GLOBAL E-CONFERENCE

On Smart Innovations in Engineering Systems and Technology - 2020

Organized By

JAGANNATH INSTITUTE OF TECHNOLOGY
(Formerly Balaji Institute of Engineering and Technology)

Off I.T Highway, Thandalam,
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SIEST'20

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SECRETARY MESSAGE

I am pleased to know that Jagannath Institute of Technology has come forward to conduct SIEST'20 , the On Smart Innovations in Engineering Systems and Technology-2020.

I feel proud about my students, Staffs who are well known for their independent thinking, hard work, devotion, dedication and bubbling enthusiasm.

I take the pleasure in thanking the Head of the Departments and the Faculty members of the college for their motivation and continuous support extended to the students for their efforts towards the E-Conference and publication of the Proceedings.

I whole heartedly congratulate the members of the editorial for their excellent achievement.

PRINCIPAL MESSAGE

I am filled with unbounded pleasure to know that Students and Staff Members of Jagannath Institute of Technology brought out SIEST'20 , the On Smart Innovations in Engineering Systems and Technology-2020 to its credit this year.

It had been the dream of our beloved Secretary and other members of the management body to see the growth of the Students and the Institution in terms of Academics. Iam indeed very happy to see the vision of our Secretary being fulfilled progressively.

I take this opportunity to wish the Students and Staff Members who are instrumental in bringing out the Proceedings this year.

CONVENOR MESSAGE

I am happy and proud to see that our Students and Staff Members have done a remarkable achievement in organizing the SIEST'20 , the On Smart Innovations in Engineering Systems and Technology-2020. It is heart-warming to see the progress we've made in such short span of time. From conducting simple seminars and guest lecturers to organizing a full-fledged E-Conference at the International level, students have come along way and grown as Engineers and Organizers.

As a fellow organizer of this mega event, Iam proud to say that this is indeed going to be the greatest achievement yet in the already overflowing achievements of JIT. My best wishes are always with my beloved students & Staff Members.

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A DFT study - Gas sensor application

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Abstract. Density Functional study of gas adsorption on transition metal with and without active material to evaluate the supplications of this systems as a toxic gas sensor was proposed. Different chemical doping on transition metal and its computational analysis are analysed. In this DFT study, the selectivity for toxic gas adorption and changes in its electrical properties in the existence of the target gas molecules have been identified through the calculation of adsoption energy, bond length, charge transfer, the gap between HOMO-LUMO and band structure changes due to the gas adsorption. From the adsorption results, all the configurations were stable, have confimed that toxic gas physical adsorption in all designs and each designs has different response to the toxic gas adsorption. The highest adsorption energy and charge transfer value of designs were evaluated and optimum material could be potentially a bertter toxic gas sensor.

Keyword- DFT study, Gas adsorption, Adsorption energy, Bond length and charge transfer.

SIEST20

ADVERSARIAL ATTACKS AND DEFENCES IN DEEP LEARNING

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ABSTRACT

With the fast headways of Artificial Intelligence (AI) and Deep learning (DL) systems, it is fundamental to ensure the security and quality of the passed on counts. Starting late, the security shortcoming of DL computations to poorly arranged models has been commonly seen. The made tests can incite diverse devilish exercises of the DL models while being viewed as obliging by individuals. Compelling executions of poorly arranged attacks in certifiable physical-world circumstances further display their good judgment. Hereafter, poorly arranged attack and watchman strategies have pulled in extending thought from both AI and security organizations and have become an assessment subject of late. In this paper, we at first present the theoretical foundations, counts, and employments of adversarial attack techniques.We then describe a few research efforts on the defense techniques, which cover the broad frontier in the field. Several open problems and challenges are subsequently discussed, which we hope will provoke further research efforts in this critical area.

Analysis and Mitigation of Voltage sag using Matrix converter based DVR in EV

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Abstract

The electric Vehicle (EV) is a relatively new concept in the world of the automotive industry. Cars produce a lot of carbon emissions that are ejected into our natural atmosphere, leaving us vulnerable to things like pollution and greenhouse gases. In order to help positively the environment we live in, an electric car is a great step forward. An all-electric vehicle only uses batteries to power the motor engine instead of fuel. They produce no tailpipe emissions. All-electric cars rely only on batteries, which are recharged from the grid. As Electric Vehicles (EVs) are becoming more wide spread, their high power consumption presents challenges for the residential low voltage networks, especially when connected to long feeders with unevenly distributed loads. However, if intelligently integrated, EVs can also partially solve the existing and future power quality problems. One of the main aspects of the power quality relates to voltage quality. The aim of this work is to analyses and mitigation of the voltage sag using Matrix converter based DVR. This, in turn, leads to the compensation of long time voltage sag and the reduction of size, weight and cost of the entire system. Simulations are carried out in MATLAB/SIMULINK software package.

