Abstract- Retinal diseases are identified by conducting different medical examinations primary of which are visual examinations. One of the key issues in visual diagnosis of diseases is the human error due to poor decision making, for that an upcoming inter- disciplinary technology named Computer Aided Medical Diagnostic System provides precise detection and prediction of disease. Automated image analysis methods are far more helpful for early identification and evaluation of disease as compared to cryptic and time taking manual techniques of digital medical imaging. This study aims to develop an automated method for identification of eye disorders that affect the
human retina which if left unidentified may result in blindness due to delayed detection and analysis. Image data was acquired by publically available STARE Database having fundus images and by implementation of exclusion and inclusion criterion it was pre-processed on MATLAB. Initial pre-processing increased the significance of the data to be analyzed. From 186 images, 16 diseases and 22 features were deduced. A support vector machine classifier was used for automated identification and classification, resulting in an accuracy of 94% and specificity of 98%. In the chosen technique sensitivity, specificity and accuracy of the results was affected by the problem of one-sided data. For the reduction of dimensionality of data
(redundancy reduction) principal component analysis was employed. 5, 10 and 22 Principal components were obtained to reduce the amount of variables. PCA was performed prior to training of the SVM, results for different data dimensionality was compared for completeness.

Keywords- Image processing, support vector machine, principal component, analysis, MATLAB, fundus images, retinal diseases

Modification in Hill Cipher for Cryptographic Application

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Abstract- In order to keep the information secure from various contenders is an important factor for data security. For any organization, it is an incredibly important feature to timely transmit secured data. Optimized techniques for key management and protected encryption algorithms are always helpful for reducing the overhead of the system and maintain the integrity, authentication and confidentiality of data. Cryptographic applications play an important role in our daily lives through sending emails, exchanging bank account transaction information, through mobile communication and through ATM card transaction. To secure our information from unauthorized users, Hill Cipher is one of the most well-known symmetric cryptosystems. For Hill Cipher, here we are proposed an algorithm for encryption and decryption which is based upon the transposition, substitution and left-right shift.

Keywords- Traditional Hill Cipher (THC), Transposition, Substitution (TS), Transposition Substitution & Left Right Shift (TSLRS), Cryptography, Encryption, Decryption.

Design and Development of Mach Zehnder Interferometer based Optical Sensors to Detection of Arsenic compound in Drinking Water

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Abstract- Water, the inevitable need of any individual, must be monitored. Detection of the arsenic chemical present in water leads to contagious diseases. The legacy makes people difficult to survive. The consequences are cancer, other diseases. Employing photonic crystal waveguide with the rally round of mach Zehnder interferometer, it is feasible to correctly compute arsenic compound level in water. MZI sensor has many compensation, diminutive, least use of instrumentation, and ready to be used with CMOS technology. We have manifested a reasonable and point-of-use photonics platform able to outline amounts of arsenic compound in water samples based on consequence of water quality interposition. Follows in the paper, arsenic compound level of wavelength range of 1530–1565 nm is analyzed and detected. Experiential program from the band arrangement that for minute change in refractive index is accounted, subsequently logical shift in the frequency and amplitude will be evident enlarging mach Zehnder interferometer will behave as a sensor. Thus projected alternate included optical Mach Zehnder Interferometer (MZI), composed of graded index channel waveguide that can be frequently used as chemical and biological sensor in this manuscript. This dissertation describes how the MZI operates two arms predominantly to conquer the industrial challenges. Manuscript represents test data, graph and results that exemplify the performance of whole system.

Keywords- NANOCAVITY-COUPLED WAVEGUIDE
HEXAGONAL SENSOR MEEP
MACH ZEHNDER INTERFEROMETER USING BEAM PROP

Mobile Learning as a New E-Learning Strategy

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Abstract- Mobile learning is a method of e-learning that serve the distance learning environment, which reduces the limitations of conventional education. This research will be discussed the existing devices and techniques that usage to reach the mobile learning target. Mobile learning is also examined as a new phase of distance learning. This paper results that the desire to use M-Learning technology will be increased continuously and significantly using wireless devise in Wi-Fi environment.

Keywords- M-Learning, E-Learning, Distance Learning.

