



# International Conference on Research Trends in Engineering & Management

# ICRTEM-2021

## 20<sup>th</sup> - 21<sup>st</sup> August 2021

**Virtual  
Conference**



**ORGANIZED BY**

**R R INSTITUTE OF TECHNOLOGY, BANGALORE, INDIA**

**IN ASSOCIATION WITH**

**INSTITUTE FOR ENGINEERING RESEARCH AND PUBLICATION (IFERP)**



**ICRTEM-21**

International Conference on  
Research Trends in Engineering & Management

**Bangalore, India**  
**20<sup>th</sup> – 21<sup>st</sup> August, 2021**

Organized by:  
**R R Institute of Technology, Bangalore, India**  
In Association with:  
**Institute For Engineering Research and Publication**





## Rudra Bhanu Satpathy

Chief Executive Officer

Institute For Engineering Research and Publication.

On behalf of *Institute For Engineering Research and Publications (IFERP)* and in association with *R R Institute of Technology, Bangalore, India*. I am delighted to welcome all the delegates and participants around the globe to *R R Institute of Technology, Bangalore, India* for the “*International Conference on Research Trends in Engineering & Management*” (ICRTEM-2021)” Which will take place from *20<sup>th</sup> – 21<sup>st</sup> August 2021*

It will be a great pleasure to join with Engineers, Research Scholars, academicians and students all around the globe. You are invited to be stimulated and enriched by the latest in engineering research and development while delving into presentations surrounding transformative advances provided by a variety of disciplines.

I congratulate the reviewing committee, coordinator (**IFERP & RRIT**) and all the people involved for their efforts in organizing the event and successfully conducting the International Conference and wish all the delegates and participants for their virtual presence.

Sincerely,



**Rudra Bhanu Satpathy**



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## Preface

The *International Conference on Research Trends in Engineering & Management (ICRTEM -21)* is being organized by *R R Institute of Technology, Bangalore, India* in Association with *IFERP-Institute for Engineering Research and Publications on the 20<sup>th</sup> – 21<sup>st</sup> August, 2021*.

The “*International Conference on Research Trends in Engineering & Management*” was a notable event which brings Academia, Researchers, Engineers, Industry experts and Students together.

The purpose of this conference is to discuss applications and development in area of “*Engineering & Management*” which were given International values by *Institute for Engineering Research and Publication (IFERP)*.

The International Conference attracted over 110 submissions. Through rigorous peer reviews 72 high quality papers were recommended by the Committee. The Conference aptly focuses on the tools and techniques for the developments on current technology.

We are indebted to the efforts of all the reviewers who undoubtedly have raised the quality of the proceedings. We are earnestly thankful to all the authors who have contributed their research works to the conference. We thank our Management for their wholehearted support and encouragement. We thank our Principal for his continuous guidance. We are also thankful for the cooperative advice from our advisory Chairs and Co-Chairs. We thank all the members of our local organizing Committee, National and International Advisory Committees.



## Message from the Chief Patron



**Shri Y RajaReddy**

Chairman

PKMET, Bangalore

I am extremely pleased to know that the department of Electronics and Communication Engineering of R R Institute of Technology is organizing an International Conference on Research Trends in Engineering & Management (ICRTEM-2021) on 20<sup>th</sup> and 21<sup>st</sup> of August 2021. I understand, a substantial number of researchers have submitted their papers for presentation in the conference and also for publication. The response to this conference from all over India and Foreign countries is most encouraging. I am sure all the participants will be benefitted by their interaction with their fellow scientists and engineers which will help for their research work and subsequently to the society at large.

I wish the conference meets its objective and confident that it will be a grand success.

## **Welcome message from the Patron**



**Sri Kiran H R**

Secretary

PKMET, Bangalore

I am pleased to state that the Department of Electronics and Communication Engineering of RRIT is organizing a prestigious International Conference on Research Trends in Engineering & Management"- ICRTEM-2021, on 20th and 21st of August 2021. Concept to commissioning is a long route. The conference may strengthen theme of "Innovative India" and may translate the innovations into a workable product. The conference forum will set a path for the academicians, researchers who play a major role in bringing out new products through innovations. Also I am delighted to know that the conference has received innovative ideas for presentation. I wish the participants of the conference to get additional insight into their subjects of interest. I wish the organizers of the conference a great success

## **Welcome message from the Patron**



**Sri Arun H R**

Director

PKMET, Bangalore

I am delighted to wish Electronics and Communication Engineering department for organizing an International Conference on Research Trends in Engineering & Management"- ICRTEM-2021 on 20<sup>th</sup> and 21<sup>st</sup> of August 2021. I have a strong desire that the conference to unfold new domains of research among the Electronics and Communication Engineering fraternity and will boost the knowledge level of many participating budding research scholars by opening a plethora of future developments in the field of Electronics and Communication Engineering and other areas of Engineering.

I appreciate the faculties and department Head of Electronics and Communication Engineering for continuous untiring contribution in making the conference a reality.

I wish the conference a great grand success and motivate other departments to follow the trend, to make RRIT reach higher levels of learning in the next few years.

## Welcome message from the Principal



**Dr.Mahendra K V**

Principal,  
RRIT, Bangalore

The International Conference on Research Trends in Engineering & Management (ICRTEM-21) Organized by the department of Electronics & Communication Engineering, R. R. Institute of Technology, Bangalore, India, on 20<sup>th</sup> - 21<sup>st</sup> August 2021 in association with IFERP is a great pride and honor for the College. The College has made tremendous progress in all areas of academic, non-academics, capacity building relevant to staff and students. The College has achieved another milestone in getting NAAC accreditation. Conferences are an important way researchers stay connected to others in their field and learn about cutting-edge technologies. It provides a platform for scholars, researchers from industry and academia to demonstrate their findings and studies. The conference brings together the members of research communities to enrich their knowledge in various emerging areas of research. One of the primary aims of all engineers who take part in international conferences is to acquire information and expertise on the latest and most recent advancements that have taken place in their field. Engineering conferences are the right place to learn about new tools that are being used in the field by engineers who are involved in similar streams of research such as yourself. Enrolling yourself into an engineering conference and taking an active part in the event can mean making a considerable and sizable investment of your time, money and resources. My heartfelt encouragement to all staff members and Students for their participation in the Conference and my best wishes for their fruitful effort. I thank all the organizers for their efforts in making the event successful.

## **Welcome message from the Convenor**



**Dr.Sunitha HD**

Professor & HOD

Department of ECE, RRIT, Bangalore

It gives me immense pleasure to present the proceedings of International Conference on Research trends in Engineering and Management (ICRTEM-21), organized by the department of Electronics and Communication Engineering, R R Institute of Technology, Bangalore in association with IFERP. The main objective of organizing this conference is to share and enhance the knowledge of researchers in engineering & Management domain. This conference aims to bridge the researchers working in academia or industry and other professionals through presentations and keynote sessions on current technology and trends.

My heartfelt thanks to our Management, Principal, IFERP, Keynote speakers, reviewers and organizing committee for their support in organizing this conference and making it a success.



**ICRTEM-21**

*International Conference on  
Research Trends in Engineering &  
Management*

**Keynote Speakers**



**Professor Marwan Al-Akaidi**

Vice President for Research  
The American University in the Emirates, Dubai  
Chair SPC, IEEE UK & Republic of Ireland

**Biography**

An Experienced Vice President for Academic Affairs with a demonstrated history of working in the education management industry. Skilled in Analytical Skills, Lecturing, Leadership, Data Analysis, and Strategic Planning. Strong education professional with a Doctor of Philosophy (PhD) focused in Optical and Communication Engineering from Loughborough University.