***Key words*:** electric Vehicle (EV), DVR, Matrix converter

AUTOMATED ROAD SAFETY MEASURES

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Abstract: In day toady life the accidents taking place in India is growing in the alarming states, though we take many procedures to prevent it. Unfortunately, we couldn't prevent it rather we reduced it using various safety measures. In this paper we are coming up with one such thought which could help in the flattening of the curve which occurs due to road accidents. This measure includes sensors, cameras, timer, and artificial intelligence. It also consists of an application which keeps the license holder and the operator connected. The entire license holder must have this application installed on their respective mobile phones. This application is linked with your bank account in order to charge you for the penalty if you disobey the given instructions which have to follow properly during your driving. Hence violation can be avoided and proper traffic rules will be followed. This can decrease the number of accidents occurring in our state.

Sensor less Speed Control of PMSM Using Extended - High Gain Observer

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Abstract — In this paper, we regulate the speed of a surface mount Permanent Magnet Synchronous Motor (PMSM) with only using current sensors. We use a back-Electromotive Force (back EMF) based sensor less speed control technique. We reduce the α-β model of the PMSM using singular perturbation theory, which reveals two algebraic expressions for the estimation of the back-EMF signals. We use these expressions to drive a Quadrature Phase Locked Loop (Q-PLL) that estimates rotor position and speed and also estimates the disturbance. The rotor position estimates used for park transformation while the speed and disturbance estimate are used in a feedback linearization law to regulate the speed .Our development of the controller only assumes knowledge of the nominal parameters of the PMSM. In additional, We assume the external load to be time-varying and bounded but otherwise unknown. Finally, results from simulation and experiment are shown to confirm robustness of the proposed system, and high performance of the output feedback system.

Keywords *— PMSM, Sensorless, Speed Control, Feedback Linearization, Extended High-Gain Observer, Q-PLL.*

CYBER SECURITY

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Abstract **-** Cyber security is the practice of defending computers, servers, mobile devices, electronic systems, networks, and data from malicious attacks. It's also known as information technology security or electronic information security. Cyber security is the protecting systems, networks, and programs from digital attacks. These cyber attacks are usually aimed at accessing, changing, or destroying sensitive information; extorting money from users; or interrupting normal business processes. Implementing effective cyber security measures is particularly challenging today because there are more devices than people, and attackers are becoming more innovative. Users must understand and comply with basic data security principles like choosing strong passwords, being wary of attachments in email, and backing up data. Technology is essential to giving organizations and individuals the computer security tools needed to protect themselves from cyber attacks. In our approach its deals with three main entities must be protected: endpoint devices like computers, smart devices, and routers; networks; and the cloud. Common technology used to protect these entities include next-generation firewalls, DNS filtering, malware protection, antivirus software, and email security solutions.

Design of Hybrid Electric Vehicle

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***Abstract*—**The studies for Hybrid Electrical Vehicle (HEV) have attracted considerable attention because of the necessity of developing alternative methods to generate energy for vehicles due to limited fuel based energy, global warming and exhaust emission limits in the last century. HEV incorporates internal composition engine, brushless DC motor and power electronic equipment. The hybrid engine in vehicles has the potential to reduce fossil fuel use, decrease pollution, and allow renewable energy sources for transportation. Conventional vehicles use gasoline or diesel to power an internal combustion engine. Hybrid also use an internal combustion engine and can be fueled like normal cars but have an electric motor and battery, and can be partially or completely powered by electricity. HEV is implemented to control the BLDC motor speed using a microcontroller as the vehicle's electronic control unit along with simple proportional integral derivative (PID) control using speed as a feedback mechanism. Hybrid cars can be configured to obtain different objectives, such as improved fuel economy, increased power, or additional auxiliary power for electronic devices and power tools. Many technologies like regenerative braking, electric motor drive, automatic start or shutoff are being used in hybrid cars to make them as good as conventional vehicles.