The role of Database Management System to Improve e-Banking Processes –
Case Study Islamic Banking

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Abstract- The world is moving towards Globalization and from there, to Googlization; where there are no limits or restrictions, in spite of the multiplicity of manifestation. The move is most prominently seen in the economic sphere, and banking institutions are no exception to be affected. Regarding on this, there are two major challenges facing by the Islamic banks. The first is the merger or what is known as conglomeration, a major force in economic and the second is financial globalization that is also faced by the Islamic economy. This phenomenon requires the Muslim community as well as the Arab countries to keep up with the reality-based competition on a local and international level. This study aims to enlighten on the strategic proposal for an Islamic banks in Arab countries to capitalize on the opportunities offered by globalization and therefore achieve greater benefit and reduce the risks and threats associated with them. The study focuses on two groups of results, namely public and private as the main subject matter. The study also looks at the current lack of technical developments which could adversely affect the speed of decision-making and lead to lack of coordination among the key decision makers. In studying the exposure of these institutions being to financial crises as a result of globalization, this paper also shows the possibility of benefiting from the experiences of the commercial banks, stating that globalization can actually stimulate Islamic banks to innovate and develop methods and attract new financing and investments. The researcher took a series of recommendations, such as fostering closer cooperation among Islamic banks in all countries and building a strong entity operating belong one umbrella

Keywords- DBMS, e-banking, Islamic banking.

E-Learning and Students Satisfaction –
Case Study MEDIU

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Abstract- This research aim to identify what are factors affecting Al-Madinah international university (MEDIU) students from two different faculties , study mode some are online and some on-campus because nowadays E-learning management system are support education and it have been easy for learner to learn from his location anywhere and anytime and with improvement of the technology in education specially in 21 century still they are some factors affecting learners and this may be a technology or others factors And some they still using traditional classroom and some they emerge the technology with traditional classroom , the sample of the research are 101 students 31 from facility of finance and 70 from faculty of information and communication and it test seven different factors which are usability, system support, service interaction, content or information quality, instructor interaction, practical lab or work experience and according to this factors most of students are affecting by six factors which content, instructor interaction chat forum 24/7, language, time-zone and practical lab or work experience.

Keywords- E-learning, Management information systems, Integrated systems.

E-Business and E-Government between Challenges and Opportunities – Case Study Malaysia

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Abstract- Electronic business or better known as e-business is a global business. To obtain the best benefits of e-business and promises good returns for companies operating in this field, apart from the advances in technology and smart partnerships that exist in developed countries, it needs the active involvement of all countries in the world. Government regulations are needed to reinvent to deliver the beneficial and productive service in terms of cost, information and knowledge through ICT as the governments around the world today are facing the phase of transformation. It is essential to investigate the complications in the effort of e-business and e-government development as there is a demand for the implementation of e-business initiatives in e-growing faced by the developing countries. Malaysia, a country with rapid conversion in reference to the e-business and e-government initiatives is chosen as a case study for this purpose. Further study should be implemented on creating awareness among citizens on the e-business applications, e-government and stimulating cooperation between the government and enterprises as to improvise the current technical infrastructure as to why Malaysia is chosen for this particular purpose.

Keywords- E-business, E-Government, Business opportunities, Business Challenges.

Deep Rapping: Character Level Neural Models for Automated Rap Lyrics Composition

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Abstract- "Dope", "Twerk", "YOLO", these are just some of the words that originated from rap music which made into the Oxford dictionary. Rap lyrics break the traditional structure of English, making use of shorten and invented words to create rhythmic lines and inject informality, humor, and attitude in the music. In this paper, we attack this domain on a computational perspective, by implementing deep learning models that could forge rap lyrics through unsupervised character prediction. Our work employed novel recurrent neural networks for the task at hand and showed that these can emulate human creativity in rap lyrics composition based on qualitative analysis, rhyme density score, and Turing test performed on computer science students.

Keywords- Gated Recurrent Unit, Long Short-Term Memory, Natural, Language Generation, Recurrent Neural Networks

Spectral Amplitude Coding Optical CDMA: Performance Analysis on Free Space Optical Channel

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Abstract- In this paper, we investigate the performance of Spectral Amplitude Coding Optical Code Division Multiple Access technique based on Free Space Optical channel. SAC OCDMA is one of the most popular multiplexing techniques since many years and FSO is gaining popularity and is very useful especially in point to point communication. The system presented in this paper utilizes Walsh Hadamard code as signature code. The coder and decoder structures are based on optical filters of fiber Bragg gratings (FBGs). This system focuses on the performance analysis of FSO based systems for subtropical regions. This paper demonstrates the error rate performance in the form of eye diagrams/BER under varying channel gain and link distances. Five cases have been taken which shows that SAC OCDMA FSO system is reliable even for distances sufficient to overcome the last mile problem.