**Education**

Doctor of Philosophy (PhD) Field Of Study Optical and Communication Engineering, Loughborough University, 1985 – 1988

**Designation:**

- ✓ As Vice president Research & Dean of the College of Computing & Information Technology, The American University in the Emirates (AUE), Dubai, United Arab Emirates
- ✓ As VPR is to encourage research that has practical application for both economy & society in UAE & the region.
- ✓ Working as Vice President for Academic Affairs, Arab Open University, Kuwait

**Experience:**

- ✓ Started his Career as Lecturer in Software Engineering/ Communication Engineering at Plymouth University
- ✓ Senior Lecturer at De MontFort University and served as Director of External affairs with almost 21 years in De MontFort University



**Professor Dr. Hatem Hatem Abdulkadhim Alyasari**

Professor of Economics  
Cihan University  
Kurdistan region, Alsulaymaniya

**Biography**

- Currently, he is a senior lecturer in Cihan University of Sulaimaniya. Sulaimaniya, KRI, Iraq.
- Chairman of finance and Banking Dept. University of Kalamoon Syria, 2006-2012
- Supervisor of Graduation Project , The Arab Academy for Banki and Financial Sciences, 2006-2012.
- Dean of Administration and Economic College Al-Kufa University, Iraq, 2001-2003
- Dean of Administration and Economic College, Al-Qadisiya University, Iraq, 1993-2001
- Published scores of refereed articles on topics related to banking, finance and economics.
- Editorial board member in five international journals.
- Educated in Iraq, US, and UK universities with a bachelor degree in business and economics from Al-Mustansiriyah University (Iraq) , a master degree in economics from Detroit university and a doctorate degree in econometrics from Bradford University (USA).



**Dr. M V Reddy**

Institute of Research Hydro-Québec  
Centre of Excellence in Transportation  
Electrification and Energy Storage (CETEES), Hydro-Québec, J3X 1S1, Canada

**Biography**

Dr. M.V. Reddy obtained his Ph. D (2003) with the highest honors in the area of Materials Science and engineering from the University of Bordeaux, (ENSCP/ICMCB-CNRS), France. From June 2019 working as a Senior Researcher (level 3) (equivalent to professor) at the Institute of Research Hydro-Québec, Canada. From July 2003 to May 2019, he worked at the National University of Singapore (NUS), Singapore as a Senior Research Fellow. Over the past 20 years, he has conducted leading research on Materials for Energy Storage and Conversion including materials processing and the evaluation of functional properties of materials for electric vehicles, and the development of in situ techniques.

Dr. Reddy has published around 210 papers (1st author; 47, 2nd author 55; \* Corresponding author: 92 papers) and one landmark review paper in “Chemical Reviews”, his h-index of 66 with over 16000 citations. These have recently placed him within the top 2% highly cited researchers in Energy (Ranked #1002 out of 186,500 researchers in 2020, Source: Stanford University (USA)).

Dr. Reddy is serving as an editorial advisory board member in Materials Research Bulletin and Journal of Energy Storage (Elsevier) as well as several open access Journals (Materials, Energies and Molecules, MDPI) and the regional editor: Nanoscience & Nanotechnology-ASIA.

Dr Reddy has conducted several workshops related to functional materials and energy storage & conversion and delivered 10 Plenary, 22 Keynote, 78 Invited and 18 Contributory talks at various conferences and conducted a number of workshops on battery materials’ fundamentals, synthesis and characterization techniques. He also delivered Materials Science and Engineering outreach talks to college and high school students all over the world.

## Technical Session Chairs

### **Dr. Manjunath R**

Professor & Head

Department of Computer Science & Engineering

R R Institute of Technology, VTU, Bengaluru

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# ICRTEM -2021

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*Bangalore, India, 20<sup>th</sup> – 21<sup>st</sup> August, 2021*

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Research Trends in Engineering &  
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**ABSTRACTS**

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## Automatic Fire Detecting and Fire Fighting Robot

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### ***Abstract:--***

The safety of humans depends on the safety of where he live, work and travel. The ensurement of security of our home, office and buildings is the utmost priority of human. We develop an security system that contains a fire fighting robot equipped with intelligent sensors. The fire caused by electric may cause huge damages. This is because our present security systems can't detect any small abnormal fires and notify us. In addition, it is difficult for us to detect the small fire caused by electrical circuit / devices. Humans may take a lot of time to find an extinguishing source. Humans may also find it hard to reach the fire, this may be due to small spaces or it ma also lead to dangerous situations where human's may risk their lives due to large fires.

## Cost-Efficient Arduino-based Automated Washroom Sanitizing System

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### ***Abstract:--***

The proposed project is based on automated washroom sanitizing system that mainly deals with solving the problem of unhygienic condition of public toilets. Sanitation is one of the largest problems faced by people in our country. Even though 6 percent of the urban people are relying on public toilets for their daily use, they are still not hygienic. This has become one of the most basic issues faced by people everywhere. Providing the best solution to this issue is the aim of our project. The existing method involves manual cleaning done by a human which is not at all an easy task and may not even exist in all areas. Implementing a facility to clean the major units of a washroom after several cycles will maintain a sufficient hygienic environment. The cleaning process is aimed to be automated and simple. Such a provision will ease the job of regular janitors as well as the users. Placing sensor-controlled water flusher attached to the toilet will perform the cleaning task and meanwhile, the number of cycles used is recorded to activate the automated cleaning process. On selecting ESP32 microcontroller as a suitable interface, we aim to provide an easily compatible facility at an economically feasible rate. We aim to ease the brushing technology using a simple belt and DC motor-driven mechanism. Hence, on adopting this methodology, we will be able to increase the standard of public and community toilets and facilitate people to use these effectively.

### ***Keywords***

Sanitization, Automation, Sensors

## 3-Phase Power Failure Detection and Voltage Measurement Using Arduino

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### ***Abstract:--***

Three phase power failure preventor is a device which used in detection of power failure in 3 phase power supply. It is a device where the user would be acknowledged that one of the phases has been failed. This would be known to the user as the circuit trips off the power supply, in other system the detection would be presented with LEDs or buzzer. Three phase power failure prevention using microcontroller is the device where supply would provide to relays using transformers and rectifier circuit. And the controller we are using in proposed system is Arduino nano, the power supply to the controller would be given by using power supply. For displaying fault messages, we are making use of 16\*2 lcd display. Initially the circuit will be working fine and there would not be any fault messages in the display as there is no failure of any phases. Once any one of these phases fail, the controller detects this failure and with the help of relays the circuit is turned off. Now the failure message displays on lcd display and only particular phase needs to be corrected and circuit will be working fine.

## The Influence of Boron Nitride Reinforcement on Physical and Mechanical Properties of Polyethylene Terephthalate (PET)

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### ***Abstract:--***

Polymers are economical, easy to fabricate, low weight, decent strength, good thermal and electrical insulating properties, and many more advantages made polymers reach the highest magnitude and replace all traditional materials with various types of reinforcing elements as desired. In many capacities, they have significantly suppressed traditional materials. There are numerous advantages that make polymers very promising contenders for domestic, commercial, and engineering applications. In the present research, Polyethylene terephthalate (PET) polymer as a matrix and hexagonal boron nitride (h-BN) as reinforcement were used, and are fabricated using ball milling and injection molding process. The properties of h-BN addition to (0 – 40 wt. %) were studied, recorded, and analyzed the physical and mechanical properties. Optical microscopy images showed good distribution of BN particles in the PET matrix. The Vickers microhardness, impact strength, were found to increase by 28% and 70%. Tensile strength and flexural bending test results of composites were found to increase approximately 54% and 52%, and percent elongation has reduced by almost 46% by an increase in the BN particles compared to pure PET matrix.

