

# PROCEEDINGS

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ON ADVANCES IN SCIENCES & ENGINEERING



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## EC-401

# NON INVASIVE BASE OF DIABETIC DETECTION THROUGH MAGNETIC SIGNAL

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### ABSTRACT

This article describes the research on biomagnetism, an inter disciplinary field of research involving biology, physics, psychology and other areas. Biomagnetic fields are extremely weak magnetic fields, with from 1/10,000 to 1/100,000,000 the strength of the earth's magnetic field, are emitted by the heart, brain, lungs, pancreas and other organs of the human body. In laboratories around the world, research is currently in progress aimed at measuring such extremely weak magnetic fields for use in diagnosis and in explication of body functions. This paper mainly focuses on the remarkable progress of research on biomagnetism involving Spintronic sensors in the measurement of bio magnetic fields. Spintronic sensors based on the magneto resistive (MR) effect have been widely explored over the past years for many applications, strongly inspired by the success of the magnetic recording technology. These devices directly convert the magnetic field into a voltage or resistance with a dc bias current supply. As the MR sensors can be fabricated with high yields in 200 mm diameter substrates and also integrated on CMOS wafers already including the readout electronics, the MR technology can be made very compact and versatile. In diagnosing the weak magnetic field we use DAQ. Data acquisition systems, abbreviated by the acronyms *DAS* or *DAQ*, is the process of sampling signals that measure real world physical conditions and converting the resulting samples into digital numeric values that can be manipulated by a computer. Data acquisition systems, abbreviated by the acronyms *DAS* or *DAQ*, typically convert analog waveforms into digital values for processing. Using this sensor, diabetes is detected from the pancreas region through non-invasive method.

Keywords : Magnetic signals, diabetic detection, bio-magnetic fields , Data acquisition systems.

EC-402

# SECURE AND AREA EFFICIENT RING OSCILLATOR PHYSICAL UNCLONABLE FUNCTION FOR AUTHENTICATION

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## ABSTRACT

FPGAs are being increasingly used in products and systems of all kinds and often form the core of any system dominating a wide range of application areas. Cloning, overbuilding, reverse engineering and tampering are the major security vulnerabilities of FPGAs. Physical Unclonable Function (PUF) are the ones that provide a promising approach towards embedded security and enables the exploitation of unavoidable variations in manufacturing processes. We have designed a PUF that is efficient in area and as well as it is secure to response prediction types of attacks. This PUF takes an 8-bit challenge and produces an 8-bit response. The randomness and repeatability aspects of the PUF are obtained through the use of relative comparisons between adjacent ring oscillators (RO) on implementing the RO structures using Xilinx FPGAs. With an inter-die variation of 49% between PUF instantiations, an intra-die variation of about 33% in the same PUF instantiation, and a measurement noise of about 6% at room temperature, this PUF could be used for identification purposes in FPGA or ASIC designs. Xilinx Spartan-3E FPGA experimental results demonstrate the efficacy and scalability of the PUF architecture with area reduction of 43% compared to traditional PUF with a marginal trade off with speed.

**Keywords:** Cloning, FPGA, Physical Unclonable Function (PUF), ring oscillators, inter-die and intra-die variations.

## EC-403

# WIRELESS HEALTH MONITORING SYSTEM

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### ABSTRACT

Internet is growing at a rapid rate. It is estimated with evolving techniques such as **IoT** (*internet of things*) there will be more than 20 billion devices connected through internet in next five yrs. Nowadays we can see that the people are becoming more conscious about their health problems and they are needed to be regularly monitored. The today's hospitals are huge in areas where the doctor has to attend each wards to monitor the patient and people lack time to attend hospital for regular checkups. It is not feasible for the doctors to go to each patient and attend them in person .Keeping all these aspects in the mind using the concept IoT we have developed wireless biomedical parameter monitoring system which helps the doctor to monitor the patient globally.

In this system we are continuously monitoring the patient's different parameters such as body temperature, blood pressure, pulse rate where the acquired data through the various sensors is transmitted to the doctor's mobile through a **Microcontroller Unit CC3200** server using Wireless Sensor Networks where the necessary coding is done with the help of **Energia** a Texas instruments software designed specially to work on MCU CC3200. The data acquired by the MCU is transmitted to the internet through the built-in Wi-Fi. These data on the internet can be continuously viewed by the doctor through an app designed using **MIT App Inventor**. This helps the doctor on constant monitoring of the patients health.

Thus our system proves to be globally helpful by reducing the man power through online surveillance of patient. This system can also be widely extended by including an alert system which alerts the nearby hospital in case of a need of immediate medical attendance or by calling an ambulance if the patient is in trouble. Thereby using our concept we can achieve a global health surveillance for the welfare of the people.

## EC-404

# INNOVATIVE TRENDS IN RECENT TECHNOLOGIES COCONUT HARVESTING MACHINE

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### ABSTRACT

The purpose of the project is to develop a wired or wireless robot that is capable of climbing trees and pole like structures. The vital motivating force behind this project was to design a small man-portable robot which can be operated by an individual and perform various applications. The coconut harvester will be having qualities like maneuverability and adaptability on a irregular and a varying diameter of a tree. The whole setup consists of a climbing base portion which can cling and climb on columns of a range of 30-40cm diameter. It has a arm which consists of a gripper and a cutter. Gripper is used to plug the coconut from the tree and cutter is used to cut the branch of the tree. The entire motions of the coconut harvesting robot are controlled by using a DPDT switch.

# EC-405

## HIGH PRESSURE INDUCED ELECTRICAL RESISTIVITY MEASUREMENTS OF LANTHANUM DOPED CeO<sub>2</sub> NANOPARTICLES.

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### ABSTRACT

Pristine and Lanthanum doped Cerium oxide nanoparticles were synthesized via chemical precipitation method. The average particle size was found to be 23 nm. The X-ray powder diffraction spectra show that all samples have a fine FCC structure of CeO<sub>2</sub> nanoparticles. The FT-IR study fairly agrees with the XRD results. Laser Raman spectra confirms the cubic nature of the materials. From the SEM images, the particles are seen to be in spherical shape and uniformly dispersed on the surface. The optical absorption study clearly shows that the absorption edge shift towards the higher wavelength region with the increase in La-doped concentrations. The slight decrease in relative resistivity with increase of pressure and Lanthanum concentration. This result agrees well with the earlier reports of no phase transition due to high pressure and induced internal volume change in cubic lattice.

**Key words:** Precipitation; Ceria; Nanoparticles; Doped; Face-centered cubic; Phase transition

EC-406

# STRING MATCHING ON MULTICONTEXT FPGA USING DYNAMIC PARTIAL RECONFIGURATION

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## ABSTRACT

If logic be optimized for each problem instance, FPGAs do better than ASICs. CAD tools to generate problem instance dependent logic and time required configuring the FPGAs. In this paper, a novel approach for mapping and reconfiguration proposed that uses dynamic partial reconfiguration of FPGAs to get speed-up over existing approaches. Main idea is to design and map problem instance dependent logic on FPGA that maps problem instance dependent logic on other contexts of the same FPGA. As a result, CAD tools needed to use just once for each problem and not once for every problem instance as is usually done. To prove this approach, a detailed implementation of snort rule set based IDS using Boyer-Moore (BM) string matching algorithm is presented. It is implemented to get correct estimates of performance on FPGA device. Speedups in mapping time approximate  $10^6$  times over conventional CAD tools and dynamic reconfiguration time of 0.016 ms for 8 patterns are obtained. Significant speed-up obtained in overall mapping time as well including a speed up ranging from 3 to 16 times over a software implementation of snort rule set based IDS using BM algorithm running on a Pentium @ 2.8GHz workstation.

***Index Terms*** —partial reconfiguration, context switching, Dynamic reconfiguration, Field programmable gate arrays



EC-408

# **COMPARATIVE ANALYSIS OF RECTENNA CONFIGURATIONS FOR POWER TRANSMISSION AT INDUSTRIAL SCIENTIFIC AND MEDICAL FREQUENCY BAND**

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## **ABSTRACT**

Wireless power transmission allows the continuous charging of electronic devices and eliminate constrains due to the power cords. A rectenna is a rectifying antenna used in the wireless power transmission systems. In this paper, we present the comparative analysis of different rectenna configurations (Shunt rectifier, half wave rectifier) working at Industrial Scientific and Medical (ISM) frequency band. To identify an efficient rectenna configuration, we computed the conversion efficiency using ORCAD simulation and laboratory experiments. In our experiments, the conversion efficiency of shunt rectifier and half wave rectifier based rectenna configurations are computed for different load resistance values. Based on this conversion efficiency value, an efficient rectenna setup is designed for power transmission using ISM band ( 2400 Hz-2483.5 Hz) wireless device signal.

**Keywords:** Wireless power transmission, Rectenna, ISM band, Shunt rectifier, Half wave rectifier.

EC-409

# COMPARISON OF MULTIPLIER DESIGN WITH VARIOUS FULL ADDERS

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## ABSTRACT

A multiplier has an important role in various arithmetic operations in digital signal processing applications which include digital filtering & communications and power analysis. The design of fast and low power multipliers has been a huge theoretical and practical concern for scientific researchers. In this paper the analysis of 4\*4 Array and 4\*4 Wallace tree multiplier and comparison is being done by using different full adders namely Conventional full adder, Transmission function full adder and Hybrid full adder. This work has been done in a schematic editor using Tanner tool v14.1 in 0.18nm CMOS technology. T-spice is used as simulator and W-editor is used to show the waveform of multiplier. The material area required to design a multiplier is reduced. Due to the reduction of material area, this causes the low power consumption, minimized area and time delay.

## EC-413

# AN AUTOMATIC OPTIC NERVE HEAD LOCALIZATION AND SEGMENTATION IN RETINAL IMAGES

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### ABSTRACT

Automated retinal image analysis has been emerging as an important diagnostic tool for early detection of eye-related diseases such as glaucoma and diabetic retinopathy. In this paper, we have presented a robust methodology for optic disc detection and boundary segmentation, which can be seen as the preliminary step in the development of a computer-assisted diagnostic system for glaucoma in retinal images. The proposed method is based on morphological operations, the circular Hough transform and the grow-cut algorithm. The morphological operators are used to enhance the optic disc and remove the retinal vasculature and other pathologies. The optic disc center is approximated using the circular Hough transform, and the grow-cut algorithm is employed to precisely segment the optic disc boundary. The method is quantitatively evaluated on five publicly available retinal image databases DRIVE, DIARETDB1, CHASE\_DB1, DRIONS-DB, Messidor. The method achieves an optic disc detection success rate of 100% for these databases with the exception of 99.09% and 99.25% for the DRIONS-DB, Messidor, and ONHSD databases, respectively. The optic disc boundary detection achieved an average spatial overlap of 78.6%, 85.12%, 83.23%, 85.1%, 87.93%, 80.1%, and 86.1%, respectively, for these databases. This unique method has shown significant improvement over existing methods in terms of detection and boundary extraction of the optic disc.

**Key words:** Optic disc, Retinal image analysis, Grow cut algorithm, Glaucoma detection, Image Analysis.

## EC-414

# LIFE DETECTION SYSTEM DURING NATURAL CALAMITY

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### ABSTRACT

To create a robotic wheel car that moves in a earthquake prone area and help in identifying the people who are alive in the debris. As sound waves travels in dense medium, we are using acoustic sensor as an input and reflected wave identifies the life of human being. The sensor is based on the concept of transmitting ultrasonic waves and analyzing the reflected waves to detect the motion of human. For each consecutive meter the transmitted frequency is increased. In this sensor the slow motion of stationary person can also be detected. The location of the human is detected by using GPS. The gathered data is plotted over the map using softwares like google earth Density map indicates the number of persons buried at any point .The process consists of two fragments .First is to detect the human by using ultrasonic transducer, which can manage frequency and the second, is to send the gathered information which includes location coordinates and the depth where it can made available globally .This model may also be beneficial in calculating the rescue technique competency for different natural and manmade disaster.

**EC-415**

**AN EMPIRICAL INVESTIGATION OF OPTIC DISC  
DETECTION AND SEGMENTATION IN RETINAL  
FUNDUS IMAGES**

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**ABSTRACT**

Careful evaluation of Optic nerve head structure and its documentation is extremely important for diagnosis of Glaucoma, an eye disease which leads to vision loss. This work focuses on automatic segmentation of Optic disc from fundus images, which is an important parameter for disease diagnosis. We investigate and compare performance of various methods for Optic disc detection and segmentation. Comparison of optic disc and segmentation methods done by various performance measures such as success rate and Cup to Disc ratio. Cup to disc ratio is the measure indicator used to detect glaucoma. It is the ratio of sizes of optic cup to disc. The aim of this analysis is to study the performance of various detection and segmentation approaches used for optic cup and optic disc so far by different researchers for detection of glaucoma in time.

Keywords: Optic disc, segmentation, Glaucoma, success rate, Cup-to-disc ratio.