Keywords- Spectral Amplitude Coding, Optical CDMA, Free Space Optics, last-mile solution, channel attenuation.

An Underwater Image Enhancement via Wavelet domain Gradient Guided Filter

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Abstract- Pictures confined in underneath are often yield limited visibility and low dissimilarity due to haze in undersea. Existing approaches enhance pictures but frequently undergo noise issue; this paper presents a hybrid method for solving mage enhancing difficulty in frequency domain. Firstly, we propose locally adaptive Non locally robust regularization to deblur the image. The deblurred image has small gray-level rate in any color channel. Secondly we used an open dim channel scheme to increase visibility in low-intensity rate. Thirdly, gradient guided filter to enhance the details. Later, we use the soft-thresholding process to decrease noise in high-intensity rate to advance texture information. Finally, image is well enhanced via wavelet domain gradient guided filter. The projected technique intends to raise perceptual visibility, keep extra texture information as well lower noise effect. The performance evaluations prove that projected scheme give up better results by existing methods.

Keywords- Underwater image enhancement, Dehazing, Wavelet domain Gradient guided filter.

Highly sensitive Lab-On-Chip with Deep learning AI for detection of bacteria in water

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Abstract- Artificial Intelligence (AI) has provided a new insight on how to make better predictions in water quality. AI uses convolutional neural networks (CNN) modeled after the human brain. In this work we have started implementing deep learning techniques to predict level of bacterial contaminants in water. A look-up table is used to classify the level of sensing parameters based on signature of the bacteria. AI will be very helpful for accurate prediction based on of signature as identified by the sensor. We have simulated an AI-based Lab-On-Chip application platform that can detect the contamination using the output from Photonic Crystal based optical biosensor. The presence of bacteria in water changes the output spectral behavior. By training with the different samples, design of input layer was optimized for bacteria in water. Optical biosensors are generally light weight, small and portable and less noisy system and works without electric power. The AI technique helped to distinctly predict the presence of E.coli bacteria. Research concludes with the probability of accuracy of 95% detection based on output spectrum and identified training data.

Keywords- CNN, FDTD, Biosensor, AI Deep Learning, Lab-On-Chip.

Effect of Hydrogen Addition and Equivalence Ratio on Tumble Motion of Direct Ignition Engine

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Abstract- Engineers and researchers are struggling to reduce the emissions and improve the performance of the automobile engines. Many new techniques and alternative fuels have been introduced to overcome such obstacles. In alternative fuels, hydrogen as a fuel achieved prime importance on account of many better characteristics: broader flammability limit range and improved flame stability, the higher laminar and turbulent burning velocities as compared with conventional hydrocarbon fuels. Also since the hydrogen has very low ignition energy and such benefits to achieve ultra-lean-burn mixture. In this research work, the hydrogen was added from 10% to 90% with each interval of 10 % in the primary diesel fuel and varied equivalence ratio from 0.6 to 1.4 to examine the effect on tumble motion. ANSYS Fluent 17 for Internal Combustion (IC) Engines was employed to accomplish all the results. In results, the addition of hydrogen and increasing the equivalence ratio cause the tumble motion increased and boosts the flame propagation.

Keywords- Computational Fluid Dynamics, Diesel Fuel, ,Equivalence Ratio Hydrogen Tumble Motion.

Power optimization using label switching Router and predictor technique in 2 dimensional Network on chip

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Abstract- Network on chip has become a essential paradigm to decouple the computation from communication. Circuit switching and Packet switching had been implemented for best effort schemes and guaranteed throughput schemes respectively. Due to technology scaling, static power has become major concern in Network on chip which contributes most part of the total network power. In this paper, a Router is designed based on Label Switching-predictor(LS-pred)technique for 3x3 2D mesh network is implemented which overcomes the problems perceived by IP based routing and reduce the static power. In the proposed method, labels are used to forward the packets hop by hop and the static power is optimized using a predictor technique in the router. Experimental results are performed on Xilinx 14.2 software and there is 3.45% improvement in power by LS-predictor technique.

Keywords- label switching, mesh network, Network on chip, static power.

INVERSION OF COMPLEX NEURAL NETWORK

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Abstract- The inversion of complex neural network and Complex New Neuron
Model is also achieved by extending the gradient descent inversion algorithm to complex domain. The performance of complex neural network in learning the function mapping in complex domain is also studied. The complex domain inversion of neural network and new neuron model is discussed in this paper.

Keywords- Inversion, Neural, Network.

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