### ***Index Terms***

Boron nitride, Injection molding, Mechanical properties, Polymer composite, Optical Microscopy.

## Cyber Crime

**Anshu Deepak**, Assistant Professor, ECE, RRIT  
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### ***Abstract:--***

Cybercrime can be defined as an "illegal act in which a computer is a tool or a goal or both". The use of computers has become extremely common and popular. However, the misuse of technology in cyberspace has led to cybercrime both nationally and internationally. With the intention of regulating criminal activities in the cyber world and protecting the technological advancement system, the Indian parliament approved the law on technological information, 2000. It was the first global law of India to deal with technology in the field of e-commerce, e- governance, electronic banking services, as well as penalties and punishments regarding computer crimes.

Law that regulates the internet must be considered in the context of the geographical in context of the internet and political borders, which are crossed in the process of sending data or exchanging information around the globe. The unique globe structure of the internet raises not only jurisdictional issues, that is, the authority to make and enforce laws affecting the internet , but also questions concerning the nature of the laws themselves.

This document will discuss the common types of cyber-crime and measures to prevent cybercrime.

### ***Index Terms***

Cyber bullying & stalking, Vishing, Pharming, Phreaking, Bots, phishing, spoofing attacks, malwares, email bombing, Data diddling.

## A Survey Paper on Kidney Cancer and Computer aided methods for their Image Segmentation

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**Mahesh Bhimsham Dembrani**, Assistant Professor,

### ***Abstract:--***

The medical image is segmented. Finding tissue cells or tumors in image data such as CT is among the most challenging tasks in medical image processing, as it provides vital information on their shapes and volumes. Improved imaging predictive validity have emerged from technological breakthroughs in machine vision. Computer aided solutions have contributed significantly for automatic examination of medical images and interpreting the images to provide helpful information for enhancing the medical experts diagnostic procedure. Per year, around 4 million new instances of kidney cancer are diagnosed, the most common treatment to be surgery. To prevent unnecessary surgery is possible only when physicians has proper segmented data from CT. It is of great importance for developing profound learning models to help physicians identify successfully segmented tumors. Hence there is a need to develop or modify algorithm using deep learning approach which will help physicians to classify renal carcinoma and give proper diagnosis

### ***Index Terms***

Medical Image, CT, Kidney, Deep learning.

## Roxas City the Seafood Capital of the Philippines: Myth or Fact?

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### ***Abstract:--***

The purpose of this study attempts to prove the branding of Roxas City which is part of the Province of Capiz as the Seafood Capital of the Philippines. The researchers utilized secondary data from the Fisheries Statistics of the Philippines from 2007 to 2017. Phase 1 of the study was on the determination of the performance of the Province of Capiz in the type of production on Commercial, Marine Municipal, Inland Municipal, and Aquaculture its volume and value at the same time knowing the performance on various species in its volume and value and determine who are the top fisheries producing Provinces by sector from 2007 to 2017.

Results of the study revealed that the volume and value in the fishing industry in commercial, marine municipal, inland municipal in the Province of Capiz was decreasing. And it was noted that the Capiz is not part of the top producing province in the Philippines. However, in the aquaculture industry, the volume and value were increasingly focused on different species such as milkfish, mud crab, mussel, oyster, tiger prawn, white shrimp, and endeavor prawn. If the basis for the claim of Roxas City as the Seafood Capital of the Philippines in terms of volume and value across types of industry, indeed the claim is a myth.

### ***Index Terms***

Province of Capiz, Time-Series Analysis, Fisheries, Commercial, Municipal, Inland Municipal and Aquaculture

## Smart Notice Board Using IoT (Internet of Thing)

**Ashok K N**, Assistant Professor, ECE, RRIT

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### ***Abstract:--***

Notice boards are playing very important role in our day to day life. By replacing conventional type notice board with IoT based smart notice board we can make information dissemination much easier in a paperless community. Here the admin can control notice board through internet. So information can be send from anywhere across the world and can be displayed within seconds in form of scrolling manner. Smart phone or PC is used for sending information and an IOT development board i.e., Node MCU is connected to internet at the receiving side. In addition to this an application which is installed on the admin's mobile phone can serve the same purpose.

## Application of Lean Six Sigma in cast in-situ construction

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### ***Abstract:--***

Construction sector is living in continuous change environment. Rapid growth of construction industry and increasing requirements, demands of customer towards the safety, quality assurance has put pressure on construction companies for implementing advance quality tools. This paper studies the implementation of Lean Six Sigma in construction industry to reduce the deviation and variation in the process of construction activities. The DMAIC (Define, Measure, Analysis, Improve, Control) approach of six sigma and tools of each stage of this methodology is been discussed in this paper. A case study of a residential building has been carried out which demonstrates the application of Lean Six Sigma principles to some construction works: R.C.C work, brickwork and plastering. A defect assessment sheets were prepared for every work and the current sigma level of each has been computed. DMAIC methodology has been applied to improve the quality standards and reduce the wastages and variation in the process by analyzing the defects, their severity and root causes. The study aim at understanding the need of construction industry and customer requirements from quality perspective and fulfill them with the principles of Lean Six Sigma. The results of study suggest that the proper management and minor changes in the work procedure will help to achieve the desire quality standards.

### ***Index Terms***

Lean Six Sigma, DMAIC methodology, quality standards, case study.

## Light-Fidelity (Li-Fi): Transmission of Data through Light of Future Technology

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### ***Abstract:--***

Current era many people are using internet to accomplish their task through wired or wireless network. As no of users get increased in wireless speed decreases proportionally. Though Wi-Fi gives us speed up to 150mbps as per IEEE 802.11n, it is still insufficient to accommodate no of users. To remedy this limitation of Wireless Fidelity, we are introducing concept of Li-Fi. As per german physicist Harald Haas data through illumination taking the fiber out of fiber optic by sending data through an LED light bulb that varies in intensity faster than the human eye can follow. It's the same idea behind infrared remote controls but far more powerful. Haas says his invention, which he calls D-LIGHT, can produce data rates faster than 10 megabits per second, which is speedier than your average broadband connection.

### ***Index Terms***

Wi-Fi, Light-emitting diode (LED), Video LAN Client (VLC), Technology, Entertainment and Design (TED), Visible Light, Data utilization, server, lamp driver.

## Wireless Charging of Electric Vehicle in Smart Cities

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**Hemanjali R**, Student, Electrical and Electronics Engineering, RRIT/VTU

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**Rishi GN**, Student, Electrical and Electronics Engineering, RRIT/VTU

**Sunanda C V**, Assistant professor, Electrical and Electronics Engineering, RRIT/VTU

### **Abstract:--**

Currently, we are facing issues related to lack of fuel. So, we are moving towards electrical vehicle. But still people are not ready to prefer electrical vehicle over present ones. It is because of price as well as lack of available charging stations. Even if few charging stations are available, it is necessary to spend extra time for charging the vehicle. The vehicle battery charger station using renewable power system developed in this work provides a unique service to the traveler. It can be quickly and easily installed outside any business premises.