## EC-416

# A FUZZY LOGIC BASED CLUSTERING ALGORITHM FOR WSN TO EXTEND THE NETWORK LIFETIME

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### ABSTRACT

Wireless sensor Network (WSN) brings a new paradigm of real time embedded systems with limited computation, communication, memory, and energy resources that are being used for huge range of applications where traditional infrastructure based network is mostly infeasible. The sensor nodes are densely deployed in a hostile environment to monitor, detect, and analyze the physical phenomenon and consume considerable amount of energy while transmitting the information. It is impractical and sometimes impossible to replace the battery and to maintain longer network life time. So, there is a limitation on the lifetime of the battery power and energy conservation is a challenging issue. Appropriate cluster head (CH) election is one such issue which can reduce the energy consumption dramatically. Low Energy Adaptive Clustering Hierarchy (LEACH) is the most famous hierarchical routing protocol, where the CH is elected in rotation basis based on a probabilistic threshold value and only CHs are allowed to send the information to the base station (BS). But in this approach, a super cluster head (SCH) is elected among the CHs who can only send the information to the mobile BS by choosing suitable fuzzy descriptors such as remaining battery power (RBP), Mobility of BS and Centrality of the clusters. Fuzzy inference engine (Mamdani's rule) is used to elect the chance to be the SCH. The results have been derived from NS-2 simulator and shows that the proposed protocol performs better than LEACH protocol in terms of First node dies, Half node alive, better stability and better lifetime.

*Index Terms*— WSN, SCH, Fuzzy Logic

EC-417

# AN ANDROID BASED APPLICATION FOR AUTOMATION IN EDUCATIONAL INSTITUTION AND INDUSTRIES

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## ABSTRACT

The project presents automation in educational institution and industries using a GSM SIM900 module. The idea behind this project is to provide its users with a simple, fast and reliable way to put up important notices in an LED where the user can send a message to be displayed in the LED. The message can be sent through an android application designed in this project, to the GSMSIM900 module which has a SIM card inside it. Similarly, automation system has been developed where industrial appliances like light, fan etc. can be switched on or off using the same android application designed in this project. So the android application can be used to control and notices can be put up in an LED display from any location in the world. It uses a microcontroller for system control, GSM technology for communication and sends SMS containing the message through the android application. The project consists of a 32-bit ARM based microcontroller LPC2148, GSM SIM900 module, an LED, a motor and an android application for user interface with the hardware. The device can be used anywhere irrespective of the place of deployment provided mobile network connectivity is available.

**KEYWORDS:** *LPC2148, GSMSIM900, Android, Relay, Microcontroller*

EC-418

# ANALYSIS OF PDORP ROUTING PROTOCOL IN WIRELESS SENSOR NETWORKS

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## ABSTRACT

*In recent years, there has been a winged generation of research relating to wireless sensor networks (WSN), due to large-scale range of potential utilization there can be used for several applications such as, surveillance, hostile monitoring, target tracking, and security management. Sensor nodes can be defined as typically powered by batteries so it is having a limited amount of lifetime, and another problem can be considering is batteries cannot be recharged. The energy problem is major trouble in wireless sensor networks. So we proposed advanced routing protocol PDORP, reduced the energy consumption as well as improving the quality of service (QoS), and better throughput which compared to another routing such as, LEACH, PEGASIS, DSR, and OLSR.*

**Keywords:** *Energy Efficient, Sensor Node, Routing, PDROP, Network Life Time, Energy Level.*



## EC-420

# POWER EFFICIENT DESIGN OF 8-BIT WALLACE TREE MULTIPLIER USING FULL SWING GATE DIFFUSION INPUT TECHNIQUE

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### ABSTRACT

This paper proposes design and implementation of low power 8-bit Wallace tree multiplier design using Full Swing Gate Diffusion Input Logic technique. The proposed design, developed using 250nm process technology was compared with its equivalent design, developed using CMOS technology. The proposed design depicted prominent decrease in power and area owing to its low complexity. Regression analysis of the design was performed for various values of supply voltage and process technologies.

**Keywords:** *Gate Diffusion input, Wallace tree Multiplier, Low power.*

EC-421

# LOW POWER DESIGN OF 8 BIT MANCHESTER CARRY CHAIN ADDER USING FULL SWING GATE DIFFUSION INPUT TECHNIQUE

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## ABSTRACT

This paper details the design and implementation of low power 8 bit Manchester carry chain adder using Full swing Gate Diffusion Input technique. The proposed adder was compared with an identical Manchester carry chain adder developed using CMOS technology. The designs were implemented and simulated using Tanner EDA tool in 250nm process technology. Results for power, area and delay were obtained. It was observed that the proposed design offered significant reduction in power, area and delay when compared with the design developed using traditional CMOS technology. A mathematical analysis of the design, depicting its robustness for varied supply voltages and process technologies was performed.

**KEYWORDS:** *Full swing gate diffusion input, low power, Manchester carry chain adder*

EC-422

# AUTOMATIC DEFECT DETECTION IN AUTOMOBILE FOR SAFE AND SMART LIFE USING IOT

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## ABSTRACT

Mechanical parts defect detection is an important problem in automobile which is being done manually. So, we have proposed a novel technique in which the defects can be identified individually and can be reported to the mechanic nearby using IOT. The project is divided into 3 phases. The first phase is Defect Detection by various sensors placed in the vehicle. The Second Phase involves categorizing the defects into minor defects and major defects and listing the defects to the vehicle owner as a text message using IOT and getting the approval of the list of defects to be attended by the mechanic. The Third phase involves sending the list of defects to be attended and getting the approval from the mechanic.

## EC-423

# Cluster Based Energy Efficient Fault Node Detection and Replacement in WSN using Genetic Algorithm

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### ABSTRACT

Routing algorithm plays an important role in wireless sensor network (WSN). Sensor nodes typically runs on a low powered battery device. Hence, routing with efficient power utilization is becoming a critical issue for sensor network. This paper detects the faulty nodes by devising clusters to intensify the sensor network life time by detecting the non-functioning sensor nodes. The algorithm actively and spontaneously form clusters of entire sensor nodes and creates the routing table using energy-efficient ant colony optimization technique. Genetic algorithm is used to perceive and replace the defective nodes in order to reduce the time delay. The simulation results shows that system decreases the energy consumption and increases the lifetime of nodes on comparison with High Energy First and LEACH protocol.

**Keywords:** Transcritical, energy, exergy, cooling cycle

## EC-424

# INGENIOUS TROLLEY

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### ABSTRACT

Today's world thrives making human life easier than it already is with every passing moment. Creating a smart cart that takes care of comfort while shopping is another step taken in the same direction. Product acquisition in large grocery stores with wide range of products is a tedious and time consuming process. The smart shopping cart explores the mini computers and automatic identification technology. Instant billing without queuing and keeping track of the expenditure is the main but not the sole motive of this intelligent cart. The paper is based on development of a project with the aim to reduce the time spent in the store and to make shopping of day to day items and experience instead of a headache. This cart uses modern and cheap technology like RFID and mini computers to make it intelligent and time saving. It helps the consumers to utilize the time saved in other fruitful activities instead of wasting their time by standing in long queues at the checkout counter.

***Keywords: Radio Frequency Identification (RFID), Arduino, Bluetooth module***

## EC-425

# *CONTEXT-BASED RIDEMATE SYSTEMS*

### ABSTRACT

A Helmet is a basic safety protocol for every Bike Rider. But, people (especially youngsters) do not consider wearing it despite of Law enforcement. So, our idea is to make Helmet a device which is context based and this helmet is considered as RIDEMATE system not only ensures compete safety of the rider but also flourish the rider with adequate information and assistance required for his/her journey like:-

- VOICE GPS and SEARCH,
- ALCOHOL DETECTION,
- SPEED ALERT AND CONTROL,
- ACCIDENT PREVENTION

based on situational context of user.

A wireless link is implemented which is able to communicate between transmitter circuit and receiver circuit. ARDUINO uno R3 is used to control the entire component in the system.

The other components besides ARDUINO UNO R3 are BLUETOOTH, Alcohol Gas Sensor, along with mic, ear cups (Speaker) and Sensors such as speed sensor and stimuli sensor are used. Helmet pairing is done with the vehicle module along with use of smartphone for in voice commands. Drunk & drive can also be prevented by using required sensor. Motorcyclist will be alarmed when the speed limit is exceeded.

We are using ARDUINO uno R3 as a processor along with other external devices and sensors which provides as with a required safety measures and to prevent accidents.

# EC-426

## BIG DATA ANALYSIS IN RISK BASED INDUSTRIAL WIRELESS SENSOR NETWORK USING RSM ALGORITHM

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### ABSTRACT

The era of Wireless Sensor Network (WSN) has the challenge for gathering real time data in risk analysis for various applications. We introduce a concept of big data to overcome this limitation by collecting the data from source nodes to the sensor node. We implement Response Surface Methodology (RSM) algorithm in sensor node to analyze the sensed data for deciding the important of transmission of data to the base station during risk analysis operation. We develop Destination Sequenced Distance Vector Routing (DSDVR) to establish a path between the sensor node and source node .This concept will overcome draining of battery life, failure of nodes in WSN and balances the energy consumption of all nodes. Network simulator (NS) tool is used for implementing RSM algorithm in different network .In future, RSM algorithm can be applied to the risk analysis for different industrial applications. We can also implement the system in hardware real time environment for real time situation for refining our process.

**Keywords - Big data, Risk analysis, RSM algorithm, WSN, DSR, sensor node**

## EC-427

# TRANSMISSION OF BONE CONDUCTED SOUND TO THE BRAIN BASED ON VIBRATION

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### ABSTRACT

The frequency components interact non-linearly with each other inside the cochlea, the loudness growth of tones is relatively simple in comparison to the loudness growth of complex sounds. The term suppression refers to a reduction in the response growth of one tone in the presence of a second tone. Suppression is evident in many measurements of cochlear function in subjects with normal hearing, including distortion-product otoacoustic emissions (DPOAEs). Suppression is also evident, to a lesser extent, in subjects with mild-to moderate hearing loss. This paper describes a hearing-aid signal processing strategy that aims to restore both loudness growth and two-tone suppression in hearing-impaired listeners. The prescription of gain for this strategy is based on measurements of loudness by a method known as categorical loudness scaling. The proposed signal-processing strategy reproduces measured DPOAE suppression tuning curves and generalizes to any number of frequency components. The restoration of both normal suppression and normal loudness has the potential to improve hearing-aid performance and user satisfaction.



## EC-428

# INTELLIGENT BINS FOR SMART CITIES

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### ABSTRACT

The method of connecting the objects or things through wireless connectivity, Internet called Internet of Things. Nowadays a variety of tasks are based on IOT. Cities in the world are becoming smarter by implementing the things around using IOT. This is a new trend in technology. One of the objective of smart cities is keeping the environment clean and neat. This aim is not fulfilled without the garbage bin management system. Hence the paper “IOT Based Intelligent Bin for Smart Cities” has been developed. Bin management is one of the major applications of IOT. Here sensors are connected to the all the bins at different areas. It senses the level of garbage in bin. When it reaches threshold a message is sent via GSM to the concerned person to clean it as soon as possible.

**KEYWORD:** Raspberry pi, IR sensor, Arduino, GPS, GSM, SIM, WIFI module

## EC-429

# VEHICLE ACCIDENT DETECTION, REPORTING AND NAVIGATION USING IOT

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### ABSTRACT

With the envisioned era of internet of things, all aspects of Intelligent Transportation Systems will be connected to improve transport safety, relieve traffic congestion, enhance the comfort of transportation and significantly reduce road accidents. However, some of the rescue teams face difficulty in reaching the injured people to due late alerts and insufficient information of the specific accident location. The advent of the mobile phone and Internet of Things (IOT) industries reshaped the way people communicate and brought a paradigm shift to public and private services. This paper conveys a smart and reliable IOT system solution which instantly notifies the Emergency Medical Services(EMS) of the victims location and pinpoints its geographic coordinates on the map. At the same time the designated numbers are also notified of the incident and are constantly updated of the victim's whereabouts by the EMS. In addition to this, the vehicle involved in the accident continuously transmits signals to the oncoming vehicle indicating about the incident and warning them to reduce their speed and travel cautiously to avoid further collisions. This is a promising system expected to aid in the tedious rescuing process by reporting in a matter of seconds the location of an accident, the passengers injured, blood types, thus lowering death rates.

**KEYWORDS:** Accident, rescue, IOT, sensor, geographical coordinates, accident alert signals

## EC-430

# AN AUTOMATED HYBRID MULTI REGION THRESHOLDING FOR CYST SEGMENTATION IN DIGITAL DENTAL X-RAY IMAGES

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## ABSTRACT

Finding the optimum threshold for an image is still challenging task in automated segmentation digital dental x-ray images because the cystic areas are not homogeneous in the distribution of pixel intensities and having blurred edges. This paper proposes a hybrid multi-region thresholding method to achieve the highest possible degrees of automatization for the computer aided diagnosis or detection of dental cysts in dental x-rays. The proposed methodology utilizes both soft thresholding and hard thresholding for segmentation. First, it finds out the number of centroids and centroid values using Fuzzy C-means clustering (FCM). Then based on that the membership function has been designed and assigns fuzzy membership degree to every pixel in the clusters. At this stage, it produces intermediate segmentation result based on fuzzy membership degree. Then the fuzzy aggregation of local neighborhood pixels has done by running the mask over the image. Finally fully segmented is produced by hard thresholding the resultant image by considering pixels which are having the maximum response. This method is a fully automated, accurate, and efficient segmentation of dental cyst in dental x-ray images. The obtained results compared with other segmentation methods for validation. The Experimental result shows that the proposed method is reliable on segmentation of contour of the dental cyst in small to large size in any location in the dental x-rays.