***Keywords* —** Internal Combustion Engine (ICE), Brushless DC motor (BLDCM), PID Controller, Battery and Regenerative braking.

Detection of Microcalcification Clusters using Statistical Parameters and Dyadic Contourlet Transform based Precision Enhancement

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Abstract—Recent scenario, breast cancer found to be a threat and dangerous carcinoma among women in the world. In contemplation of reducing the breast, cancer-related death needs an efficient computer-aided diagnosis (CAD) system. The discrimination of microcalcification clusters (MCCs) is an important manifestation for the early diagnosis of breast cancer. This paper focuses on the detection of breast cancers cells size below 2mm. To achieve précised enhanced cancer cell region an efficient technique dyadic Counterlet transform (DCTs) in two dimension is proposed. The enhancement of cancer cell region obtained through preserving the boundaries and borders with curvature for a small region.

Keywords —Breast cancer, Mammography, Microcalcification Clusters, Wavelet Transform, Dyadic Contourlet transform.

DNA BASED PREDICTION OF BREAST CANCER USING DEEP LEARNING ALGORITHM

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Abstract-Recent advances in information technology have induced an explosive growth of data, creating a new era of big data. Unfortunately, traditional machine-learning algorithms cannot cope with the new characteristics of big data. In this paper, we address the problem of breast cancer prediction in the big data context. We considered the data, namely gene expression (GE) and DNA methylation (DM). The objective of our work is to scale up the Deep Learning algorithms which are used for classification by applying each dataset separately and jointly. For this purpose, we chose MATLAB as a platform. In our study, we selected deep learning algorithm in predicting breast cancer. We conducted a comprehensive comparative study using three scenarios with GE, DM, and GE and DM combined, in order to show which of the three types of data would produce the best result in terms of accuracy and error rate. The experimental results showed that the scaled proposed framework outperforms the other classifiers, as it achieved the highest accuracy and the lowest error rate with the GE dataset.

Keywords- Deep Learning, Breast Cancer, Gene Expression, DNA methylation, Random Forest, Decision Tree.

ECOMMERCE CARE RESOURCE OPTIMIZATION FOR VM MIGRATION AND ANT COLONY OPTIMIZATION IN BIG DATA

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Abstract- As of late, the Ecommerce idea has turned out to be well known for its guarantee to enhance the personal satisfaction of urban nationals .Ecommerce benefits regularly contain an arrangement of utilizations with information sharing alternatives. The greater part of the administrations in Customer is really mashups joined information from a few sources. This implies access to every single accessible datum is imperative to the administrations. Consistent access of Smart Network administrations requires asset relocation as far as VM movement amid the offloading procedure to guarantee QoS for the client. Subterranean insect Colony Optimization (ACO) based joint VM relocation strategy is proposed in which client versatility is additionally considered. Propose an Ant Colony Optimization (ACO) based joint VM movement display for a heterogeneous, MCC based Smart Network framework in Ecommerce condition. In this model, the client's portability and provisioned VM assets in the big data address the VM relocation issue. Utilize DSMS, CEP, group based MapReduce and other preparing mode and FPGA, GPU, CPU, ASIC advancements contrastingly to handling the information at the terminal of information accumulation. Here organized the information and afterward transfer to the big data server and Map Reduce the information joined with the ground-breaking processing abilities big data engineering. Present an exhaustive execution assessment to examine the viability of our proposed display contrasted and the best in class approaches.

Keywords- Ant Colony Optimization (ACO), Big data Computing (MCC),Map Reduce. Big data Analysis .

FLEXIBLE HARDWARE ARCHITECTURE OF HIERARACHICAL K MEANS CLUSTER FOR LARGE NUMBER OF CLUSTERING

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Abstract- Tumor is an abnormal mass of tissue which may be solid or fluid. Tumor is a collection of cells forming mass. The tumor is of different characteristics and different treatment, when turns in to cancer become life threatening. So medical image, it is necessary to detect the exact location of tumor and type. For location of tumor in magnetic resonance image (MRI) segmentation of MRI plays an important role. MRI is the preferred technology which enables the diagnosis and evaluation of brain tumor. The current work presents a hierarchical clustering algorithm that is employed to cluster brain tumor. Comparing to other clustering technique the performance of hierarchical clustering plays a major role. Implementing this clustering technique along with FPGA hardware. The segmented tumor can be seen accurately at the exact place of brain with low cost and accuracy with less memory.