The application of Internet of Things (IoT) has been emerging as a new platform in wireless technologies primarily in the field of designing electric vehicles. To overcome all issues in existing vehicles and for protecting the environment, electric vehicles should be introduced by integrating an intellectual device called sensor all over the body of electric vehicle with less cost. Therefore, this article confers the need and importance of introducing electric vehicles with IoT based technology which monitors the battery life of electric vehicles. Since the electric vehicles are implemented with internet, an online monitoring system which is called Things Speak has been used for monitoring all the vehicles in a continuous manner (day-by-day).

## Behavior of Wear and Corrosion Resistance of thin film coated Titanium alloy substrate

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### ***Abstract:--***

Thin-film barrier coating on titanium alloy substrate features a vast range of application among which aeronautic and marine application are significant. Talking about 2 very different aspects, whose requirements and application are way apart. Titanium has always been beneficial in both these products applications. The introduction of titanium in aerospace and marine locomotive parts will have significant importance on parameters like pressure withstanding capacity and corrosion resistance. Our immense perseverance is to satisfy the above intent by giving a skinny coating on Titanium alloy substrate. These coated titanium alloy are going to be tested for wear and corrosion resistance and it's hoped are going to be in line with TiN, AlcroNa pro, DLC (diamond-like-carbo) and WCC (Tungsten carbide carbon coating) all the mentioned are coated for about 2 microns to 4 microns over the substrate titanium alloy. TiN is administered in PVD Coating process, AlCroNa pro are administered in arc spray method and DLC, WLC is administered in sputtering process.

## Image De-noising Using Machine Learning

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**Shyamala P Bhat**, Assistant Professor, Raja Reddy Institute of Technology, Bangalore

### ***Abstract:--***

It turns into a great subject to be explored for the better translation of the medical images. Now different de-noising techniques are using but still it is an area of research. Here medical image is de-noised using machine learning technique, is random forest classifier. While diagnosing, some noise cannot be ignored. Therefore it is vital to eliminate the noises from the medical images. To get a fully de-noised image still researches are going on.

### ***Keywords:***

image de-noising, image restoration, impulse noise, salt and pepper noise, Speckle noise

## Image segmentation of White Blood Cells using K-means and Gram-schmidth orthogonalisation algorithm

**Chitharanjan das V**, Assistant professor, R R Institute of Technology

**Dr. Puttamade Gowda J**, Associate professor, R R Institute of Technology

### ***Abstract:--***

A Blood cell is a liquid organ of the body produced through haematopoecisis in mammals, provides necessary ingredients like nutrients and oxygen to the cells. RBC, WBC and platelets are the general categories. RBC Carries oxygen to all parts of the body, WBC forms immune system of the body and fight against virus and bacteria in the body. WBC count plays a major role in disease diagnosis. Based on the data from blood test doctors treat the patients accordingly. There are many method like manual, clinical are available to diagnose the WBC which are in accurate and facing lot of issues in testing of blood Evaluation of WBC. In Image processing has given a strong foundation in medical diagnosis. The proposed method of WBC segmentation includes Gram -Schmidt with K means algorithm. By this method we can easily separate RBC, WBC and platelets from the microscopic image. So it is easy to analyze blood Components.

## A wireless sensor networks for early Forest Fire detection and Monitoring

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### **Abstract:--**

The fire occurs in wild area due to carelessness and change in an environment the main focus of this project is to minimize the forest fire which may be caused by anything. There is existing system like satellite, cameras and other wired/wireless technologies but those systems have some limitations like satellites provides image of the earth after a long period of time so these systems are not accurate because it doesn't provide the real time data. This IoT based detection is real time, it detects fire at the very early stage and forest fire can be prevented. It has been found in a survey that 80% losses caused due to fire would have been kept away from if the fire was identified promptly. Node Mcu based IoT empowered fire indicator and observing framework is the answer for this issue. In this task, we have assembled fire finder utilizing Node Mcu which is interfaced with a temperature sensor, a smoke sensor and signal. The temperature sensor detects the warmth and smoke sensor detects any smoke produced because of consuming or fire. Buzzer associated with Arduino gives us an alert sign. At whatever point fire activated, it consumes protests adjacent and produces smoke. A fire caution can likewise be activated because of little smoke from candlelight or oil lights utilized as a part of a family. Likewise, at whatever point warm force is high then additionally the alert goes on. Bell or alert is killed at whatever point the temperature goes to ordinary room temperature and smoke level decreases. We have additionally interfaced LCD show to the Node Mcu board. With the assistance of IoT innovation. Node MCU fire checking serves for mechanical need and also for family unit reason. At whatever point it recognizes fire or smoke then it immediately alarms the client about the fire through the ethernet module.

## Friction Stir Additive manufacturing in Align with Industry 4.0 - A Review

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### **Abstract:--**

Additive Manufacturing, also referred to as 3D Printing, is a technology that produces three-dimensional parts layer by layer from a material, be it polymer or metal based. The method relies on a digital data file being transmitted to a machine that then builds the component. Typical applications of metal AM are production of models and prototypes during a product's development phase, parts for pilot series production in medical, automotive and aerospace industry, short series production where tooling costs for casting or injection molding would be too high and Parts of high geometrical complexity which cannot be produced by means of conventional manufacturing (molding, grinding, milling, casting, etc.). Magnesium, aluminum, aluminum silicon carbide, copper, copper matrix materials and steels have been successfully made with FSAM. Additive friction stir deposition is solid-state additive manufacturing technique that can be used to process metals and metal matrix composites. It consists of a hollow shoulder through which the feed material (solid rod or powder) is delivered. The shoulder rapidly rotates and generates heat through dynamic contact friction at the shoulder-material interface and at the material substrate interface. The heat generation, dissipation, and transfer mechanisms in the deposited material are similar to the stirred material in friction stir welding. In both cases, heat is generated by dynamic contact friction between material and tool, dissipated by severe plastic deformation of the material, and transferred inside the material by thermal conduction and thermal convection via material flow. Heated and softened, the filler material is fed through the tool and bonds with the substrate through plastic deformation at the interface. The transverse motion of the shoulder results in deposition of a single track of material. 3D parts are made selectively adding subsequent layers upon layers. In this study various parameters defining the quality and strength are explored. The present work aims to highlight the working principle and the past research work carried out by the various authors that utilize FSAM as a fabrication process. Based on the available experimental data, the summary of additive based friction stir processes, type of machine for fabrication, materials, process parameters taken for the study is also discussed in detail. Mechanical properties such as grain refinement, microhardness variation, and tensile strength are also summarized, in comparison with their base materials. In addition, the current scenario and future scope of the FSAM process are also discussed in detail in terms of its utilization in various sectors of engineering along with estimated future trends.

### **Keywords**

Friction stir additive manufacturing; Metal additive manufacturing; Friction stir processing; Microstructure, Grain refinement; Tensile strength

## Review on X2 & S1 handover in LTE Networks

**Divya T M**, Assistant professor, Department of ECE, Raja Reddy Institute of Technology, Bangalore

### ***Abstract:--***

Handover is the greatest advantage of wireless device over wired. Handover allows transfer of an ongoing call, data or services conveniently, when UE switches from one base station to another base station. Handover allows transfer of data or calls without losing any data and being interrupted. UE has an antenna which can search for multiple frequency channels. When UE is travelling from serving cell to another cell, it receives weak signals from current serving cell whereas receives stronger strength from neighboring cell to which it is moving. A decision has to be made for handover from eNodeB. A handover report configuration will be initiated from eNodeB. Then UE initiates Measurement report to eNodeB. Later Handover decision will be made and then handover preparation followed by handover completion phase. This paper describes the purpose of Handover, types of Handover and different phases of X2 handover.