**Keywords :** Digital Dental X-rays, hybrid multi-region thresholding, dental cyst segmentation

**EC-431**

# **IMAGE DENOISING USING PARTICLE SWARM OPTIMIZATION ALGORITHM**

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## **ABSTRACT**

Image Denoising has become one of the major forms of image enhancement methods that form the basis of image processing .Due to inconsistencies in the machinery producing, these signals, medical images tend to require these techniques. In the real time , images do not contain a single noise ,and instead they contain multiple types of noise distributions in several indistinct regions .This paper presents an image Denoising method that uses PSO algorithm to identify the noise distribution , and appropriate noise correction techniques. Experiments would be conducted using salt and pepper noise, Gaussian noise , special noise in the same image . We would also try to denoise the image by using GSO (gravitational search algorithm) and compare the results with PSO method.

**EC-434**

# **OPTIMAL AND SECURED AODV ROUTING PROTOCOL FOR MANETS**

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## **ABSTRACT**

Mobile Adhoc Networks are self-configuring and autonomous networks. MANETs comprise many number of nodes which move in random manner. MANETs find many applications such as defense, situations occurred in natural calamities, and emergency situations. MANETs require optimal and secured routing path between source and destination. We consider AODV routing protocol for our study to design the required optimal and secured protocol. We propose a protocol which is optimal and secure AODV routing protocol for MANETs. The optimal path is found using genetic algorithm by considering traffic free path parameters such as bandwidth, signal strength and energy level of mobile nodes which are involved in forming networks. The data sent are secured while sending along the optimal path. The results of designed protocol are obtained through simulations using network simulator 2 and compared with AODV routing protocol. The results show the efficiency of designed protocol.

**KEYWORDS**– MANET, Optimal, Secured, Genetic Algorithm, Traffic Free Path Parameter, AODV.

**EC-436**

# **LIBRARY AUTOMATION USING PROGRAMMABLE LOGIC CONTROLLER**

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## **ABSTRACT**

Now a days, there are number of authors in the world and they publish lot of books. Presently the library has lot of books which makes lots of time to search for a book. To avoid the manual searching and to save the time. We are going with automated PLC technology for searching and collecting the books.

Keywords : Library automation, PLC, Automated searching, Manual searching.

## EC-438

# INTERNET BASED GPRS AND RFID SECURITY SYSTEM FOR MONITORING KIDS OF SCHOOL BUS

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**Abstract:-** Security system is one of the key issues .kids safety is largely concern now a days, Parents always worried about the security of their child, This paper present the Security system of kids. It provides the information of kid while entry and exit and most importantly throughout the route of school bus. The proposed system read the information of kids and updates the server database, so through mobile app parent can monitor the status of kids, track the school bus how far from the source and destination. The designed security system is based on microcontroller having RFID, GPS, GPRS and display unit. The main approach of system is use of Internet which is most commonly accessible now days, Use of GPRS and GPS play key role of technologies up-gradation. RFID reader based secure system using GPS and GPRS for kids are useful for parent to monitor the kid's status and track presence of kid in school bus. Hardware uses PIC 18F45K22 microcontroller and Embedded software is based on embedded C, application uses Android and Java. The system is fully implemented. Overall system is successfully tested and results are presented here .The system is cost-effective and flexible. The system also configure remotely for updation of embedded software and functionality.

**Keywords – Security, database, GPRS, RFID, tracking etc.**

EC-442

# **SELFLEARNING CAMERA BASED EYE CONTROLLED WHEELCHAIR**

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## **ABSTRACT**

A novel technique is implemented for the eye controlled based independent and cost effective system. The purpose of this project is to control electric wheelchair and eliminate the necessity of the assistant required for the disabled person. In this system, controlling of wheelchair is carried out based on eye movements as the camera is mounted in front of the user to capture the image of even any one eye. Then the camera tracks the position of eye pupil with the use of image processing technique. According to the position of eye wheelchair motor will be directed to move left, right and forward. For safety purpose sensors are used to stop the wheelchair in the occurrence of any obstacles. In advance we can also store the required data in Artificial Intelligence.



## EC-444

# DESIGN AND OPTIMIZATION OF PHOTONIC CRYSTAL BASED EIGHT CHANNEL DENSE WAVELENGTH DIVISION MULTIPLEXING DEMULTIPLEXER USING CONJUGATE RADIANT NEURAL NETWORK

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### ABSTRACT

In this paper, Two Dimensional Photonic Crystal (2DPC), based eight-channel demultiplexer is proposed and designed for DWDM applications. The performance parameters of the demultiplexer such as transmission efficiency, channel spacing, spectral line width, Q factor, and crosstalk have been evaluated. The proposed demultiplexer comprises of bus waveguide, drop waveguide and Parellogram Resonant Cavity (PRC). The bus waveguide transmits light to the PRC and exits through respective drop waveguide. The PRC consists of a parellogram resonator with a Nano ring cavity that is used for dropping eight specific wavelength for ITU-T G 694.1 standard with 50 GHz channel spacing. The circular ring resonator is placed above the PRC wherein a resonant air hole (Cr) is positioned for desired channel selection. The channel selection is done by altering the radius of the air hole. In addition, a conjugate radiant neural network is implemented for optimizing the radii of resonant air holes to select the required channel wavelength. The proposed device is very compact and it could be considered for implementing the Photonic Integrated Circuits (PIC).

**KEYWORDS:** photonic crystal; nano ring cavity.

# EC-446

## WOMENS SAFETY SYSTEM USING IBEACON TECHNOLOGY

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### ABSTRACT

According to the reports of NCRB-social-government organization ,WHO 35% of Women all over the world are facing a lot of unethical physical harassment in public places such as railway-bus stands, foot paths etc. This paper describes about a one touch alarm system for women's safety using IBEACON. In the light of recent outrage in Delhi which shook the nation and woke us to the safety needs for women, people are finding up in different ways to defend. Here we introduce a device which ensures the protection of women. This helps to identify protect and call on resources to help the one out of dangerous situations. Anytime you sense danger, all you had to do, is hold on the panic switch. The system resembles a normal wearable device which when activated, tracks the place of the women using Bluetooth low energy and sends emergency messages using GSM (Global System for Mobile communication); to SOS contacts and the police control room. The proposed work shows a flexible and interoperable combination of a device and application that will accessorize and empower the citizens and serve as a multifunctional device.

**KEYWORDS:** Women Safety, IBEACON, Delhi, protection, GSM, SOS

EC-447

# ACOUSTIC MODULE BASED FIRE EXTINGUISHER USING DRONE

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## ABSTRACT

In today's scenario Dense forest's face a major threat of forest fire. All fire fighters use Carbon Di Oxide(Co2) powder, and foam etc,.. to put off the fire Which affects the natural habitats, so in our project we generate acoustic signal to put off the fire, Incorporated with a drone which flies over the fire.

Using our acoustic module design, we can put off the fire and also it does not affect the forest environment.

**KEYWORDS:** Acoustic module,drone,radio waves.

# EC-448

## OPTIMAL FEATURE SELECTION AND CLASSIFICATION OF CAROTID ARTERY IMAGES

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### ABSTRACT

Cholesterol plaque may slowly build up in the carotid artery wall. This growing plaque may eventually narrow the carotid artery and reduces blood flow, which leads to stroke, heart attack and peripheral vascular disease .In this paper, we proposed a technique to easily detect a disease which is present in carotid artery. Features like Spatial wavelets, Moment of Gray Level Histogram (MGLH) and Gray Level Co-occurrence Matrix (GLCM) are extracted from ultrasound images of carotid artery and the extracted feature set is optimized using genetic algorithm. To detect the presence of plaque in carotid artery, the ultrasound image is segmented using improved spatial FUZZY c means algorithm. The IMT (Intima Media Thickness) value is measured from the segmented images. With the help of optimized feature set and IMT value, the images are classified into normal or abnormal using MLPNN (Multi- Layer Back-Propagation Neural Networks).

**EC-449****PATH INFERENCE IN WIRELESS SENSOR NETWORKS USING IPATH**Nasrin Fathima.M<sup>1</sup>, Sameera Begam.A<sup>2</sup>, Shyeela Barvin.S<sup>3</sup>**ABSTRACT**

Recent wireless sensor networks (WSNs) are becoming increasingly complex with the growing network scale and the dynamic nature of wireless communications. Many measurement and diagnostic approaches depend on per-packet routing paths for accurate and fine-grained analysis of the complex network behaviors. In this paper, we propose iPath, a novel path inference approach to reconstructing the per-packet routing paths in dynamic and large-scale networks. The basic idea of iPath is to exploit high path similarity to iteratively infer long paths from short ones. iPath starts with an initial known set of paths and performs path inference iteratively. iPath includes a novel design of a lightweight hash function for verification of the inferred paths. In order to further improve the inference capability as well as the execution efficiency, iPath includes a fast bootstrapping algorithm to reconstruct the initial set of paths. We also implement iPath and evaluate its performance using traces from large-scale WSN deployments as well as extensive simulations. Results show that iPath achieves much higher reconstruction ratios under different network settings compared to other state-of-the-art approaches.

## EC-450

# VEHICLE COLLISION AVOIDANCE, TRAFFIC DETECTION, DRIVER SAFETY MECHANISMS USING LI-FI (LIGHT FIDELITY) TECHNOLOGY

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### ABSTRACT

Li-Fi (Light Fidelity) is a form of high speed bidirectional visible communication used in wireless network. This OWC (optical wireless communication) technology uses light from high-speed light-emitting diodes (LEDs) as a medium to deliver communication in a similar manner to Wi-Fi. Wi-Fi deals with wireless coverage within premises, whereas Li-Fi is perfect for high compactness wireless data coverage in a defined area and for mitigating Radio interference issues. Li-Fi can transmit multimedia data between two terminals using LEDs.

To overcome the implementation cost of technology, Low cost Light Fidelity (Li-Fi) technology is introduced. During night time, Light is available in all vehicles, so using the light, communication is done between vehicles and whereas during day time communication is done by using light module installed in the vehicle .There are five modes, which includes Traffic mode, Vehicle to Vehicle Mode, Drowsiness checking mode, breaking condition and Emergency vehicle mode. In Traffic mode based on the traffic signs the vehicle will be Turn On/Off. By using vehicle to vehicle communication mode we can check whether breaking condition is applied by the vehicle moving in front, drowsiness condition, etc. if any one of the condition occurs voice board gives information to our vehicle. To give way for ambulance, ambulance mode is available, so that traffic can be cleared easily. The various fields in which this system can be used is traffic management, general tourist places ,Hospitals and big industries, Security and Underwater Application.

This will provide reliable and smart automotive communication providing security and avoid other roadside mishaps.

**Keywords:** Light Fidelity, Optical Wireless Communication, LED's, traffic, collision

Aalim Muhammed Salegh College of Engineering

Department of Electronics and Communication Engineering

EC-451

# **SMART SURVEILLANCE NETWORK FOR INTRUDER DETECTION**

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## **ABSTRACT**

Smart surveillance network has received considerable interest because it can provide various intelligent services to combat various issues. A fundamental technique for building such a smart network is indoor target localization. One major application is a floor-centric intruder identifying system, where our smart floor can be used to monitor the secured places of an environment in an efficient way. So, we are going to design a smart floor by using Optical fiber cables which is placed under the glass type fiber floor, is used to track the path of the human movement. Whenever the force is applied on Fiber cable, due to the deformation that is happened in the cable denotes that the intruder has crossed the surveillance area. The location will be tracked in PC and it will be updated in the IOT for further communication. The floor is suitable for all private and public environments, from narrow to wide areas. Application like secure places in banks, offices, military applications, server rooms etc.

EC-452

# **DESIGN AND IMPLEMENTATION OF WIRELESS MESH NETWORK USING NS2 FOR MONITORING**

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## **ABSTRACT**

With the advent of new technologies and the demand for flexibility and ease in working environment, the use of mobile wireless computing is growing fast. Besides their use, mobile wireless networks are assumed to grow in size too. The rapid development and miniaturization of sensor devices, and the recent advances in wireless communication and networking technologies are allowing engineers to develop networks of small sensors that can be used for continuous monitoring. Wireless mesh networks bring the dream of a seamlessly connected world into reality. They can easily, effectively and wirelessly connect entire cities using inexpensive, existing technology. Traditional networks rely on a small number of wired access points or wireless hotspots to connect users. In a wireless mesh network, the network connection is spread out among dozens or even hundreds of wireless mesh nodes that "talk" to each other to share the network connection across a large area. They can function in independent groups, containing some tens of nodes up to several hundreds of nodes. As the network size increases, it becomes common for the nodes to be dispersed in a larger area than the radio range of individual nodes. Under such conditions, one has to employ routing techniques such that the out of range nodes may communicate with each other via intermediate nodes. Path routing and protocol selection are the primary strategies to design any wireless network. A protocol is proposed in this project to overcome the problem of routing in ad-hoc networks. The performance analysis is carried out on Ad hoc On-demand Distance Vector (AODV) and proposed Wireless Mesh Network protocols (WMNP) using NS2 simulator. The average delay, throughput, routing overhead, energy spent and packet delivery ratio (PDR) are the five common parameters used for the comparison of the performance of above protocols. The results indicate that the WMNP protocol is a better solution for high mobility conditions and is more efficient in networks with high density and sporadic traffic.