Keyword-Cluster brain tumor-MRI-K-means clustering -Fuzzy K means-Hierarchical K-Means-FPGA.

A STUDIES ON GAIT CHALLENGES IN PATIENTS WITH CEREBELLAR ATAXIA.

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Abstract-The work is about the Gait challenges faced in patients affected with Ataxia. Ataxia is the lack of muscle control or coordination of voluntary movements like walking or picking up of objects. Here cerebella ataxia is due to the damage or inflamed of cerebellum which is responsible for controlling gait and muscle coordination. The objective of this work is to measure the improvements on gait with the patients who are in rehabilitation Centre under treatment. In recent days there are various methods used for the analysis of human gait and is the most sensitive clinical test. In this study, we employ certain precise sensors on the muscle areas involved in gait such as foot, knees. These sensors provide us gait movements and along with the EMG in a numeric data and with that graphs can be plotted. This makes the analysis to be readable and it goes on hand with the physiotherapist.

Keywords- Cerebella Ataxia, Gait, sensors, muscle movement.

INFLUENCE OF ZrB_2 ON THE MICROSTRUCTURAL CHARACTERISTICS OF AA6082/ZrB_2 COMPOSITES

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Abstract-In the recent scenario, particulate reinforced aluminium matrix composites (AMCs) are used for plenty of applications in aerospace, non-structural, structural, transportation and automotive industries. This study concentrates on the manufacturing of AA6082/ZrB_2 aluminium matrix composites (AMCs) using liquid metallurgy process. The zirconium diboride particles of three different weight percentage i.e. 0, 3, 6 and 9% are reinforced with aluminium alloy (AA6082) using stir casting technique. Hardness, tensile and compression tests were conducted to evaluate the mechanical behaviour. The microstructures of the composites were examined using scanning electron microscope (SEM). The SEM microphotographs proved successful dispersion of ZrB_2 particles into the aluminium matrix. The tensile fracture surface of prepared composites and the plain aluminium were examined through SEM to understand the tensile fracture mechanism. Tensile fracture morphology reveals different mode of fractures, like brittle and ductile. The unreinforced AA6082 plain matrix alloy are subjected to ductile mode of fracture, with increase in zirconium diboride the mode of failure gradually transforms to brittle fracture. The mechanical properties of the composites are improved after the dispersion of ZrB_2 particles. The tremendous improvement in mechanical of the AMCs was found at 9 wt.% ZrB_2 particles in the matrix.

Issues with Perimeter Based Network Security and a Better Model to Resolve them

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***Abstract*—**Network firewalls are becoming irrelevant, neither can we be relied upon the perimeter networks nor can they be trusted. With adoption of bring your own device and convey your own cloud, we must evolve our defences to the devices and therefore the identities. ZTA is a response to enterprise network trends that include remote users and cloud-based assets which are not located within an enterprise-owned network boundary.

In this paper we will be understanding how the security state and the trustworthiness contributes to overall security posture, considerations for automated access to resources via device also the identity conditions and the way to implement these conditions to the road of business SaaS apps or on-premises web apps.

***Keywords*—**user identity, internal assets protection, architecture-zero trust, breaches.

Performance and Emission Study of Watermelon Seed Oil Biodiesel with Ferrous Oxide Nano Particle On Diesel Engine

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Abstract- Most of researches warns the world that our sources for traditional fuels including petroleum would be depleted. Owing to the fact that these fuels are also typically not renewable, a lot of people are worried that a day would come when the demand for these fuels would be more than the supply, triggering a considerable world crisis. The use of alternative fuels considerably decreases harmful exhaust emissions as well as ozone-producing emissions. According to a commonly accepted scientific theory, burning fossil fuels is causing temperatures to rise in the earth's atmosphere. Lot of people across the globe are of the belief that discovering sources of cleaner burning fuel is an essential step towards enhancing the quality of our environment. Many research works are finding the suitability of various alternative fuels like Jatropha oil, Sunflower oil, Waste cooking oil, Rubber seed oil, Melon seed oil etc. for IC engines. Therefore, it was proposed to find the suitability of water melon seed oil as an alternative fuel in this work. Bio-diesel was prepared from watermelon seed oil by using transesterification processes. The performance, emission and combustion characteristics of the various bio-diesel and diesel blends (B10–B20 and B30) have been compared with those of the diesel. The experimental result indicates that owing to the lower heating value of the biodiesel, the brake specific fuel consumption increased and the brake thermal efficiency slightly decreased. However, biodiesel and its blends reduced carbon dioxide and hydrocarbon, while the oxides of nitrogen and carbon monoxide slightly increased. The combustion analysis proved that increasing bio-diesel blend ratio decreases the cylinder pressure and heat release rate when compared with base diesel..