### ***Keyword***

eNodeB, Handover, LTE

# Hybrid Optimization Control Algorithm for Grid Connected PV system

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**P.Sujatha Therese**, Professor, EEE, Noorul Islam University

***Abstract:--***

In the field of power sector Renewable Energy Sources (RES) plays an important role. They are abundant in nature and clean sources of energy. At the present condition it is very important to reduce the carbon emission and pollution to the environment. Hence the integration of RES with the utility grid is increased. The main problems of the RES are; they are dynamic in nature and their efficiency is also very less. Researches are going on to increase the efficiency of the system and also manage the dynamics in the system. There are so many optimization techniques in the literature to reduce the dynamics in the system. In this work the performance of Dragonfly Algorithm (DA), Grey wolf Algorithm (GWO), Firefly Algorithm (FF) and Sea lion combined with Firefly (SL-FF) Algorithm were analysed by applying those to a grid connected PV system. The model is simulated using MAT Lab Simulink software.

***Keywords:***

Firefly, Grey wolf, levy update, Optimization, seven level inverter

## Leak Localization on Gas Pipeline using Acoustic Sensors and the MUSIC algorithm

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**Nebras Sobahi**, SUPCOM-COSIM Lab., Ariana, 2083 Tunisia.

### *Abstract:--*

In this paper, we propose the use of the Multiple Signal Classification algorithm (MUSIC) to locate a leak on a gas pipeline using acoustic sensors. We compare the Root Mean Square Error (RMSE) of the leak position estimate to the intercorrelation method using two acoustic sensors and a pipeline of length 100m. At average Signal to Noise Ratio equal to 0 dB, the RMSE of the leak position estimate is equal 1.6m for the MUSIC algorithm while the RMSE is 7.4 m for the intercorrelation method. The MUSIC algorithm and intercorrelation method are unbiased as the RMSE converges to zero at high SNR.

### *Index Terms*

Leak localization, Gas pipeline, Acoustic Sen- sors, MUSIC algorithm, Intercorrelation method.

## A Short Review on Measuring Impact of Microencapsulated Phase Change Material in Mitigating Urban Heat Island

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### ***Abstract:--***

The mitigating urban heat island (**UHI**) has been extensively studied by many researchers because of its favorable Micro Encapsulated Phase Change Material (MEPCM) property. This helps to reduce the indoor temperature and this article reviews the major effects of reducing the indoor temperature by using MEPCM. The study wants to illustrate that the Phase Change Material (PCM) application is helpful for surface temperature supervision and enhancing indoor thermal performance by passive cooling. Suitable PCMs will maintain the comfort room temperature in the summer by dropping the inner temperature and increasing the temperature in winter. Basic methods of PCM incorporation are macro encapsulation and micro encapsulate by PCM implantation in the buildings. Encapsulation of PCM is essential to increase fusion of heat in the material. The several manufacturing companies on the commercial - scale produced a variety of PCMs, fatty acids, Paraffin, and Fatty acid esters as (MEPCM). PCM application in the Inter Building Environment (IBM), which is a PCM embedded building envelope, reduces the negative impact on energy usage and reasonable progress of yearly Heating Ventilation and Air Conditioning (HVAC) energy consumption. A basic understanding of UHI under various PCM is used to analyze the thermal effect in a better.

### ***Index Terms***

Urban Heat Island (UHI), Phase Change Material (PCM), paraffin wax, cool roof, thermal comfort.

## Congruence between Cause Marketing Campaigns and Purchase Intention towards Consumers – An Analysis

**M.Ancy Raja Nathiya**, Research Scholar

**K.Asha**, Assistant Professor

### ***Abstract:--***

Cause marketing is a type of marketing activity which involves both the ‘for profit’ business and a non-profit organization together for a mutual benefit. Cause marketing is considered to be a tactical philanthropic instrument which commercialize the charity into a new orbit. Nowadays, many firms are actively participating in the Cause related marketing programs to fulfil their corporate social responsibility. Cause marketing also helps to combine the social responsibility and the marketing strategy of a firm to attain the social and economic goals. This article gives brief note about the term Cause marketing and its benefits. The main aim of the study is to explore the opinion of the consumers regarding the Cause marketing campaigns and to interrogate whether it influence the purchase decisions of consumers. As a result, it is found out that consumers were having positive response towards Cause marketing campaigns and are tend to be more prone to support the brand which engage themselves towards societal activities.

### ***Index Terms***

Cause marketing, Cause marketing campaigns, Consumers, Purchase intention.

## Fundamental Frequency estimation and analysis of speech signal

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### ***Abstract:--***

Fundamental frequency is a critical component in speech signal processing analysis. The fundamental frequency ( $f_0$ ) is the rate at which the vocal cords vibrate, and the fundamental frequency range for a person is 120 to 400 Hz. This basic frequency varies depending on the size and form of the vocal cords, and it might differ for males, females, and children. Different domain of time and frequency pitch estimation techniques are utilised. The time domain methods include autocorrelation and AMDF (Average Magnitude Difference Function), whereas the frequency domain algorithm is Cepstrum. The fundamental frequency may be determined by pitch preprocessing and extraction.

### ***Index Terms***

Autocorrelation function, Speech Recognition System, Center-clipping Pitch, Pitch Detection Algorithm, Pitch Detection Algorithm, Pitch Detection Algorithm, Pitch Detection Algorithm, Pitch

## EEG data processing for Emotion detection using DTCWT and FFNN Architecture Design

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**Sunitha H D**, Professor, Dept. of ECE, R. R. Institute of Technology, Bengaluru, VTU, Karnataka, India

**Sneha Joesphine**, Student, Dept. of EEE, R. R. Institute of Technology, Bengaluru, VTU, Karnataka, India

### ***Abstract:--***

Emotion detection and classification algorithms developed are based on wavelet features and neural network approaches which are limited to software implementation only. Very little literature is reported on hardware implementation of EEG detection and classification approaches. One of the major challenges in hardware implementation is the computation complexity of DWT processor and FFNN architecture. In this paper, architectures for data path operation of both DWT and FFNN structures are designed and are implemented on FPGA platform. A low power and high speed architectures for DTCWT and neural network are designed based on customized systolic array logic and reusable data path circuitry respectively. The nine-stage DTCWT architecture designed is designed to work at maximum frequency of 322 MHz consuming less than 0.71 W of power. The FFNN structure is designed to operate at maximum frequency of 321 MHz consuming less than 2.2 W of power. Both of the architectures are suitable for real time EEG data processing.

### ***Index Terms***

FFNN architecture, DTCWT, FPGA platform, Emotion detection

# An Analysis of Deep Learning Models for Dry Land Farming Applications

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**Dr.T.Y.J.NagaMalleswari**, Assistant Professor, Department of CSE, SRMIST, Chennai

## ***Abstract:--***

Smart farming is a farming system that integrates information technology (IT) to ensure that plants, animals and soil receive what they have for optimum health and production. The goal of Smart Farming is to provide the profitability, viability and security of the ecosystem. Agriculture is indeed a challenge in drought-prone areas with limited water supplies. Using remote sensing data such as UAV images is exceptionally sufficient to detect the in-field variability of soil and plant properties in dry soil. UAV images produce faster and more accurate NDVI with higher resolution. New technologies such as IoT, Artificial Intelligence, Global Positioning Systems (GPS) and Big Data Analysis are promising tools to optimise farmed operations and inputs to enhance productivity and reduce losses and returns of information. Finally, the fundamental Dry Land Agricultural issues under study, their applications, specific models and sources were examined. Besides, the study compares standard deep learning algorithms with the results of classification or regression accuracy.