EC-453

# PROBABILISTIC NEURAL NETWORK FOR BRAIN TUMOR CLASSIFICATION

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## ABSTRACT

Probabilistic Neural Network with image and data processing techniques was employed to implement an automated brain tumor classification. The conventional method for medical resonance brain images classification and tumors detection is by human inspection. Operator-assisted classification methods are impractical for large amounts of data and are also non-reproducible. Medical Resonance images contain a noise caused by operator performance which can lead to serious inaccuracies classification. The use of artificial intelligent techniques for instant, neural networks, and fuzzy logic shown great potential in this field. Hence, in this paper the Probabilistic Neural Network was applied for the purposes. Decision making was performed in two stages: feature extraction using the principal component analysis and the Probabilistic Neural Network (PNN). The performance of the PNN classifier was evaluated in terms of training performance and classification accuracies. Probabilistic Neural Network gives fast and accurate classification and is a promising tool for classification of the tumors

**KEYWORD:** Neural Networks, Fuzzy Logic , Matlab.

EC-454

# AUTOMATIC TRAFFIC CONTROL SYSTEM FOR AMBULANCE

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## ABSTRACT

Traffic clog is a noteworthy issue in urban areas of creating nations such as India. Development in urban populace and the working class fragment devour means of transportation pertaining to the increasing quantity of automobiles in the urban areas. Blockage on streets in the long run outcomes in moderate moving movement, which builds the season of travel, along these lines be remarkable as one of the real problems pertaining to municipal urban areas. Crisis vehicles like rescue vehicle plus blaze automobiles require achieving their goals at the most punctual. On the off chance that they invest a ton of energy in roads turned parking lots, esteemed existences of many individuals might be in threat. To maintain a strategic distance from these issues in current circumstance programmed movement control framework has been suggested. Through the means of utilizing this framework crisis automobile (Ambulance) has been a distinguished through a wave by means of sound in flag territory. Emergency vehicle sound wave has been recognized by flag framework considering the preparation and testing technique. This proposed framework additionally gives briefest way and close-by doctor's facilities points of interest to the driver of emergency vehicle as of resource put for fast coming to. It just works at crisis circumstance, following the crossing of the automobile in intersection, consequently the activity signals take after the past example era of movement signs.

**Keywords:** *Traffic Signal, Vehicles, Ambulance, Road Congestion, RFID device, sensors.*

EC-456

**DETECTION OF BRAIN TUMOR USING NIR SENSOR**S.AKSHAYA<sup>1</sup>, S.HEERA PRIYADHARSHINI<sup>2</sup>, B.KHURRATH HUMA<sup>3</sup>, DR.S.SHEIK AALAM<sup>4</sup>**ABSTRACT**

Tumor is the most dangerous life threatening disease and today it is most common for all ages due to human life cycles. In this paper we mainly concentrate on detecting brain tumor in earlier stages. Previously ultrasonic waves are used for detecting tumors but it is harmful because it is penetrated directly on tumor and it damages nearby normal cells. To overcome this we use Near Infrared sensors to detect the brain tumor and Lagrangian SVM (LSVM) algorithm is used. Near Infrared imaging technique can detect tumor cells below 3 mm size.

EC-457

# **DNA SEQUENCING TO ANALYZE NIR SPECTROSCOPY**

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## **ABSTRACT**

A Brain tumor is a collection of abnormal cells in the brain. The skull is very rigid and the brain is enclosed, so any growth inside such a restricted space can cause problems. Brain tumors can be cancerous (malignant) or noncancerous (benign).

Brain tumor is one of the most life-threatening diseases and hence its detection should be fast and accurate. This can be achieved by the execution of automated tumor detection techniques on medical images. Some the presently using medical imaging techniques are MRI, CT, Microwave which cannot detect below 3mm size (tumor cell) but can be detected using Near Infrared (NRI) imaging techniques.

Here instead of using RADAR technologies, a new Near Infrared imaging technique is proposed for the tumor detection in brain. This NIR imaging uses the 780nm frequency NIR LED for imaging. The 780nm led (transmitter) and photo detector led (receiver) is used for the imaging. Also more importantly for accurate result, DNA Sequencing techniques is used here.

## **EC-458**

# **AREA EFFICIENT CARRY SELECT ADDER**

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### **ABSTRACT**

Carry-select method has deemed to be a good compromise between cost and performance in carry propagation adder design. However, conventional carry-select adder (CSL) is still area-consuming due to the dual ripplecarry adder structure. The area overhead makes CSL relatively unattractive but this has been circumvented by the use of add-one circuit introduced recently. In this paper, an area efficient square root CSL scheme based on a new first zero detection logic is proposed. The proposed CSL witnesses a notable power-delay and area-delay performance improvement by virtue of proper exploitation of logic structure and circuit technique.

## EC-459

# CONVERSION OF TEXT TO SPEECH AND SPEECH TO TEXT INFORMATION FOR PHYSICALLY DISABLED AND VISUALLY IMPAIRED PEOPLE USING ARM PROCESSOR

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### ABSTRACT

This paper proposes design and implementation of voice controlled conversion of text to speech and speech to text information using ARM cortex A7 for visually impaired and physically disabled people . The feature of ARM cortex is that it consumes minimal power than its forerunner based on ARM v7 architecture and its quad core processor . This embedded system uses Google's speech API for the conversion process which supports English,tanglish(tamil) . The speech recognizer circuit has a capability of detecting efficiency separately for male and female.

## **EC-462**

# **ANALYZING THE RESULT OF RENEWABLE ENERGY SOURCE FROM MULTILEVEL, DC-DC, DIODE ASSISTED DC-DC CONVERTERS**

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2ND YEAR ECE 'A' SECTION 2ND YEAR ECE 'A' SECTION 2ND YEAR ECE 'A' SECTION  
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### **ABSTRACT**

The world is ruling under the severe shortage of reliable and efficient energy resources. The profitable energy resources used to generate electricity so far fossil fuels are extinguished. Multilevel inverter structures have been developed to overcome shortcoming in solid state switching device the general function of it is to synthesize a desired AC voltage from several levels of dc voltages in the conventional DC-DC converter, a pair of additional diode and the adjacent passive component capacitor/inductor can be added to the circuit with an x-shape connection, which generates a family of new topologies. As home energy use is increasing and renewable energy systems are deployed, home energy management systems (HEMS) needs to consider both energy consumption and generation simultaneously. This paper proposes a smart HEMS architecture that consider both energy consumption and generation simultaneously and mainly investigates and compares about conventional DC-DC converters in wide range power conversion from the aspects of silicon devices.

EC-464

# PERFORMANCE ENHANCEMENT OF MICROSTRIP PATCH ANTENNA IN PCB BY USING METAMATERIAL BASED EBG STRUCTURES

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## **Abstract:-**

In recent years current packaging technologies such as Digital circuit ,DSP Processor, RF/Analog module are required to be integrated into one chip known as System on chip (SOC) but due to increasing demand in high speed digital circuit there occurs a problem of Simultaneous Switching Noise(SSN),Ground bounce noise(GBN) and radiative emission(heat) in the mixed circuit(PCB).In this paper we propose a novel idea of suppressing various noise and also increase the gain of antenna by using a metamaterial based EBG(Electromagnetic Bandgap Structure) structures.

Due to switching of transistors and unwanted clock pulses, noises are generated such as SSN,GBN. These noises travel through the PCB substrate and try to disturb the transmission of waves in the analog portion which are very sensitive to even slight variations. So to avoid these noise we place a EBG structures which are capable of absorbing these noise.

Every antenna radiation pattern will have a considerable amount of back lobe radiations. In order to direct these radiations to the major lobe direction we use the same EBG structures, for that we have to find the Reflection phase frequency of the EBG structures. By identifying the resultant frequency, we can conclude that EBG structures will propagate the electromagnetic waves of those frequency in broadside major lobe direction. These directed radiations from EBG will have the same property as that of the radiations from the antenna. From our work we have found that the reflection phase frequency is 4.3GHz which will cover the UWB and they can be used for WLAN applications.

**Keywords:** - Metamaterial, EBG structure, Simultaneous Switching Noise, Ground bounce noise, Reflection phase frequency.



## EC-466

# A NOVEL HIDDEN CAMERA DESTROYER TO AVOID UN-LAWFUL ACTIVITIES

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### ABSTRACT:

Nowadays, lots of crime activities are done upon women's and children's especially in trial rooms in textile shops, hotels, etc., by using hidden cameras. This may causes an insecure environment for women's and children's. To eradicate the issues of the hidden camera on women and children falling victims. We introduced a novel hidden camera destroyer system to destroy these kinds of hidden cameras in the dressing rooms. The EMP provides the major backbone in its application in this security project. An EMP (Electro-Magnetic Pulse) has the destructive tendency to destroy any electronic equipment in its specified range, causing electronic equipment to malfunction. This makes the Electro-Magnetic Pulse one of the most devastating weapons in the world causing huge damage to any devices. Here we include all the bases of Electro-Magnetic Pulse generation & its possible causes & effects on the nearby electronic components within its specified range capability. The EMP will devastate any devices which it encounters on its range. This can be used in many other applications like military warfare, smart cities. The MAX2015 complete multistage logarithmic amplifier is designed to accurately convert radio-frequency (RF) signal power in the 0.1GHz to 3GHz frequency range to an equivalent DC voltage. The MAX2015 can also be operated in a controller mode where it measures, compares, and controls the output power of a variable-gain amplifier as part of a fully integrated AGC loop.

# EC-467

## AUTOMATIC COMPUTING

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ENGINEERING

### ABSTRACT

The abstract is taken in every organisation. traditional approach for attendance is , professor calls student names and record the attendance. for each lecturer this is wastage of time. To avoid this losses of time, we have implemented an automatic process which is based on image processing. In this project approach, we are using face detection 2<sup>nd</sup> recognition system. The first phase is reprocessing where the face is detection is processed through step image processing. It includes face detection and face recognition process. Second phase is feature extraction . Step by step execution of these techniques help to achieve the desired output. The working of this project is to detect and recognize the face of the student and mark the attendance for the corresponding face. Input of this project is face detection recognition and output is to mark attendance. Our project is a solution for the automatic attendance marking system. It is designed to be reliable and low power. The automatic face detection and recognition proposed to attendance marking in data base acts as a solution for the automatic attendance marking system.

## EC-468

# PERFORMANCE AND ANALYSIS OF RESOURCE MANAGEMENT FOR TRAFFIC ANALYSIS CELLULAR COGNITIVE NETWORKING

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**Abstract—** In the upcoming years mobile networks will go through major changes to hold the continuous growing of the load which is prompted by the aggregate phones and also the connected objects. Among those, the one which is supplementary dynamic to the network effects is the Cognitive networking, which support to approve the mobile demands in intense properties. Cognitive networkings are advantageous in excavating vast mobile traffic data which helps in understanding the resource consumption. So this paper, is to consider the provision of the belongings in the cognitive network, formulate the summary on request and circumvent common positions in systems. And to estimate this context, existent origin mobile traffic datasets are used. And uniform records out a enormous quantity of outlying activities in existent area mobile traffic datasets, which are recorded to collective measures or technical problems in the network.

**Index Terms:** Compound annual growth rate (CAGR) C-RAN (cloud radio access network) and SDN (software defined networking).

**EC-469**

# **A REVIEW ON NON LOCAL MEANS DENOISING ALGORITHM AND WAVELET DECOMPOSITION FRAMEWORK**

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**Abstract**— Ultrasound imaging is a research ground which plays an important role in the identification of several diseases. Medical images contain a signal reliant multiplicative noise called speckle which degrades image resolution and contrast. Speckle is a multiplicative noise and is more difficult to remove than white Gaussian noise contained in numerous images. Hence several approaches have been studied which removes speckle noise from ultrasound images. Speckle noise reduction is made by using filters which advance the worth of ultrasound images. The Nonlocal means(NLM) denoising process discussed in this paper is based on self-similarity perception in which denoised values of pixels is determined by neighboring pixels with alike neighborhoods. Many speed up procedures have been projected so far for quicker rate and increased efficiency of NL means. The shortcoming is that notable denoising results are obtained due to a high amount of weight computations and computational cost. BM3D denoising method also surveys non-local procedure by grouping the 2-D images and thus filtering them. It finds 2D images and combines them into 3-D image arrays. It employs spectral spacing in the filtering of images. The drawback is that comparable patches must be there for this process to take place. By removing the noise, the collaborative filtering finds the finest details shared by gathered image blocks and preserves the important characteristics in each individual block. Decomposition of image is performed before applying these denoising algorithms. 2D-Wavelet Decomposition of the images is studied in which the whole image is divided into numerous parts and denoising algorithm is applied to each portion and the denoised results are figured. It is observed that better results are obtained by carrying out decomposition and applying NL means to each portion than carrying out filtering of the entire image directly. An extensive review of NLM denoising and BM3D is done in this paper.

**Key Words** – speckle, ultrasound images, nonlocal means filter, noise reduction, BM3D, denoising, wavelet decomposition

## EC-470

# INTERNET OF THINGS (IOT)

### Abstract:

Internet of Things (IOT) is a new technology getting popular with major industrial applications, due to its flexibility and implementation feasibility with any kind of process. The Substation automation is one of the critical area it needs more accurate and reliable data transmission . It needs reliable internet connection and embedded server to acquire the data and to post it using wireless fidelity (Wi – Fi) modules. The data's collected is loaded into the cloud for further processing. IEC61850 standard designed to avoid time delay during communication.

There are four major parameter is taken for consideration they are pH, Co2 level, humidity and temperature of the plant. These parameters are sensed and closed loop control system is designed for two parameters to keep it within limits. The embedded server is used to process the data and to form a local closed loop system. Apart from controlling these parameters these data's are sent to the remote cloud server using a wi-fi module connected to the embedded server an through wi-fi modem. There are cloud space is available like temboo and think space web pages. The datas collected were loaded into the above clouds.

## **EC-471**

# **BRAIN PORT VISION DEVICE**

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### **ABSTRACT**

The Brain port Vision Device allows the blinds to “see” using their tougues. The device includes a pair of sunglasses that has a tiny digital video camera for collecting visual data. Data collected are then transmitted to a handled, cell phone-sized base unit that will convert digital signal into electrical pulses.