Keywords **-** Watermelon seed oil, Biodiesel, Performance and emission characteristics, Combustion analysis.

Performance and Emission Test in CI Engine Using Dates Seed Oil Biodiesel with Diethyl Ether

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Abstract-Increase in industrialization and rapid growth in vehicle population led to sudden need for fuel energy and increase in fuel economy. Indiscriminate and continuous use of petroleum fuels has increased the depletion in petroleum sources all around the world. Exhaust emissions from CI engines has resulted in greater impact in affecting the environmental eco system and air pollution. In order to meet the energy demand fuels from renewable sources can be used for some extent. This paper reviews the effect of biodiesel obtained from dates seed oil, emission and performance characteristics on a CI engine by modifying the cetane number using DEE. Greater viscosity, is found as the major problem and poor atomization in use of biodiesels when used directly in engines, and thus they are in need to be converted it into a low viscous fuel by chemical transesterification process. Fuel properties such calorific value, flash and fire point, pour and cloud point and cetane value of the above mentioned biodiesel–diesel blends are related to petroleum diesel. Diethyl ether (DEE) having a high cetane number it is blended to the biodiesel. Performance results are found that biodiesels provide increased brake thermal efficiency and lower brake specific fuel consumption. Emissions are calculated using AVL Gas analyser showed increased NOx and lowered HC, CO, and PM emissions as found.

Keywords- Biodiesel, dates seed, CI engine, DEE, transesterification, properties, performance, emission .

A NON-ISOLATED HIGH GAIN DC-DC CONVERTER USING CLOSED LOOP CONTROLLER FOR PV APPLICATION

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Abstract- The transformer less converters generally has low voltage gain. This paper proposes a new high gain DC-DC converter topology using closed loop FUZZY control. The proposed DC-DC converter has high gain output even though without transformer (Non-Isolated) and without mutual inductor. Despite of this high gain, the voltage stresses on MOSFET switches and diodes are considerably less. The input and output (load) current waveforms are continuous. The continuous character of input current of suggested converter candidates it as a suitable choice for application in renewable energies for maximum power point tracking. The low output voltage and fluctuation of generated powers are the main limitations of most of renewable sources. Thus, there exists a big need to voltage boosting converters, by which the low output voltage can be enhanced and stored in the energy storage system. Here by using PWM waveform the switches are closed to gain high output voltage.

Key words – Non-isolated, High gain, Voltage stress, DC-DC converter.

A SECURED TCP/IP IMPLEMENTATION AND VIRUS DETECTION USING FPGA

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Abstract-This Paper describes implementation of web server using Altera Nios II embedded IP core and a virus detection processor. A web server is a computer that delivers web pages to other computers in the network. Any computer can work as web server by installing server software. The web server with Nios II processor is called the embedded web server. The embedded web server is a high performance embedded web server, allows users to monitor and control their embedded applications using any standard browser. The embedded web server can communicate with the web browser through TCP/HTTP. The user can use a web browser and typing URL of website into that browser user can examine the web pages. The web server application is designed using Altera NiosII embedded platform. The results are verified by connecting it through intranet within the campus. This is found to be the cheapest best solution with low power consumption for substituting traditional web servers. Network security applications generally require the ability to protect against attacks such as viruses and spam. Traditional hard-ware solutions are intended for firewall routers. The solutions in the literature for firewalls are not scalable, and they do not address the difficulty of an antivirus with an ever-larger pattern set. This provides a systematic virus detection hardware solution for network security for embedded systems. Instead of placing entire matching patterns on a chip, a new solution is to provide a two-phase dictionary-based antivirus processor that works by condensing as much of the important filtering information as possible onto a chip and infrequently accessing off-chip data to make the matching mechanism scalable to large pattern sets.

Keywords- Algorithmic Attacks, Scalable Encryption Algorithm, Embedded System, Memory Gap, Network Security, Virus Detection.