## ***Keywords:***

Smart Farming, Dry Land, UAV Images, Deep Learning, Soil Management, Crop Prediction

# Disk-Based Real-Time Applications for Power Consumption

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**Divya T M**, Department of ECE, RRIT, Bengaluru

***Abstract:--***

While several power optimization techniques have been proposed at all levels of design process abstractions for electronic equipment, until now, power consumption in mixed mechanical-electronic subsystems, such as disks, has not been addressed. We intend a conceptually simple, but realistic power consumption model for disk drives. The core of the paper are heuristics for optimization of power consumption in several common hard real-time disk-based design systems. We show how to coordinate tasks scheduling and their disk data assignment, in order to minimize power consumption in both electronic and mechanical components of used disks. Extensive experimental results indicate significant power reduction

## Women Empowerment in India: Issues & Challenges

**Namratha Murthy**, 2<sup>nd</sup> Sem Law student, Kristu Jayanti College of Law, Bengaluru

**Dr.Sunitha H D**, Professor, Dept of ECE, R R Institute of Technology, Bangalore

### ***Abstract:--***

Empowering a women has been one of the main concern in 21st century. Women are becoming victims of various social evils. Women empowerment can be used as a vital instrument in supporting a women to access resources and to make strategic life choices. The main objective of this paper is to assess the need for women empowerment in India, analyze the factors that influence empowerment of women in India, discuss various government schemes for women empowerment- implementation and hindrances. The data used here are from secondary sources.

### ***Index Terms***

Empowerment, crimes against women, government schemes, IPC, SLL

## Design and Implementations of Humming Bird Cryptographic Algorithm using FPGA

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**N Nandeesh Reddy**, Department of Electronics and Communication Engineering R R Institute of Technology, Bengaluru, Karnataka

**Divya KH**, Department of Electronics and Communication Engineering R R Institute of Technology, Bengaluru, Karnataka

**Alangir Badsha**, Department of Electronics and Communication Engineering R R Institute of Technology, Bengaluru, Karnataka

**Kishore S**, Department of Electronics and Communication Engineering R R Institute of Technology, Bengaluru, Karnataka

### ***Abstract:--***

Hummingbird is a new ultra-lightweight cryptographic algorithm targeted for resource-constrained devices like RFID tags, smart cards, and wireless sensor nodes. In this project, we describe efficient hardware implementations of a stand-alone Hummingbird component in field-programmable gate array (FPGA) devices. We implement an encryption only core and an encryption/decryption core on the low-cost Xilinx FPGA series Spartan-6 and compare our results with other reported lightweight block cipher implementations on the same series. Our experimental results highlight that in the context of low-cost FPGA implementation Hummingbird has favorable efficiency and low area requirements. Hummingbird algorithm is one of the recently proposed light weight cryptographic algorithms targeted for resource constrained devices like RFID (radio frequency identification), smart cards and majority of wireless sensor nodes. The main advantage of this algorithm is that it provides adequate security with smaller block size

## Wireless Sensors Network for Radiation Monitoring Using IoT

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**Dr. Sunitha H D**, Marathwada Mitra Mandal's Institute of Technology

**Samadrita Roy Chowdhury**, Marathwada Mitra Mandal's Institute of Technology

**Priyanka Nagendra Shindogi**, Marathwada Mitra Mandal's Institute of Technology

**Varsha Biradar**, Marathwada Mitra Mandal's Institute of Technology

### ***Abstract:--***

The changes in climate led to the increased importance of environmental monitoring. In order to determine the quality of the environment, continuous tracking of the environmental parameter is needed. As the IoT is the most emerging technology, it plays an important role in collecting the information from the sensing unit. Generally sensing unit is composed of different sensors like temperature, humidity, moisture etc. The project uses a Node MCU Wi-Fi module that helps in processing and transferring the sensed data to the Thingspeak cloud. Thus the parameters received are stored in the cloud platform (Thingspeak). The changes in the environment are updated in the form of database through the cloud computing method. This paper presents the development of a flexible environmental monitoring system that allows the monitoring of parameters in the workplace, required for optimal performance. Several sensors and three modules, with different functionalities, are used to complete the system.

## Smart Indoor Vertical Farming Using IOT

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**Sushma V**, Electronics and Communication Engineering, R.R Institute of Technology, Bangalore

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**Ullas K S**, Electronics and Communication Engineering, R.R Institute of Technology, Bangalore

### ***Abstract:--***

Vertical farming is the practice of producing food in vertically stacked layers or in vertically inclined surfaces in which plants are grown in a controlled environment. The proposed system uses the concept of IOT (Internet of Things) and is much more efficient. The indoor vertical farming environmental parameters are continuously sensed using various sensors and the collected data is displayed on a customized website. Thus, the indoor vertical farming can be monitored from anywhere and at any time. Basic functions like detecting the soil moisture, temperature, humidity are performed. Artificial photosynthesis for the plants using grow-lamps and also drip irrigation is implemented to maintain the urban gardens. GSM provides systematic alerts regarding the status of garden to the user at regular intervals of time. An android app interface is used to remotely control the garden functioning encouraging the smart way of agriculture.

## Intelligent Covid-19 Pandemic Bus Service with Safety Measures

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### ***Abstract:--***

This paper depicts the intelligent covid-19 pandemic bus service with safety measures. Many will travel from one place to other for their work by the means of public transportation. In this case, the government needs to take more precautions by finding out the infected people along with that they need to avoid the spreading of the virus. This paper will make a good impact on finding out the people who are having the primary symptoms and follows the WHO rules. In this paper, the main focus is to find the people who are close to the infection by checking their temperature automatically, along with this the counter will be there to keep a count of people who is boarding and de-boarding the bus. so that the passengers get to know that whether there are empty seats on the bus or not. In addition to this, the sanitization process will be carried out for each passenger automatically before entering the bus.

### ***Keywords:***

Temperature, Sanitization, Counter

## Investigation of Fluoride Uptake by Chlorine Doped Polyaniline in Continuous Column Mode Operation

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**Potsangbam Albino Kumar**, Department of Civil Engineering, National Institute of Technology Manipur

### **Abstract:--**

This study focuses on optimisation of pH for fluoride uptake by adsorbent polymer polyaniline doped with chloride and synthesised on surface of jute fiber (PANI-Cl-Jute) in continuous column mode operation. At reactor bed depth of 1.5 m, flowrate of 1.2 mL/min and initial fluoride concentration of 5 mg/L, the breakthrough time at pH 1, 2, 4 and 6 were 11, 7, 5 and 1 hour respectively suggesting favourable adsorption at acidic pH. On characterized with Scanning Electron Microscope (SEM) and Energy Dispersive X-ray Measurements (EDAX), F- uptake by PANI-Cl-jute was confirmed. Total amount of ions adsorbed at different bed depth of 1.5, 2 and 3 m yields and F- uptake of 11.87, 15.85 and 26.53 mg respectively thus amounting an average uptake of 0.07 mg F-/g PANI-Cl-jute against a higher uptake of 12.99 mg/g in batch mode studies. The formation of mass transfer zone in continuous mode unlike adsorption equilibrium in batch mode is the main reason for lower uptake in continuous column mode operation. However a throughput volume of 620 mL was able to achieve under the study condition with F- below the permissible limit suggesting the effective adsorption of F- by PANI-Cl-jute.