Converted signals will be sent to the tongue via a “lollipop” an electrode array about nine square centimetres that sits directly on the tongue. This amazing new device may help people to interact with their environment in ways never before experiences.

## EC-472

# HIGH GAIN DC- DC CONVERTER USING LPPT TECHNIQUE FOR PV APPLICATION

### ABSTRACT

Differential power processing (DPP) systems are an effective architecture for future photovoltaic (PV) power systems that achieve high system efficiency through processing a fraction of the full PV power. It achieves distributed local maximum power point tracking (MPPT). The power processed through the DPP converters depends on the string current in the PV-to-bus DPP architecture. The string current must be controlled to minimize the power processed through the DPP converters. A real-time least power point tracking (LPPT) method is proposed to minimize power stress on PV DPP converters. Mathematical analysis shows the unique of the least power point for the total power processed through the system. The perturb-and-observe LPPT method is presented. The method enables the DPP converters to maintain optimal operating conditions. The method helps in reducing the total power loss and converter stress. This work validates through simulation and experimentation that LPPT in the string-level converter successfully operates with MPPT in the DPP converters to maximize output power for the PV-to-bus architecture. Hardware prototypes were developed and tested at 140 and 300 W, and the LPPT control algorithm showed effective operation under steady-state operation and an irradiance step change.

EC-473

# IMPLEMENTATION OF MODIFIED BOOTH MULTIPLIER USING FAST ADDERS

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*Abstract*— In this paper, modified booth algorithm is employed wherein the booth partial product matrix to generate regular partial product array is slightly modified. The speed at which the addition of the partial products is carried out determines the speed of the circuit. This is performed by error tolerant adder (ETA) in which no carry signal will be generated in the lower order bits of the input to eliminate the carry propagation path. The proposed method is able to ease the strict restriction on accuracy, and at the same time achieve improvements in both the power consumption and speed performance. In addition (several conventional) state of the adders like ripple carry adder(RCA),carry select adder(CSA),carry look ahead adder(CLA) are used for final addition. Furthermore, experimental results are obtained by comparing the delay in all the above mentioned adders. It also demonstrated that the proposed modified booth multiplier can reduce the delay by 36.883 % when compared to ripple carry adder.



## EC-474

# LIMB CONTROLLER USING NEURAL SIGNALS

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**Abstract-**The mind-to-movement system that allows a quadriplegic man to control a computer using only his thoughts is a scientific milestone. It was reached, in large part, through the brain gate system. This system has become a boon to the paralyzed. The device was designed to help those who have lost control of their limbs, or other bodily functions, such as patients with spinal cord injury. The computer chip, which is implanted into the brain monitors brain activity in the patient and converts the intention of the user into computer commands. It is described that "such applications may include novel communications interfaces for motor impaired patients, as well as the monitoring and treatment of certain diseases which manifest themselves in patterns of brain activity, such as epilepsy and depression." Currently the chip uses 100 hair-thin electrodes that sense the electro-magnetic signature of neurons firing in specific areas of the brain, for example, the area that controls arm movement. The activities are translated into electrically charged signals and are then sent and decoded using a program, which can move either a robotic arm or a computer cursor.

**Keywords-***Brain Gate, Neuroscience, Quadriplegic, epilepsy.*

# EC-476

## GLUCOSE MONITORING SYSTEM USING BREATHING SENSOR/ NIR SENSOR AND DNA SEQUENCING

**Nandha Kumar**

### **ABSTRACT:**

Monitoring of blood glucose levels is clinically important in the management of diseases affecting insulin secretion and resistance, most notably diabetes mellitus and cystic fibrosis. Typically blood glucose monitoring is an invasive technique that may cause distress and discomfort, particularly in the pediatric population. Measurement of glucose in respiratory fluid by collection of exhaled breath condensate is therefore a potentially clinically useful method of estimating blood glucose levels if it can be shown that there is good agreement between these values. This paper reviews the research in this area.

## **EC-477**

# **CLUSTER BASED ENERGY EFFICIENT FAULT NODE DETECTION AND REPLACEMENT IN WSN USING GENETIC ALGORITHM**

**J.Farid-UI-Munavra ,A.FathimaIbthizam, Abdul kaderzakariya, R.Vithya**

**Department of electronics and communication engineering, Aalim Muhammed Salegh College of Engineering, Avadi , Chennai-55**

### **ABSTRACT**

Routing algorithm plays an important role in wireless sensor network ( WSNs). Usually nodes in a WSN run-on battery with limited power. Hence routing with efficient power consumption is becoming a critical issue for WSNs . This project uses clusters based faulty node detection system to enhance the wireless sensor network lifetime by detecting the non functioning sensor nodes.

The algorithm dynamically and periodically clustered the entire sensor nodes and creates the routing table using energy efficient ant colony optimization technique. Genetic algorithm is used to detect and replace the faulty nodes in order to reduce the time delay.

## **EC-479**

# A SURVEY ON ELECTRONIC DEVICES CONTROL USING BRAIN SIGNALS

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## **Abstract :**

Brain control signals are widely used to control the electronic devices. Researchers developed many non-invasive methods for brain-computer interface (BCI).These methods have potential significance in view of real-time applications. In this study , different brain control systems are discussed and their results are analyzed to find the suitable method to control the electronic devices. We used a dataset , which contains different type of brain signals .These brain signals are analyzed using MATLAB software. In our analysis ,we use the brain signals acquired from the various region of the forehead. Based on this experimental analysis,the suitable head position brain signal is identified and the BCI system is proposed to control the electronic devices.

**Keywords :** Brain control signals, Brain-computer interface, Non-Invasive , Electrodes.

## **EC-480**

# **PERFORMANCE EVOLUTION OF DOMESTIC REFRIGERATOR USING LPG**

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**AALIM MUHAMED SALEGH COLLEGE OF ENGINEERING**

### **ABSTRACT:**

Supply of continuous electricity is still not available in several areas of the country and the world. This work will be helpful for refrigeration of food, medicines, etc. In this work we have investigated the performance of a refrigerator based on Liquefied Petroleum Gas (LPG) refrigerant, since LPG is locally available and is easy to transport anywhere.

The pressure of LPG is high, this stored in cylinder, which is comprises of 24.4% Propane,56.4% of Butane,17.2% of Isobutane used as a refrigerant . As this pressurized LPG is passed through the capillary tube of small internal diameter, the pressure of LPG is decreased due to expansion and phase change of LPG occurs in a isenthalpic process. Due to phase change from liquid to gas latent heat of evaporation is gained by the liquid refrigerant and the temperature decreased. In this way LPG can produce refrigerating effect in the surrounding.

**KEYWORD:** LPG Refrigeration, LPG, Capillary Tube, Evaporator, COP, VCR.

## **EC-481**

# DETECTION OF IRREGULARITIES IN METAL SURFACE USING CSRR DESIGNING

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## ABSTRACT

Available microwave techniques for crack detection have some challenges, such as design complexity and working at a high frequency. These challenges make the sensing apparatus design complex and relatively very expensive. This paper presents a simple method for surface and subsurface crack detection in metallic and non-metallic materials based on complementary split-ring resonators (CSRRs). A CSRR sensor can be patterned on the ground plane of a microstrip line and fabricated using printed circuit board technology. Compared to available microwave techniques for sub-millimeter crack detection, the methods presented here show distinct advantages, such as high spatial resolution, high sensitivity and design simplicity. The response of the CSRR as a sensor crack detection is studied and analysed numerically. Experimental validations are also presented.

**EC-482**

# ENHANCEMENT OF QOS PERFORMANCES IN HYBRID WIRELESS ADHOC-NETWORK USING DISTRIBUTED ROUTING ALGORITHM

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## ABSTRACT

As wireless communication gains popularity, significant research has been devoted to supporting real-time transmission with stringent Quality of Service (QoS) requirements for wireless applications. At the same time, a wireless hybrid network that integrates a mobile wireless ad hoc network (MANET) and a wireless infrastructure network has been proven to be a better alternative for the next generation wireless networks. By directly adopting resource reservation-based QoS routing for MANETs, hybrids networks inherit invalid reservation and race condition problems in MANETs. How to guarantee the QoS in hybrid networks remains an open problem. In this paper, we propose a QoS-Oriented Distributed routing protocol (QOD) to enhance the QoS support capability of hybrid networks. Taking advantage of fewer transmission hops and any cast transmission features of the hybrid networks, QOD transforms the packet routing problem to a resource scheduling problem.

QOD incorporates five algorithms: 1) a QoS-guaranteed neighbor selection algorithm to meet the transmission delay requirement, 2) a distributed packet scheduling algorithm to further reduce transmission delay, 3) a mobility-based segment resizing algorithm that adaptively adjusts segment size according to node mobility in order to reduce transmission time, 4) a traffic redundant elimination algorithm to increase the transmission throughput, and 5) a data redundancy elimination-based transmission algorithm to eliminate the redundant data to further improve the transmission QoS. Analytical and simulation results based on the random way-point model and the real human mobility model show that QOD can provide high QoS performance in terms of overhead, transmission delay, mobility-resilience, and scalability.

EC-483

# **GPS BASED VOICE NAVIGATION SYSTEM (OUTDOOR) FOR VISION IMPAIRED PEOPLE- PERSONAL FRIEND**

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## **ABSTRACT**

Having a problem with any of your body parts is much better than a Visually Impaired people. Many project and devices are introducing for blind illness people in day to day life, our approach is also towards them in a different manner. A personal friend is a device for visually impaired people so that it can help them to move anywhere as their wish without depending on someone. This device/friend is fully depends on GPS system Technology and Opencv Technology. We use Ultrasonic sensors to detect objects, voice playback unit to instruct path. We combine this with Microcontroller ARM7 using Embedded system.

It is a compact affordable device that brings vision without seeing instead by Hearing.

**Keywords:**Opencv Technology,GPS , ARM7, BlindGuideline.

## **EC-484**



# PROVIDING DATA PRIVACY IN Li- Fi BASED NETWORKS USING AES ALGORITHM

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## ABSTRACT

In the present era, Wi-Fi has become the most trending domain. As internet users almost double every year, there is an enormous load on radio spectrum that leads to congestion. To get better and width, efficiency and speed, a new technology Li-Fi has evolved. Li-Fi stands for Light Fidelity. It is a bidirectional and wireless mode of communication using light. It uses the unused visible spectrum and reduces the load on radio spectrum. Li-Fi can be simply put to be Wi-Fi but instead of radio waves light is used as a medium. Here, data is transmitted using light whose intensity varies faster than human eye to capture. Instead of using modems, Li-Fi uses LED bulbs as transmitter and Photo detector as receivers. Since data privacy has become the vital concern with these technologies, we provide this solution using the AES (Advanced Encryption) algorithm with Arduino for the data getting transmitted between two users. Data transmission in Li-Fi is about 100 times faster than Wi-Fi. This system is robust and can be established even for the underwater communication since light can propagate through water easily.

**Keywords:** Wi-Fi, Radio Spectrum, Li-Fi, Visible Spectrum, AES algorithm

## EC-485

# SEMI-AUTOMATED VEHICLE PARKING BYDRIVER'S FATIGUE DETECTION

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### ABSTRACT

Road accidents have increased tremendously. Though many reasons prevail, one of the main reason is due to driver's drowsiness. Previously many systems were installed to overcome this. But all of them alert the driver through an alarm or stop the vehicle's engine by controlling the fuel system. But this causes further problems like a traffic jam. So in this paper we are going to discuss a modified method in which the brain signals are analyzed and if any tiredness is detected, the car switches to semi-automatic mode, tracks the traffic using GPS and parks it in a nearby parking lot. If the car is a cab, the agency is alerted for a switch of driver at the particular place through message service. This is helpful for both the driver and the customer.

**Keywords:** wireless neuro headset, EEG analysis, drowsiness detection, GPS module, semi-automatic parking.

## EC-486

# SUN TRACKING SOLAR PANEL PROJECT USING MICROCONTROLLER

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### ABSTRACT

Solar panel has been used increasingly in recent years to convert solar energy to electrical energy. The solar panel can be used either as a stand-alone system or as a large solar system that is connected to the electricity grids. The earth receives 84 Terawatts of power and our world consumes about 12 Terawatts of power per day. We are trying to consume more energy from the sun using solar panel. In order to maximize the conversion from solar to electrical energy, the solar panels have to be positioned perpendicular to the sun. Thus the tracking of the sun's location and positioning of the solar panel are important. The goal of this project is to design an automatic tracking system, which can locate position of the sun. The tracking system will move the solar panel so that it is positioned perpendicular to the sun for maximum energy conversion at all time. Photoresistors will be used as sensors in this system. The system will consist of light sensing system, microcontroller, gear motor system, and a solar panel. Our system will output up to 40% more energy than solar panels without tracking systems.

EC-487

# DESIGN AND IMPLEMENTATION OF IMAGE PROCESSING ALGORITHMS FOR CARDIAC BLOCKAGE DETECTION ON FPGA

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## ABSTRACT

In today's modern world, major health issues are concerned with heart problems called heart attack. The main cause for heart attack is plaque. The Cardiac Plaque is a waxy substance formed inside the coronary arteries. The cardiac angiogram or cardiac catheterization is a method used for the diagnosis of coronary blockages. It is an expensive and harmful method to detect cardiac blockages. So, the angiogram is a standard method to diagnose cardiac blockages.