SAFE INTERNET TRANSACTIONS FOR USER AUTHENTICATION

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Abstract-Internet banking has made the world's global exchange expand rapidly. On small and large systems, every financial transaction in daily life is carried out anywhere on small and large systems at any time. This refers to threats to include secure online transactions, such as identity malware, phishing, etc. This paper proposes a new method for authenticating personal identity users by sending a connection to the client computer from the server, authenticating the client by entering a password.

Keywords-Transaction, OTP, Security, Server, Client.

SIEST 20

SECURITY PATROLL GUARDS MANAGEMENT

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Abstract-The robots are widely used in various security applicable places. The robots are designed and developed for patrolling, which can be used to rescue human beings from danger, where human cannot sense the danger. There are four human rescuing sensors inbuilt in this robots. The sensors are light, smoke, temperature and sounds. The communication systems used here are wifi and GPS (Global Positioning System).Mobile robots are now widely used in various security and survelliance applications. The paper includes designing and developing a reconfigurable autonomous security robots which can be used in household are office purposes. The idea consists of four main parts: multiple sensor array, communication system (Bluetooth and GSM),motion planning(autonomous patrolling) and software application for mobile interface.

Design and Development of Indirect ECG Bipolar Lead II Signal through PPG Signal

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Abstract- This proposed work consists of designing and developing normal Electrocardiograph (ECG) Lead II signal from the Photoplethysmograph (PPG) signal. These signals are vital important for the heart functioning and these signals shall be obtained by means of single optoelectronic transducer. This transducer will offer the patients and necessary comfort to the patients. The hardware of the system mainly consists of two modules: the signal-conditioning module and data acquisition module. The conventional method of acquiring ElectroCardioGraph (ECG) signal may not be convenient as photoplethysmograph. A research investigation is made into the literature to convert photoplethysmograph into lead II Electrocardiograph (ECG) signal. A Software based recursive autoregressive (RARX) algorithm is proposed for converting photoplethysmograph signal to lead II Electrocardiograph (ECG) signal, considering that, both signals are repetitive signals and have same repetition frequency. Digital signal processing technique is applied to eliminate the noise contributed by the power line and other sources of noise. Also Windows Graphical User Interface (GUI) to be developed MS Visual C++ / MATLAB which will allow the photoplethysmograph signal processing required for obtaining lead II ECG signal and the visualization of these signals on PC monitor.

Keywords- RARX, ECG, PPG, GUI, MATLAB, PIC, USART.

IOT based Agricultural Field Monitoring

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***Abstract*-**The Internet of Things is a system of physical things embedded with sensors, softwares, electronics and connectivity to allow it to perform better by exchanging information with other connected devices. IOT (Internet of Things) technique is used in agriculture. In the existing work the leaf sensor senses the temperature difference level in leaf and sends it to PIC microcontroller. The sensors communicate remotely with a reader using backscatter biostatic standards. The drawback is that there is no way for monitoring the disease in crops. The technique of image processing is used to capture the image of the field and crop to find the unwanted plants and disease in the crops. The soil moisture level is maintained by soil moisture sensor. The data obtained from the field is stored in cloud by using wifi module. The information will be send to farmers through mobile application.

A Mesh Networking Based Solution on Power Management

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***Abstract*—** The development of automatic metering system and power management is presented in this paper. The system consists of Zigbee Digital Power meters installed at every consumer's unit and an automatic e-Billing system at the energy provider's side. The Zigbee Digital Power meter (ZPM) is a single phase digital kWh power meter with embedded Zigbee modem which utilizes the Wireless sensor network to send its power usage reading and the electricity bill back and forth wirelessly. At the power provider side an e-billing system is used to manage the received zigbee meter reading, compute the billing cost, and to publish billing notification to its respective consumer through wireless modem. Also the circuit is designed to manage power, when the generation of power is less available at the electricity board. The controller prioritizes the electrical appliances in each node (i.e. houses) similar to that of a mesh network. Then it gives the highest priority to the most necessary appliance needed by the user then in the same way it gives priority to all other appliances connected to the node. When the power value reaches below a threshold, the PC at the power provider section gives a command to the controller, to supply the power only to the higher priority appliances and stop providing power to the lower ones. Likewise depending on the availability, power is equally distributed to all the nodes connected to the energy provider so that each node can at least make use of the most used appliance without total power shutdown.

Keywords — AMI, GSM, MDMS, Zigbee.