### **Index Terms—**

Polyaniline, fluoride, adsorption, BDST, throughput volume.

# Optimisation of Energy Demand Based on Thermal Comfort Criteria for an Office Building in the Tropical Warm Humid Climate

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***Abstract:--***

Energy for comfort application is the single most contributor to the total energy used in building operation. Building sector contributes to a large part of global energy. The energy use in buildings makes the build infrastructure a significant contributor to the global carbon footprint. Building design could be optimized in the design stage by considering the factors that contribute to this energy load. Building envelopes should be designed taking into consideration the climatic parameter of the geographical location and elements in the building envelope could be optimized in ways that reduce the energy demand used for comfort applications in building occupancies. The current work uses a full factorial design to derive the significant factors for rooms in different orientations that contribute to energy load in buildings. The significance of factors and their interactions have been iterated through an energy simulation software. Window to wall ratio is the most significant contributing factor for rooms in all directions along with the thermal transmittance of the roof.

## Performance Analysis of Distributed System by the Placement of DG Considering Load Growth

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**Vyshnav B**, Assistant Professor, Dept of EEE, RRIT

**Akshatha R Hegde**, Assistant Professor, Dept of EEE, RRIT

### ***Abstract:--***

Load growth in a system is a natural phenomenon and analysis of load growth is very important to evaluate the future performance of the system. With the increase in load demand, system power loss and voltage drop increases. Placement of Distributed generators (DGs) are one of the best solutions to cope up with the load growth if they are allocated appropriately in the distribution system. In the work planned, the optimal size and location of multiple DGs will be able to satisfy the incremental load on the system and minimization of energy loss without violating system constraints. Genetic algorithm is used to determine the optimum size and location of DG. It is planned that with the penetration of DG in distribution system, there will be a great improvement in several distribution system parameters. Moreover, the loading capacity of distribution system will be enhanced through DG and capacitor placement considering load growth by undergoing detailed analysis. Two test system 33bus and 69bus Swill be considered to evaluate the result.

## Smart Solar Power Management System for Domestic Purpose

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**Sikindra Kumar Thakur**, Dept.of Electrical and Electronics Engineering , R.R.Institute of Technology, Bengaluru, Visvesvaraya Technological University Karnataka, India

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**Arun Prasad Yadav**, Dept.of Electrical and Electronics Engineering , R.R.Institute of Technology, Bengaluru, Visvesvaraya Technological University Karnataka, India

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### **Abstract:--**

The integration of small sized standalone solar systems to the grid is technically complicated resulting into expensive operation which is not affordable to all. As such, this paper will presents a smart controller based design using digital signal processing for cost effective operation of solar-grid tied system. The hybrid system is able to size the connected system and deploy the operation strategy so as to get the effective utilization of solar output. The synchronization is not necessary as this method can be effectively altered by the use of load discretization. This gives cheap, efficient, reliable and cost effective operation. The system has been tested for the 50Watt solar panel with the battery backup storage and its effectiveness will be observed. The battery backup is made to operate during the cut off of Grid or Grid and Solar supply. The performance of the system over the wide range of operation and transient states are assured by practical observation and modification. This system is defined to fill the necessity of regions where solar power is used only as back up purposes to charge the battery and is actively dumped during the presence of active grid. These regions include many parts of the world where grid cut off is common due to the shortage of energy.

### **Keywords:**

Solar Systems, load discretization, Solar panel, SPWM inverter, Dump Power utilization

# Intelligent Accident Detection and Ambulance Rescue System

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**Shiva Kumar N**, Student of RRIT, Department of ECE

**Umesh Gouda V Patil**, Student of RRIT, Department of ECE

**Divya.T.M**, Assistant professor, RRIT, Bangalore

## ***Abstract:--***

Road accidents and traffic congestion are the major problems in urban areas. Currently there is no technology for accident detection. Also due to the delay in reaching of the ambulance to the accident location and the traffic congestion in between accident location and hospital increases the chances of the death of victim. There is a need of introducing a system to reduce the loss of life due to accidents and the time taken by the ambulance to reach the hospital. To overcome the drawback of existing system we will implement the new system in which there is an automatic detection of accident through sensors provided in the vehicle. A main server unit houses the database of all hospitals in the city. A GPS module in the concerned vehicle will send the location of the accident to the main server which will rush an ambulance from a nearest hospital to the accident spot. Along with this there would be control of traffic light signals in the path of the ambulance.

This will minimize the time of ambulance to reach the hospital. A patient monitoring system in the ambulance will send the vital parameters of the patient to the concerned hospital. This system is fully automated, thus it finds the accident spot, controls the traffic lights, helping to reach the hospital in time.

## IoT Based Flood Management and Alerting System

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**Sandeep Pandey**, Department of EEE, RRIT, Bengaluru

**Deepti Thapa**, Department of EEE, RRIT, Bengaluru

### ***Abstract:--***

Nowadays, certain actions are taken to improve the level of cleanliness in the country. People are getting more active in doing all the things to clean their surroundings. Various movements are also started by the government to increase cleanliness. We will try to build a system which will notify the corporations to empty the bin on time. In this system we will put a sensor on top of the garbage bin which will detect the total level of garbage inside it according to the total size of bin. When the garbage will reach the maximum level, a notification will be sent to the corporation's office, and then employees can take further actions to empty the bin. This system will help in cleaning the city in a better way. By using this system people do not have to check all the systems manually, but they will get a notification when the bin is filled.

## Identification of adsorption mechanism for Iron uptake by activated carbon derived from *Alocasia indica*

**Reenarani Wairokpam**, Department of Civil Engineering, National Institute of Technology Manipur

**Potsangbam Albino Kumar**, School of Engineering and Technology, IGNOU, Delhi

**Anuj Kumar Purwar**, School of Engineering and Technology, IGNOU, Delhi

### ***Abstract:--***

The present study assess the potential of activated carbon derived from *Alocasia indica*, Taro, (ACT) for the removal of Fe(II) from the groundwater of Yaingangpokpi, Imphal East District, Manipur, India. The ground water was observed to be having Fe (II) concentration of 4.34 mg/L which is very much above the permissible limit of 1 mg/L. The adsorbent was activated using phosphoric acid and characterized by scanning electron microscopy (SEM) and energy dispersive X-ray measurements (EDAX). Adsorption kinetics study reveals that the kinetic data were better obeyed the Elovich kinetic model with correlation coefficient (R<sup>2</sup>) of 0.992 as compared to that of diffusion model with 0.93. Though, activated carbon are predominately physical adsorption due to the presence of large surface area, the study reveals a major chemical based adsorption due to the presence of functional groups in *Alocasia indica* (Taro). Adsorption isotherm studies reveals the adsorption was able to explained by both the non-linear Langmuir and Freundlich isotherm with insignificant error Chi square value of 0.05 and 0.003 respectively. The maximum adsorption capacity obtained was 4.03 mg Fe (II)/g ACT. These results proved that the adsorbent ACT is effective for the removal of Fe (II) from ground water.

### ***Index Terms***

*Alocasia indica*, Elovich model, Fe(II), intraparticle diffusion.