In this paper, cardiac blockages are detected by means of Canny edge detector and Watershed image processing algorithms implemented on FPGA (Hardware Implementation). The proposed design consumes power of 118mW and maximum operating frequency is 338.295MHz and minimum period is 2.956ns.

**Keywords:** Angiogram; CABG (Coronary Artery Bypass Surgery); Catheterization; Plaque; FPGA (Field Programmable Gate Array); PSNR (Peak Signal to Noise Ratio)

## EC-488

# LIFI TECHNOLOGY FOR WIRELESS DATA TRANSFER USING OFDM

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### ABSTRACT

In the world of Internet the amount of surfers are increasing day by day. To meet the needs of faster data transfer we may adapt the Lifi technology. The light fidelity (LiFi) technology is one of the promising solutions to increase transmission capacity in the indoor and outdoor scenario. It is based on organic light emitting diodes (OLEDs) to enable high speed communication with fully networking capabilities. In implementing Lifi there is a issue of selecting the appropriate access technique in the multiuser environment. In this paper we shall analyze orthogonal frequency division multiplexing (OFDM) to reach targets using 5G optical wireless access in terms of data rates, transmission delays and higher bandwidth. Specifically, we propose a LiFi access-point architecture that implements a novel OFDM encoding/decoding technique based on delaying optical pulses in a vector of optical delay lines loops (ODLs). An optical switch will determine the subcarriers frequencies that must be selected to generate the user specific OFDM code. The encoding/decoding architecture is fully reconfigurable by dynamically modifying the number of rounds that must be performed by the optical pulse in the ODL and the wavelengths that must be selected by the optical switch. The design and the Performance study of our dynamic OFDM all-optical encoding/decoding technique is performed to show that it can achieve the requirements of the 5G access technology.

**Keywords:** LiFi communication, OFDMA encoding/decoding, dynamic optical, 5G Networks, OLED.

# EC-489

## AMATEUR RADIO

### ABSTRACT

**Amateur Radio**(ham radio), service is defined as a radio communications service (covering both terrestrial and satellite) in which a station is used for the purpose of self-training, intercommunication and technical investigations carried out by amateurs. This paper explains about the working of Amateur radio and the field in which it is used . It's a service that uses various types of radio communications equipment to communicate with other radio amateurs for public service, recreation and self-training. A participant is called an amateur radio operator, or a **ham**. A ham selects transmitting channels to make the most effective use of the allocated frequencies. Amateurs do not broadcast their transmissions; they have **two-way communications** with other amateurs. Communicate around the world. At various stages of this paper the application and diverse use of ham have been illustrated . The handy role of ham radio in various **disaster management** circumstances have also been provided. Some Advantages of this can

- Build their own radios, transmitter, receiver and antennas.
- Communicate through orbiting satellites.
- Communicate with astronaut while orbiting the earth.

At various stages of this paper the application and diverse use of ham have been illustrated . The handy role of ham radio in various disaster management circumstances have also been provided.

## EC-491

# MINIMIZATION OF DYNAMIC POWER IN LOGIC GATES USING FEEDTHROUGH LOGIC.

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**Abstract:** This paper implements a new circuit named the feedthrough logic (FTL). It analyses the power and delay of NAND, NOR and EXOR gates, implemented in FTL and compared against modified FTL logic circuits. This logic computes the partial output before the actual inputs arrive. It makes the circuit to operate fast and is useful in implementing arithmetic circuits with cascading stages. Result illustrates that low power FTL (LP-FTL) consumes less power and high speed FTL (HS-FTL) generates less delay. The circuits are simulated using Tanner EDA V15 tools with 250nm technology.

**Keywords:** feedthrough logic (FTL), delay, power dissipation.

## EC-491 (a)

# IoT BASED ANTI THIEFT SECURITY SYSTEM FOR SMART HOME USING IRIS SENSOR

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### ABSTRACT

This paper reviews four biometric identification technologies. Iris recognition is an efficient method for identification of persons. Iris is a unique feature which is applicable for identification. We use the CASIA iris database it will also work for UBIRIS Iris database which has images captured from distance while moving a person. This all done with the help of IoT. The IoT is the next generation of innovation in the smart world, which has the potential to improve safety, security, and the quality of our daily lives through pervasive communication and computation. All the family members iris are stored in an cloud and if any different person come inside the home it detect the iris then alert the owner using GPRS module board. All databases are programed using embedded system.

**Keywords:** Biometrics, Iris identification, UBIRIS Iris database, IoT, GPRS



EC-491 (b)

# A SURVEY ON MULTISPECTRAL BIOMETRIC SYSTEMS

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**Abstract:** Multispectral biometric systems are widely preferred for person authentication at constrained environments. These systems perform the person authentication using the multispectral images acquired from face, hand, finger, and iris regions of the human body. These multispectral imaging techniques extended the usage of biometric systems at real environments. In this paper, the various biometric systems are compared based on their recognition accuracy and the error in authentication. Based on this comparative analysis, a suitable imaging technique is identified for person identification at low light environments.

**Keywords:** Multispectral Imaging, Biometric systems, Person authentication.

# EC-492

## VECTOR CONTROL OF PMSM IN A MANIPULATOR ARM

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**Abstract—** This paper deals with the vector control of Permanent Magnet Synchronous Motor (PMSM) which is present in the actuator of a manipulator arm. In the proposed system the electromechanical actuator consists of PMSM with gear box and its accessories. The process involves the control of position of manipulator arm using vector control technique. The simulation is executed using MATLAB SIMULINK software.

**Keywords—**vector control, PMSM, position control, MATLAB/SIMULINK.

## **EC-492 (b)**

# **DEVELOPMENT OF OPTICAL TOPOGRAPHY SYSTEM FOR THE MEASUREMENT OF CEREBRAL OXYGENATION LEVEL**

### **ABSTRACT**

Near Infrared Spectroscopy is a noninvasive optical method to monitor hemodynamic activity in tissue using light in the range of 600nm to 900nm. Optical topography based on Near Infrared Spectroscopy, which is less constraining on subjects, is useful for measuring the changes in cerebral oxygenation level in brain tissues for evaluating the status of brain injury and central nervous system. The main aim of this paper is to design and implement a multichannel optical topography system that can monitor the hemodynamic response and helps in determining the concentration of the chromophores. The three main units involved are optical probe unit, acquisition module and a host system. The optical probe consists of the light sources and detectors, the acquisition unit drives the light source and accumulates the data from the detected light which is passed through the brain tissue, processes the data based on the intensity of light received and is then delivered to the host system. The host system is used to display the saturation level of oxygen in the brain tissues. Hence, this paper aims at enhancing the understanding of how the cerebral oxygenation level changes with the changes in the hemodynamics of the brain.

**EC-493**

# **INDEPENDENT INTERFACE FOR A GESTURE WHEELCHAIR**

## **ABSTRACT**

People use wheelchairs if they cannot able to walk due to physiological or physical illness, injury or any disability. The main aim of the project is to provide a solution for a people who are suffering from pressure sores . Recent growth shows a broad scope in developing smart wheelchairs. The current article presents a gesture based wheelchair which controls the wheelchair using hand movements. The scheme is divided into two main units: Mems Sensor and wheelchair control. The Mems sensor, which is linked to hand, is an 3-axis accelerometer that provides hand gesture detection. The wheelchair control unit is a wireless unit which is developed using other ARM controller. A Vibrator is provided beneath the seat of the Wheelchair which will be activated at predefined intervals by using software delay inorder to reduce the pressure sores.

EC-495

# **DESIGN AND DEVELOPMENT OF AN EFFICIENT NANO LIQUID SENSOR TO MEASURE INDUSTRIAL EFFLUENTS**

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## **ABSTRACT**

Aiming at the Industrial effluents treatment, this paper is prepared using the low pass filter for online detection of the effluent silver nano and carbon fluid concentration in wastewater treatment. Environmental factors, that may pose effect on the real-time monitoring of carbon fluid are considered to get the information on the carbon fluid changing with various environmental factors. By comparing the nano sensor, experimental results showed that the soft measurement model be faster and more accurate in prediction, where the correlation coefficient of the predicted value and the actual value, with the maximum relative error, being able to achieve detection.

**EC-496**

# **VOICE SIGNAL BASED DEVICE FOR DEAF-MUTE AND DEAF-BLIND PERSONS**

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## **ABSTRACT**

There are so many humans those who don't know the sign language to communicate with deaf-mute persons. The aim of this research work is convey the information to deaf-mute and deaf-blind by normal persons using IOT module. In this paper we are using voice signal that will be converted into text and displayed in mobile phone and same voice signal is converted into vibration signal through motors for deaf-blind to interpret the signal. Purpose of this device is to make conversation easy between deaf-mute or deaf-blind and normal people around the world.

**Keywords** — Deaf - Mute; Deaf- Blind; ; STFT; Voice Signal;

# EC-497

## ECG T-SHIRT

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### ABSTRACT

**ECG** T-shirt was developed with a portable recorder for unobtrusive and long-term multichannel ECG monitoring with active electrodes. A major drawback of conventional 12-lead ECGs is the use of adhesive gel electrodes, which are uncomfortable during long-term application and may even cause skin irritations and allergic reactions. Therefore, we integrated comfortable patches of conductive textile into the ECG T-shirt in order to replace the adhesive gel electrodes.

In order to prevent signal deterioration, as reported for other textile ECG systems, we attached active circuits on the outside of the T-shirt to further improve the signal quality of the dry electrodes.

Finally, we validated the ECG T-shirt against a commercial Holter ECG with healthy volunteers during phases of lying down, sitting, and walking. The 12-lead ECG was successfully recorded with a resulting mean relative error of the RR intervals of 0.96% and mean coverage of 96.6%. Furthermore, the ECG waves of the 12 leads were analyzed separately and showed high accordance. The P-wave had a correlation of 0.703 for walking subjects, while the T-wave demonstrated lower correlations for all three scenarios (lying: 0.817, sitting: 0.710, walking: 0.403). The other correlations for the P, Q, R, and S-waves were all higher than 0.9. This work demonstrates that our ECG T-shirt is suitable for 12-lead ECG recordings while providing a higher level of comfort compared with a commercial Holter ECG.

# EC-500

## SMART HELMET

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### ABSTRACT

This proposal aims at the security and safety of the bikers against road accidents, while also providing comfortable riding experience. The helmet is designed in such a manner that the bike won't start unless the rider wears the helmet and he isn't drunk (alcohol). The piezoelectric crystal is mounted on the top and sides of the helmet to sense whether the helmet is worn by the rider, a breathe analyzer is installed on the helmet to detect whether the rider is drunk or not. If the outputs of both the sensors are positive then a signal is sent from the helmet to the bike and bike starts.

Using our smart helmet, we can avoid accidents due to drunken driving and can reduce the impact of accident on the rider.

**KEYWORDS:** Helmet, Piezoelectric crystal, Breathe analyzer.



EC-502

# DESIGN AND ANALYSIS OF MEMS BASED HUMIDITY SENSOR USING COMSOL MULTIPHYSICS

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## ABSTRACT

Micro Electro Mechanical Systems (MEMS) is the integration of Microelectronic circuits on single chip which allows the Microsystem to sense and control certain parameters such as temperature, pressure, etc. The main motivation behind this work is to need in automotive industry, climate control and humidity monitoring. The capacitive humidity sensor is to designed and analyzed in MEMS technology using COMSOL Multi physics. Here the sensor consist of two metal armatures between which is sandwiched a layer of insulating polyimide. This whole structure is subjected on a silicon substrate. Here simulation of humidity sensor is to be analyzed and to detect the moisture content in the atmosphere. It can be optimized by using MEMS CAD tool for better performance of the sensor.

**Keywords** - Capacitive humidity sensor, COMSOL multiphysics, MEMS, Polyimide

## **EC-505**

# **A COMPARATIVE STUDY OF KEY EXCHANGE PROTOCOLS WITH DIFFIE HELLMAN ALGORITHM IN LONG TERM EVOLUTION**

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### **ABSTRACT**

Based upon the evolving insecure environment, the security of the networking environment has to be increased. Eavesdropping, denial of service, replay attacks are the various threatening in the network service. The long term evolution (lte) is considered to prevent as it has the highest data rate and speed of transmission compared to the second and third generation networks. As the confidentiality, integrity and the authentication of the information has to be safeguarded, various authentication and key agreement (aka) protocols are applied .different kinds of algorithms are implemented in aka protocol to update dynamically , so that it can be used for device to device applications. Diffie –hellman can be used in aka protocol for key exchange process without sharing the private key .using diffie-hellman in the aka protocol increases the security of the network. Along with the dh key exchange protocols, various protocols are analyzed accordingly to be combined with the protocols with respect to their advantages

**Keyword:** Authentication and key agreement, Diffie-Hellman key exchange, Internet of things(IoT), Long Term Evolution.

# **EC-506**

## **SYNTHESIS OF SILVER NANOPARTICLES USING DECALEPIS HAMILTONII AND THEIR CHARACTERIZATION ON OPTICAL LIMITING BEHAVIOUR**

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### **ABSTRACT**

In this work, we have successfully synthesized silver nanoparticles from green synthesis using *Decalepis hamiltonii* (Maahali root extract) for the evaluation of optical limiting behavior. The characterization of synthesized silver nanoparticles was determined by HRTEM Analysis and UV-Visible spectral studies. The synthesized silver nanoparticles (AgNPs) in colloidal form were found to exhibit third-order optical nonlinearity as studied by closed aperture Z-scan technique and open aperture Z-scan technique using 532 nm Nd: YAG (SHG) CW laser beam (COHERENT –Compass 215 M-50 diode-pumped) output as source. The negative nonlinearity observed was further well utilized for the study of optical limiting behavior of the silver nanoparticles.