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Study of Air Pollutant Monitoring Device for Sensing Application using COMSOL Metaphysics Tool

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Abstract- This paper aims to study the analytical response of micro cantilever based gas sensor for the quantification of toxic gas molecules, simultaneously discussing the possibility of a different measurement technique. Hence the micro cantilever beam deposited with an active material such as tin dioxide, palladium, indium oxide and grapheme to monitor and obtain the concentration of each toxic gas was identified in terms of deflection for deposited mass. The physics and study provided by COMSOL Metaphysics will be exploited for the current usage. This paper discussed about the different micro cantilever beam device for the gas sensing mechanism and selects the optimum structure based on their deformation in structure due to applied mass. The proposed method will be discussed based on their pros and cons by compared with other sensors. The drawbacks of the proposed technique are also highlighted. Overcoming the drawback of conventional measurement methodology and devising a novel sensor to make it compatible for gas sensing.

Keywords- Micro cantilever, Gas adsorption, Displacement study, MEMS and Piezoelectric material.

IMPROVEMENT OF POWER QUALITY ISSUES USING UNIFIED POWER QUALITY CONDITIONER IN DISTRIBUTION SYSTEM

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Abstract-The research work is predominantly focused on to improve the power quality in distribution system using UPQC system connected with grid.Generally the UPQC has 12 switches for improving the power quality, reduce the sag and swell and decrease the harmonic distortion. The unified power quality conditioner has reduced switches and also decreases the harmonic using various controllers. The series and shunt converter connects the dc link capacitor for ripple reduction but in nine switch UPQC device has integrate the series and shunt converter without capacitor.The unified power quality conditioner has presented for reduce the coupling problem by the presence of switching leg. A particle swarm optimization (PSO)-based multi-objective planning algorithm for power compensation of radial distribution system with UPQC consists of a series and a shunt inverter. The UPQC model based on phase angle control was used. In distributed system needs to explain the approaches for standard supply voltage droop and voltage swell. ThePSO-ANN controller has most appropriate in dynamic response with a simple configuration and reduces harmonics.

Keywords- UPQC,Non Linear Load, PSO-ANN,Nine Switch.

INCLUSION OF ROAD NETWORK IN THE SPATIAL DATABASE FOR FEATURES SEARCHING USING DYNAMIC INDEX

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***Abstract*—** Spatial database systems manage large collections of geographic entities, which apart from spatial attributes contain non spatial information (e.g., name, size, type, price, etc.). An Interesting type of preference queries, which select the best spatial location with respect to the quality of facilities in its spatial neighborhood. Given a set D of interesting objects (e.g., candidate locations), a top-k spatial preference query retrieves the k objects in D with the highest scores. The score of an object is defined by the quality of features (e.g., facilities or services) in its spatial neighborhood. For example, using a real estate agency database of flats for lease, a customer may want to rank the flats with respect to the appropriateness of their location, defined after aggregating the qualities of other features (e.g., restaurants, cafes, hospital, market, etc.) within their spatial neighborhood. Such a neighborhood concept can be specified by the user via different functions. It can be an explicit circular region within a given distance from the flat. Another intuitive definition is to assign higher weights to the features based on their proximity to the flat. In this paper, we formally define spatial preference queries and propose appropriate indexing techniques and search algorithms for them. We extend [1] results with dynamic index structure in order to accommodate time - variant changes in the spatial data. In my current work is the top-k spatial preference query on road network, in which the distance between object and road is defined by their shortest path distance.

Keywords- spatial information, spatial location.

INNOVATIVE HUMAN IDENTIFICATION SYSTEM USING MULTIPLE BIOMETRICS

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***Abstract*—**This paper proposes a human identification system using Gait, Facial elements, Palm and voice acknowledgment on biometric elements and is used to give an effective validation. The framework proposed in this paper takes one of a kind of human personalities which is given by the biometric elements of each person. This system assures to give secure access to the authorized clients without requiring them to recollect their check subtle elements or convey anything more. It gives a dynamic and speed calculation for approving the clients. The usage includes recording the step highlight of a man, which shows his/her strolling style and the qualities removed from them is extraordinary for every one of the people. The step highlight is combined with other remarkable components of people like palm print and facial components will give effective and secure validation framework. All the procedure is done with the help of only three cameras and it is finished by picture handling. The usage utilizes calculation which is dynamic, quick and plays out the proposed assignment adequately.