## EC-509

# ENERGY-EFFICIENT LOCALIZATION AND TRACKING OF MOBILE DEVICES IN WIRELESS SENSOR NETWORKS

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### ABSTRACT

Wireless sensor networks (WSNs) are effective for locating and tracking people and objects in various industrial environments. Since energy consumption is critical to prolonging the lifespan of WSNs.

We propose an *energy-efficient Localization and Tracking* (eLOT) system, using low-cost and portable hardware to enable highly accurate tracking of targets. Various fingerprint-based approaches for localization and tracking are implemented in eLOT. In order to achieve high energy efficiency, a network-level scheme coordinating collision and interference is proposed.

On the other hand, based on the location information, mobile devices in eLOT can quickly associate with the specific channel in a given area, while saving energy through avoiding unnecessary transmission. Finally, a platform based on TI CC2530 and the Linux operating system is built to demonstrate the effectiveness of our proposed scheme in terms of localization accuracy and energy efficiency

EC-510

# COMPARISON OF CO-OPERATIVE SPECTRUM SENSING TECHNIQUES IN COGNITIVE RADIO NETWORK

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## ABSTRACT

In today's world we have flexible wireless communication, which helps for efficient transmission and distribution of digital content. We have a problem in spectrum usage of radio spectrum. In order to utilize the radio spectrum effectively, cognitive radio network would be the efficient solution. Spectrum is one of the important resource for wireless communication. It is one of the most challenging issue in Cognitive radio network. It helps to find the white spaces in the spectrum. (i.e unused frequency bands).Spectrum sensing refers to detect the unused spectrum without interfering with other frequency bands. In this paper we discuss the co-operative spectrum sensing to minimize the sensing time and maximize the probability of detection.

# EC-512

## OPPORTUNISTIC ROUTING WITH CONGESTION DIVERSITY IN WIRELESS AD HOC NETWORKS

### ABSTRACT

In this project considering the problem of routing packets across a multi-hop network consisting of multiple sources of traffic and wireless links while ensuring bounded expected delay. Each packet transmission can be overheard by a random subset of receiver nodes among which the next relay is selected opportunistically. The main challenge in the design of minimum-delay routing policies is balancing the trade-off between routing the packets along the shortest paths to the destination and distributing the traffic according to the maximum backpressure. Combining important aspects of shortest path and backpressure routing, this paper provides a systematic development of a distributed opportunistic routing policy with congestion diversity (D-ORCD). D-ORCD uses a measure of draining time to opportunistically identify and route packets along the paths with an expected low overall congestion. This paper uses D-ORCD in which congestion information is integrated with distributed shortest path instead of simple addition used in previous methods. The main goal of this paper is to design a routing policy with improved delay performance over existing opportunistic routing policies by reducing congestion. D-ORCD with single destination is proved to ensure a bounded expected delay for all networks and under any admissible traffic, so long as the rate of computations is sufficiently fast relative to traffic statistics. Furthermore, this paper proposes a practical implementation of D-ORCD which empirically optimizes critical algorithm parameters and their effects on delay as well as protocol overhead.

## EC-513

# NOISE ESTIMATION OF NON STATIONARY VOICED SPEECH USING CHIRP MODEL

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**ABSTRACT** - An algorithmic model for enhancement of speech eliminates or reduces the background noise and renovates the perceptual quality of noisy speech such as characteristics and intelligibility. The speech is considered as a Non stationary signal, whose frequency and amplitude may change over short time interval using a Chirp Frequency Model. Minimal Variance (MV) Filter and Amplitude ESTimation (AES) filter are used in elimination of noise, enhancement of speech, and estimation of parameters to measure the perceptual quality of clean speech. The proposed filtering technique herein provides full parameterizations of periodic signals with the use of chirp frequency based filters. Based on MV and AES filters noise covariance matrix is generated to measure power of the noise and reduce the noise present in speech signals. The pseudo-spectral noise power in signals is measured using the implementation of MUSIC algorithm. Parameters such as Speech Intelligibility Index (SII) and Mutual Information (MI) are used in evaluating the performance of MV and AES filters and the quality of speech enhanced. Simulation on speech signals corrupted by noise result in a denoised clean speech with the SII value of 0.8 and MI of 0.17, and the values are compared with the input speech values. Simulation results shows that the SII value is increased by 0.3 and MI value of clean speech is increased by 0.5 from the input speech signal values.

**Key words**- chirp frequency; MV filter; AES filter; MUSIC algorithm; Speech Intelligibility Index (SII); Mutual Information (MI).

## EC-514

# AIR QUALITY MONITORING SYSTEM BY USING LIFI

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### ABSTRACT

The atmosphere is a compound of air; it's a resource for all the living organism for their living without pure air organisms cannot survive in nature. The main reason for air quality damage is due to liberation of toxic gases from industries and pollution generated by automobiles, power plants etc. These are the main reason, which is harm to living organism in order to avoid damage to air quality. We are implementing a new technology to detect the pollution level in the atmosphere by means of air check technology; this technology can be implemented in important locations such as zoological parks, industries, power plants, school zones, government localities etc. In order to check atmospheric changes there should be a regular monitor of air quality and for monitoring the atmosphere. We are using sensors such as humidity, gases, pressure and temperature with the help of these parameters calibration of the atmospheric quality is monitored. If any change in the atmospheric parameters the information is transmitted to local server through serial communication with the help of LIFI wireless data transmission with the help of data transmitted certain precaution process can be carried out.



## EC-515

# MICRO-IMU-BASED MOTION TRACKING SYSTEM FOR VIRTUAL TRAINING USING DEGREES OF FREEDOM - RAZOR IMU

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### ABSTRACT

This paper presents the development of a low cost wireless real-time inertial limb tracking system for virtual training. The system is designed to provide accurate human body motion capture and interactive three-dimensional by combining low cost MEMS inertial measurement units (IMUs). First, MEMS IMU sensors which is placed on user's body and limbs according to human skeletal action, each sensor performs a 9 degrees of freedom (DOF) tracking at a high-speed rate. Second, the collected sensor's data is transferred to Microcontroller, The inner communication between the MCU and the IMU is achieved through I2C.Finally The IMU sensor values is serial communicated with Mat lab based PC Program for Motion detection.

# EC-516

## INTERNET OF THINGS BASED ENERGY MANAGEMENT SYSTEM

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### ABSTRACT

With the knowledge of new techniques in Electronics we have been able to make our life more comfortable. One such application of electronics is used in Home Appliances Controlling using Android Mobile via Bluetooth. The approach we followed and which is explained in this project report is novel and has achieved the target of Home Appliances Controlling using Android Mobile via Bluetooth satisfying user needs and requirements. Home Appliances Controlling using Android Mobile via Bluetooth is an automatic versatile system. It can be implemented in industry, home, agricultural field, remote and hazardous applications. It provides the flexibility & system reliability with low cost as well as less maintenance. It provides remote access to the system to deliver service at any time of the day. With this system, we can control as well as monitor the devices at remote location. This project is also designed to protect the electrical circuitry by operating an electromagnetic relay. Voice is used in this project for the controlling switches. Usage of voice gives a control system that can be effective and convenient to be used. The application of this system involves modifying the switching system from the traditional way which involves physical contact with the switch to a safer way where the usage of voice is done to replace the physical contact. This project involves a simple switching system that uses a transistor along with a relay which is connected to the power supply, a voice recognition system that consists of a voice recognition chip AT89C51, and the AT89C51 microcontroller to build up the system. In this project, an Android mobile user has to install an application on his/her mobile handset to control the devices. Then he/she can give commands using the buttons on that application. For this purpose, we have to turn on the Bluetooth on mobile, as the main wireless controlling technique used in this project is Bluetooth technology. A Bluetooth receiver will be connected to the project. This Bluetooth device is connected to the circuit which has a decoder. It sends out a code for the respective command sent by the user. Then the respective device connected to the circuit will be turned on or off depending on the command given. For example, turn on Fan, Turn off Fan, Turn on buzzer etc. Such that by giving commands from mobile, we can control industrial work. This is more advantageous, when we have to turn on the machinery at the time when using another urgent task to do and cannot get up from our place. In this case, we can turn on machinery by giving a simple command through a mobile phone. There is no need to go to the field.

# EC-517

## INDIVIDUALS STRESS ASSESSMENT USING HUMAN-SMARTPHONE INTERACTION ANALYSIS

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### ABSTRACT

The presence of stress in people's lives has been increasing nowadays; this motivates research focusing on continuous stress assessment in individuals. In this research we use smart phones and wearable devices. In previous methods several drawbacks have been detected, they use invasive external devices which increase entry costs and reduce user acceptance, or some of the privacy-related information may be used. This paper presents an approach for stress assessment by extracting data using Smartphone sensors, i.e. not invasive concerning privacy. Two different approaches are presented. One is smart phone gestures analysis, e.g., tap, scroll, swipe and text writing, which is evaluated in laboratory settings with 13 participants where F-measure 79-85% within-subject model and 70-80% global model. Second based on Smartphone usage analysis, tested in-the-wild with 25 participants where F-measure 77-88% within-subject model and 63-83% global model. The result shows an accurate stress assessment without being too intrusive, thus increasing ecological validity of the data and user acceptance.

## **EC-519**

# **WIRELESS PROTECTION FOR ELECTRICAL EQUIPMENT**

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### **ABSTRACT**

The protection algorithm is based on current signals measured at both ends of the transmission line. The data is exchanged through the wireless communication network. The relay decision is based on data sharing obtained through wireless communication network. Current differential protection using pilot wire is applied widely on transmission lines as the main protection. Vector difference between the measured currents at the two ends of the transmission line is used for the operation of most current differential relays.

## EC-520

# ENHANCED DYNAMIC SPECTRUM ACCESS IN MULTIBAND COGNITIVE RADIO NETWORKS VIA OPTIMIZED RESOURCE ALLOCATION

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### ABSTRACT

In this paper, we address the constrained resource allocation problems arising in the context of spectrum sharing in Cognitive Radio Networks utilizing a multi-dimensional formulation. Given the activity of the Primary Users (PUs), we consider multiple objectives and constraints, viz., sum-rate, fairness, number of active Secondary Users (SUs), power consumption, and Quality of Service (QoS) requirements (of both PUs and SUs). The three dimensions for the optimization task are the assignment of power, frequency and antenna directionality to various SUs. Efficient heuristic algorithms are developed for five variations of the NP-hard optimization problems. Solution quality tradeoffs are shown for three algorithms, viz., convex relaxation with tree pruning, convex relaxation with gradual removal, and a genetic algorithm (GA); results show that the GA provides a reasonable balance between solution quality and computational effort.

EC-521

# **HIGH SPEED BRUSHLESS DC MOTOR POSITION SENSORLESS CONTROL BASED ON NON IDEAL BACK EMF**

**S.Kamesh, V.Ranganathan , Praveen, Veltech, Chennai.**

## **ABSTRACT**

This project presents a novel method for position sensorless control of high speed brushless DC motors with low inductance and non ideal back electromotive force (EMF) in order to improve the reliability of the motor system of a magnetically suspended control moment gyro for space application. The commutation angle error of the traditional line-to-line voltage zero crossing points (ZCP) detection method is analyzed. Based on the characteristics measurement of the non ideal back emf, a two stage commutation error compensation method is proposed to achieve the high reliable and high accurate commutation in the operating speed region of the proposed sensorless control process. The commutation angle error is compensated by the transformative line voltages, the hysteresis comparators, and the appropriate design of the low pass filters in the low speed and high speed region, respectively. High precision commutations are achieved especially in the high speed region to decrease the motor loss in the steady state.

**EC-522**

# **LUMEN SEGMENTATION USING NONRIGID MOTION ESTIMATION**

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## **ABSTRACT**

In standard B-mode ultrasound (BMUS), segmentation of the lumen of atherosclerotic carotid arteries and detecting the lumen are difficult owing to irregular lumen shapes, noise, artifacts, and echolucent plaques. Contrast enhanced ultrasound (CEUS) improves lumen visualization, but lumen segmentation remains challenging owing to varying intensities, CEUS-specific artifacts and lack of tissue visualization. To overcome these challenges, we propose a novel method using simultaneously acquired BMUS&CEUS image sequences. Initially, the method estimates nonrigid motion (NME) from the image sequences, using intensity-based image registration. The motion-compensated image sequence is then averaged to obtain a single “epitome” image with improved signal-to-noise ratio. The lumen is segmented from the epitome image through an intensity joint-histogram classification and a graph-based segmentation. NME was validated by comparing displacements with manual annotations in 11 carotids. Segmentation results were validated against manual delineations in the epitome images of two different datasets, respectively containing 11 (RMSE 191±43 μm) and 10 (RMSE 351±176 μm) carotids. From the deformation fields, we derived arterial distensibility with values comparable to the literature. The average errors in all experiments were in the inter-observer variability range. To the best of our knowledge, this is the first study exploiting combined BMUS&CEUS images for atherosclerotic carotid lumen segmentation.