***Keywords*—**Image Processing(MATLAB),HMM,Eigen vector algorithm.

Embedded based Oil Industry Process Monitoring and Security system

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***Abstract*—** This paper 'Managing Oil Field Industry Based on Embedded wireless Communication' explains about the security provided to the oil field industry using the embedded technology. The wireless communication security system adopts two levels. The microcontroller used is PIC (Programmable Integrated Circuit) microcontroller which has the benefit of low power consumption and also aimed to perform direct control to the Oil Field Industry.The system level consists of a wireless receiver and a transmitter which operates with the help of the wireless Zigbee Technology, which directly sends the information to the duty room which is operated by an operator. The sensors used are float sensor, temperature sensor, LPG sensor and PIR (Pyro Infra Red) sensor which continuously monitors the entire Oil Field Industry.

Index Terms- Oil Field Management, Embedded construction, Wireless communication, Zigbee Technology, Sensors.

Online Credit Card Deceitful Detection Using Data Mining

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Abstract— As e-commerce sales continue to grow, the associated online fraud remains an attractive source of revenue for fraudsters. These fraudulent activities impose a considerable financial loss to merchants, making online fraud detection a necessity. The problem of fraud detection is concerned with not only capturing the fraudulent activities, but also capturing them as quickly as possible. This timeliness is crucial to decrease financial losses. In this research, a profiling method has been proposed for credit card fraud detection. The focus is on fraud cases which cannot be detected at the transaction level. In the proposed method the patterns inherent in the time series of aggregated daily amounts spent on an individual credit card account has been extracted. These patterns have been used to shorten the time between when a fraud occurs and when it is finally detected, which resulted in timelier fraud detection, improved detection rate and less financial loss.

Keywords- *Fraud detection; aggregation; profile; credit card; time series;*

Li-fi over Wi-fi

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Abstract **-** This document provides the detailed information about the LI-FI technology and its approach. LI-FI denotes denote light fidelity. Herald haas a German physicist first proposed the theory of li- fi technology. Similarly as in message transmission the data is transmitted through light which acts as a carrier as if carrier signal in message transmission. The best way to understand the concept of li-fi technology is to compare with the WIFI TECHNOLOGY. The data is transmitted through light with the help of LED lights. As the advancement in the science and technology increasing, parallely the development of lifi also increasing. Lifi uses VISIBLE LIGHT COMMUNICATION technique to transfer data.

Key Words- li-fi technology , wi-fi technology , led, visible light communication.

Advanced Technology for Human Vision Using Bionic Eye

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***Abstract* —** This document gives brief information about Bionic Eye. In this paper, Need of Bionic Eye, Working Principle and Advanced technologies are explained clearly .The main Purpose of Bionic Eye is to provide vision to blind people.For those millions of us whose vision isn't perfect, there are glasses. But for those hundreds of thousands who are blind, devices that merely assist the eyes just aren't enough. What they need are alternative routes by which the sights of the world can enter the brain and be interpreted. Technology has created many path ways for the mankind. Now technology has improved to that extent wherein the entire human body can be controlled using a single electronic chip.

***Keywords*—** Visual prosthesis , Retinitis , Macular , Optobionics, microphotodiode.

AUGMENTED REALITY

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Abstract **-** This paper presents an overview of basic aspects of Augmented Reality (AR) and the main concepts of this technology. It describes the main fields in which AR is applied nowadays and important AR devices. Some characteristics of Augmented Reality systems will be discussed and this paper will provide an overview of them.

Keywords – *Augmented Reality, Virtual Reality, Scientific Visualization*

SIEST 20

A New Approach in Storage for Social Media Networks

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Abstract- In recent years we people are using lot of social media network for sharing our messages, photos and videos. Big Data is a term used to describe a collection of data that is huge in size and yet growing exponentially with time. The categories are structured, semi- structured and unstructured data. Data analysis is a collective term of gathering, organizing and analyzing data for present and future improvements. It also refers to manipulation and analysis of the large volume of data such that big data is of course a complex process. Collecting, analyzing, searching, storing and sharing of big data is a challenging task using modern big data analytic tools. Storage is a big task in any social media networks such as facebook, twitter, whatsapp, LinkedIn, Instagram and youTube. In this paper we propose a new architecture for storage technology.

Keywords- Social media, Big Data, Data Analysis, Storage, Big data analytic tool

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