# **EC 523**

## **DESIGN OF AN ADAPTIVE SELF-TUNING REGULATOR FOR A THREE WHEELED MOBILE ROBOT**

**LAVANYA M , P.G student ,CEG , ANNA UNIVERSITY, CHENNAI.**

### **ABSTRACT**

This paper introduces the design of an Adaptive Self-Tuning Regulator for a Three Wheeled Mobile Robot. An Adaptive controller is designed for three Wheeled Mobile Robot in order to control the wheel speed such that the Robot track the references. This paper also presents simulation of kinematics and dynamics of the WMR, the WMR movement in straight line and also simulation of various trajectory tracking using MATLAB-SIMULINK. This Adaptive Controller gives better performance than other controllers. This WMRs are considered as the most widely used class of mobile robots. This is due to their fast maneuvering, simple controllers and energy saving characteristics. Robustness to external disturbances and parameter uncertainties is achieved. Closed loop real-time results show good performances in trajectory tracking even if for high upper bounds of uncertainty.



## **EC 524**

# **MODELLING AND ANALYSIS OF PMSG BASED WIND ENERGY CONVERSION SYSTEM**

**V.ARUN PRASATH , P.G.Student , CEG , ANNA UNIVERSITY, CHENNAI.**

### **ABSTRACT**

This paper presents the dynamic model and Detail Analysis of a Wind energy conversion system equipped with permanent magnet synchronous generator (PMSG). There are different types of synchronous generators, but the PMSG is chosen, in order to obtain its dynamic model. It offers better performance due to higher efficiency and less maintenance since it does not have rotor current and can be used without a gearbox, which also implies a reduction of the weight of the nacelle and a reduction of costs. Along with the PMSG, wind speed, wind turbine, Pitch angle control & drive train have been modeled and the mathematical equations that explain their behavior have been introduced.

The generator model is established in the dq-synchronous rotating reference frame. The wind turbine model details the mechanism of variable speed operation of the turbine. In order to verify the presented model simulations with MATLAB/Simulink software have been conducted. Simulation results prove the validity of the model.

EC-525

# **EFFECTIVE POWER GENERATION FOR STANDALONE PHOTOVOLTAIC POWER SYSTEM**

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**College of Engineering, Guindy, Anna University ,Chennai.**

## **ABSTRACT**

This paper presents the development and simulation of a Photovoltaic power system with Maximum power point tracking. A typical configuration of a standalone photovoltaic power system consists of PV arrays, a front-end dc–dc converter, and a dc–ac inverter. The system is provided with a Maximum power point tracking technique, in order to track the maximum power from the photovoltaic system. An engineering test module of the Photovoltaic cell combined with MPPT algorithm is used. Controller is used to extract maximum power from the source.

# **EC-526**

## **FLC BASED VIBRATION CONTROL OF AN ACTIVE SUSPENSION-HALF CAR**

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### **ABSTRACT**

The vehicle suspension system is helping the passenger to travel with comfort by reducing the vibration. The irregularities in the road causes the vehicle to vibrate. These vibration will also reduce the life span of the road vehicle by increasing the wear and tear of the vehicle components. The passive suspension system was useful to reduce the unnecessary vibration to certain extent but the semi active and active suspension systems are very useful to reduce the vibration much better than the passive suspension system .The trade off between the semi active and active suspension system is between the amount energy given to the suspension system and the percentage of vibration reduction.

# EC-527

## DARK SOLITON COMPLEX IN 3- COUPLED NONLINEAR SCHRODINGER EQUATIONS WITH DEFOCUSING NONLINEARITY

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### **Abstract:**

We obtain the dark soliton complex propagation in three coupled nonlinear Schrodinger equations with defocusing nonlinearity. These equations arise in the context of partially coherent beam propagation in photorefractive media. We consider the general two-soliton solution and choose the velocities of the dark solitons to be moderately different and the amplitude parameters  $k_{jR}$ ,  $j=1, 2$  to be exactly equal in order to construct the dark soliton complex. Interestingly, we notice as the polarization vector changes, the dark soliton complex vary their profile.

EC-529

# EXTRACTION OF VEGETATION AND WATER BODIES FROM SATELLITE IMAGES USING ENHANCEMENT TECHNIQUES AND INDICES

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## ABSTRACT

Delineation of vegetation and water bodies helps us to monitor deforestation and water sources. It is more helpful to the Government boards in urban and rural area planning. In most existing methods, Artificial Neural Networks and Fuzzy logic systems used to extract the vegetation and water bodies from the satellite images. Proposed system extracts the Vegetation and water body pixels from the image. In the first stage, we apply HAAR wavelet transform to enhance the image and median filter to eliminate the cloud noise from the image. In the second stage, various indices such as Normalized Vegetation Index (NVI), Normalized Difference Vegetation Index (NDVI), Normalized Water Index (NWI), and Normalized Difference Water Index (NDWI) are used to extract the water bodies and vegetation. Adaptive threshold algorithm used to fix the indices to the different kind of images.

**Keywords:** vegetation; water bodies; HAAR; NVI; NDVI; NWI; NDWI .  
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EC-530

# **MEMS ACOUSTIC SENSOR BASED FAULT DETECTION IN SINGLE PHASE INDUCTION MOTOR**

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**Abstract** — Single phase induction motors are used worldwide as the “workhorse” in industrial applications. Although, these electromechanical devices are highly reliable, they are susceptible to many types of faults. Such faults can become catastrophic and cause production shutdowns, personal injuries, and waste of raw material. However, single phase induction motor faults can be detected in an initial stage in order to prevent the complete failure of an induction motor and unexpected production costs. Faulty rotor having the acoustic signal is generally noisy and non-stationary in nature. The faulty rotors may spread and increase the damage to the entire motor mechanism. This paper reports how to diagnose the fault in motor based on dual tree complex wavelet transform. The acoustic signal from the healthy rotor is used as the reference signal. Rotor with seeded defects in one or more teeth is analyzed. The measurement of the angles between two or more damaged teeth with accuracy is achieved. The proposed method is used to evaluate the effectiveness in detection by performing simulations. The parameters such as mean, standard deviation, autocorrelation, dynamic range and normalized frequency are measured. Acoustic signals are used for rotor defect identification and estimating the severity of defects.

*Keywords*— *Condition monitoring, Single Phase Induction motor, MEMS acoustics sensor, MSP 430.*

## EC-531

# BLDC MOTOR-DRIVEN FED BY SOLAR PV ARRAY USING POSITIVE OUTPUT SUPER- LIFT CONVERTER

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*Abstract*—Solar Photo Voltaic (SPV) array is used in various applications such as irrigation fields, household applications, and also for industrial use. The efficiency and the operating condition of the SPV array are controlled by means of a Maximum Power Point Tracking (MPPT) algorithm. By using Incremental Conductance Method (INC), the maximum power can be obtained. The super lift converter increases the output voltage in geometric progression and enhances the voltage transfer gain in power series. Normally it produces high frequency switching loss. To overcome the loss and to generate an optimum value of duty cycle for the switch, an Electronic Commutated BLDC motor with a Voltage Source Inverter (VSI) operating at fundamental frequency switching is implemented. The positive output super lift converter is associated with a Permanent-Magnet Brushless DC (PMBLDC) motor used in this system. The performances of the converter under different operating conditions are investigated in MATLAB/Simulink environment.

*Index Terms*—Elementary additional series positive output super-lift converter (DC-DC converter), incremental conductance maximum power point tracking (INC-MPPT), permanent magnet brush less DC motor (PMBLDC), solar photo voltaic (SPV), voltage source inverter (VSI).

## EC-532

# COMPARATIVE STUDY OF NESTED NEUTRAL POINT CLAMPED INVERTER IN SINGLE PHASE AND THREE PHASE

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**ABSTRACT** - The comparison of Nested Neutral Point Clamped converter topology in single phase and three phase which is composed of six switches and two flying capacitor per phase is implemented. The flying capacitor is used to maintain the voltages across all the phases. In order to ensure the inverter to operate normally, the voltage across each capacitor should be controlled and maintained. This topology is easy to integrate with different pulse width modulation schemes and can be operated over a wide range. This nested neutral point clamped inverter possesses reduced number of switches as compared to active neutral point clamped inverter. The performance of the converter under different operating conditions is investigated in MATLAB/Simulink environment.

**Index Terms-** Nested Neutral Point Clamped Converter, Flying Capacitor, PWM, MATLAB/Simulink .



EC-533

# DESIGN OF OPTIMAL FRACTIONAL PID CONTROLLER USING SUCCESSIVE CONVEX APPROXIMATION ALGORITHM FOR MOTOR-LOAD SYSTEM

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**Abstract**— An optimization approach based on Successive Convex Approximation for motor speed control is proposed. The main idea is to design a speed controller for a motor load system to obtain the gains. The objective of the motor load system is to maintain the speed of the motor at the desired value under various load condition. However, two controllers are used for controlling the speed one is PID controller and the other is Fractional Order PID controller (FOPID). To implement fractional order PID controller Oustloup method is used for differ-integral operator. The main contribution is the successive convex approximation technique based on the minimization of an objective function with different indexes. To obtain an optimal value for PID gains, the parameters of the both PID and FOPID controllers are tuned by using successive convex approximation algorithm and finally a comparative result shows the performance of both the controllers.

**Index terms** – PID controller, FOPID controller, DC motor, CUK converter, DC source, Feed back unit.

## EC-539

# BRAIN COMPUTER INTERFACE FOR MEDICAL & NON-MEDICAL APPLICATION

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### **ABSTRACT:**

Until now, we have almost only seen proof-of-concepts where a single BCI model is demonstrated to work as simple control mechanism, as a measurement of user state, or for neurofeedback. The Brain-Computer interface provides a non-muscular communication channel to people with and without disabilities. In recent years, we have seen a rising interest in Brain-Computer interfacing for Human-Computer interaction and potential game application. In our paper, we are including that BCI model can also be used for visually challenged people while driving. It gives the instruction what to do when there is an obstacle. BCI device consists of Hardware and Software. BCI hardware records the brain signal using a series of device component. BCI software then translates the signals to device output command and provides feedback. BCI is considered to be one of multiple possible input modalities (together with Keyboard, Speech, Gesture, etc.) that can be used to control the brain signals. The research still follows the models traditional, medical oriented approaches.

It is also suitable for Drivers, Divers, Astronauts, Safety and security purpose, Gaming and Entertainment, Medical purpose (especially for Paralyzed patient).

### **KEYWORDS:**

Brain Computer Interface; Brain Signal Acquisition; BCI Applications; Mind Commands; Brain Monitoring; BCI Challenges.

# EC 540

## MOBILE CONTROLLED ROBOT USING DTMF TECHNOLOGY

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### **ABSTRACT:**

The main aim of the project is to avoid manpower in detecting bombs and use the robot to detect it in a greater accuracy. If we use the manpower we can come across many unexpected danger. So we include the robot for detecting bombs and intimate to the authenticated person. In this project we can use the DTMF Technology for communicating the Robot with the authenticated person .Our Robot has a special bomb detecting sensor which will detect the bomb and it will intimate to the authenticated person through mobile phone fixed in our robot. Then the authenticated person will diffuse the bomb. The movement of the Robotics can be controlled by means of motor which is involved in the major application of Robotics field.

At the transmitting end using mobile phone, commands are sent to the receiver to control the movement of the robot either to move forward, backward and left or right etc. At the receiving end two motors are interfaced to the microcontroller where they are used for the movement of the vehicle. The DTMF decoder decodes before feeding it to another microcontroller to drive DC motors via motor driver IC for necessary work.

Using this technology we can control the robotic vehicle by using cell phone. This technology has an advantage over long communication range as compared to RF technology.

EC 541

**DENOISING OF BIOLOGICAL SIGNAL USING  
WAVELETS AND OPTIMIZATION METHOD**

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**ABSTRACT**

ECG is the most commonly recognized biomedical signal for diagnostic purpose and it is electrical manifestation of the contractile activity of the heart. ECG is mostly suitable for non stationary signal where wavelet transform (WT) is useful for analyzing it. The process of removing noise from the original signal to preserve useful information is referred as denoising. In this paper, optimization method is used to choose wavelet based on the Signal to Noise ratio (SNR). The different types of Wavelet transform such as Daubechies Wavelet, Coifman Wavelet, Symlet Wavelet are used for analysis purpose. The different parameters such as signal to noise ratio (SNR), percentage root mean square difference (PRD), and mean square error (MSE) are used for measuring the performance of the above two methods.

**Keywords—Wavelet transform, Thresholding, ECG signal, SNR, MSE, PRD**

**EC 542**

**ARTIFICIAL BEE COLONY OPTIMIZATION IN  
COGNITIVE RADIO AD HOC NETWORKS**

**Dr.Saleem. Dr.S.Shiek aalam R.Manimaran**

**Abstract**

Cognitive radio networks provide the solution for the utilization of the spectrum access and also meet the requirements of the bandwidth sharing. The artificial BEE colony optimization algorithm, which has been shown to be the inspirational biological search than other optimization techniques. In this research work defining the problem of routing in cognitive radio ad hoc networks; especially this paper solves the issue of routing in dynamic secondary nodes (unlicensed users) and the simulation results show the optimized spectrum searching and effective routing solution in CRAHNS.

# EC 543

## FABRICATION OF ANTITHEFT WHEEL LOCKING SYSTEM

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### Abstract

Microcontroller is playing an major role in the field of industrial, commercial, domestic automation. The main aim us to select this project work is to acquire practical knowledge in the field of automation using microcontroller.

we selected ““ FABRICATION OF ANTI THEFT HYDRAULIC DISC BRAKE LOCKING IN A TWO WHEELER” as our project work and we have used principle of mechatronics in developing this project work. in this project work, the two wheeler is started with the key and digital code. This digital code is entered in the key pad. The microcontroller processes the correct digital code to activate the solenoid valve in order to open the brake oil line. When entering the faulty digital code the microcontroller sounds alarm .