## Need For Autonomus System to Revolutionise the Indian Banking Industry – A Study of Blockchain Technology

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**Vivek Saurav**, Assistant Professor of Law, Anil Surendra Modi School of Commerce, NMIMS University, Mumbai

### ***Abstract:--***

Organisational effectiveness and internal governance framework is imperative for the real success of our financial sector. The paper discusses the need for digital transformation through technology driven mechanism for effective governance. Further, the paper highlights the need for robust and transparent technology with less human intervention to mitigate the risk in the internal regulation of the banks. Blockchain Technology has gained a lot of importance globally due to its dependable feature and high level of protection to data. Today, it is conceptually acknowledged that blockchain technology will secure the financial services and improve governance in banking sector. The paper studies the legal application of blockchain technology, regulatory responses and recommend the prospect for implementation of the technology for future governance in the banking sector.

### ***Index Terms***

Governance, Reforms, Financial Sector, Blockchain.

## Speed Control of Dc Motor by Using Soft Starter

**Mohammad Safiullah Musalman**, Electrical and Electronics engineering, R R Institute of Technology / VTU

**Ashish Yadav**, Electrical and Electronics engineering, R R Institute of Technology / VTU

**Shovanand Chaudhary**, Electrical and Electronics engineering, R R Institute of Technology / VTU

**Gowtham G**, Assistant professor, R R Institute of Technology / VTU

### ***Abstract:--***

Different methods of speed control, pulse width modulation, firing angle method, speed control using chopper and speed control using PID method control are discussed in this paper. For soft start. In PWM technique the relationship between duty cycle, output voltage shows that when the pulse width is wider, more average voltage is applied to the motor. Due to this there is stronger magnetic force in the armature windings. The motor rotates at maximum speed. The application of microcontroller provides flexible and smooth control of the duty cycle of the PWM pulse. Also in firing angle scheme there was linear relationship between the speed and the firing angle of the converter thus PWM and firing angle scheme are efficient methods for speed control of DC motor.

In our project using microcontroller (Arduino Nano) and power electronic components to reduce the initial voltage such that starting high current is reduced and also we can control the speed of dc motor using PWM technique.

## An Efficient VLSI Implementation of CDF 5/3 Architecture on FPGA for Image Processing Applications

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**Dr N.V. Uma reddy**, HOD of ECE, AMC Engineering College, Bangalore

### ***Abstract:--***

The wavelet transform has emerged as a innovative technology, in the field of image compression. There are different kinds of wavelets exists. In that wavelet transforms most of the wavelets are lossy in nature. Only CDF-5/3 wavelet is lossless in nature. The proposed architecture uses lifting based scheme of wavelet and it is lossless in nature. Number of multipliers are reduced by using add and shift operation due to this the proposed architecture complexity reduced. To keep up with low region and high recurrence we use multiplier-less engineering for CDF-5/3 DWT for our execution. The VHDL code for multiplier-less construction is taken care of to framework generator instrument utilizing standard strategy and union the design to get the region and recurrence. The spartan6LX45 board tool will used to work on this project, it has the operating speed of 70MHZ on board, and it also has soft processor Micro Blaze. The tools like Xilinx ISE 14.5 and MATLAB 2012a are used with system generator

### ***Index Terms***

Discrete Wavelet Transform (DWT), Lifting Schemes, CDF- Cohen–Daubechies–Feauveau wavelets, 1D-DWT, 2D-DWT.

## Eye Disease Detection using Machine Learning

**Sanohi K.C Jatav**, Department of Electronics and Communication Engineering, Usha Mittal Institute of Technology, SNDT University Mumbai, India

**Dr. Shikha Nema**, Head of Department of Electronics and Communication Engineering, Usha Mittal Institute of Technology, SNDT University, Mumbai, India

**Dr. Zia Saquib**, Jio Platforms Ltd, Mumbai, India

### ***Abstract:--***

Diabetic Retinopathy (DR) is an ocular condition that causes damage to the retinal blood vessels. Diabetic retinopathy is the most visible symptom of diabetic microangiopathy and one of the most prevalent problems in diabetics. At the moment, the diagnosis of diabetic retinal problems is primarily based on images. For decades, predicting the existence of microaneurysms in fundus pictures and detecting diabetic retinopathy in its early stages has been a serious difficulty. If not detected early, DR causes visual impairment and, in severe cases, blindness. To identify this deadly illness, highly educated professionals often analyze colored fundus pictures. Clinicians' manual diagnosis of this disease is time-consuming and error-prone. As a result, numerous computer vision-based approaches for automatically detecting DR and its various phases from retina pictures have been presented. These approaches, however, are unable to encapsulate the underlying complex characteristics and can only categorize DR's many stages with extremely poor accuracy, particularly in the early stages. In recent years, deep neural has led to several advancements in a variety of domains. The purpose of this paper is to utilize convolutional neural networks to classify data.

### ***Index Terms***

Diabetic Retinopathy, VGG 19, Convolutional Neural Networks (CNN), Diabetes, Machine learning

## Predicting the Quantity of Future Heart Attack Patients Using Random Forest Algorithm

**B. Sarath Chandra**, Assistant Professor PSCMR CET

**A. Chandramouli**, Associate Professor PSCMR CET

### ***Abstract:--***

These days, heart disease is the original source of death, and that's all. It's a complex and difficult job to predict a doctor's heart attack and it requires a little more experience and know-how. On the other hand, the heart rate monitor is the most convincing at this scale, because it is one aspect of management, myocardial infarction, other health and fitness indicators like blood pressure, serum cholesterol and blood sugar. In this period, characterized by a rapid revolution, the Internet of Things, sensors for monitoring heart rate is becoming increasingly close to the patient. This work offers a range around heart rate and other data, monitoring technologies and use a machine learning method, a random forest classification algorithm, use to calculate the heart of tutmasindan in the sense that it consists of heart rate and the health status of each rib.

### ***Index Terms***

Internet of Things, heart attract, machine learning, Random Forest

## Forensic Accounting: A paradigm shift of auditing

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**Prof Ram Rattan Saini**, Dept. of Commerce, Maharshi Dayanand University, Rohatk, Haryana, India

### ***Abstract:--***

Organizations need to have forensic accounting as important as profit. Fraud became an accepted part of big business houses' culture. Auditors should be able to detect it and prevent it from becoming a problem but the auditors have their own limitations. In today's world auditors are not enough to deal with fraudulent activities. The forensic accountant is tasked with this difficult job. The data was collected from both internal and external auditors. SPSS 20 software is used to analyze data and the chi square test is applied. The study revealed that fraud is more common in companies with higher turnover. Frauds are more common in the public and govt. sectors. Private companies are more likely to commit financial statement frauds than corruption or asset misappropriation. The study suggested that the forensic accounting should be accepted and applied in organizations to prevent and detect frauds at its early stage.

### ***Keywords***

Culture, fraudulent activities, turnover, financial statement frauds.

## Arduino Based Patient Health Monitoring System using Internet of Things

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**Charutha M V**, Assistant Professor, Raja Reddy Institute of Technology, Bangalore

**Shyamala P Bhat**, Assistant Professor, Raja Reddy Institute of Technology, Bangalore

### ***Abstract:--***

The main focus of this project is to implement a prototype model for the real time patient monitoring system. The proposed project is used to measure the physical parameters like body temperature, heart beat rate and ECG of the patient with wireless communication technology. In this system, the patient health will be monitored and the data which is collected is transmitted to Wifi wireless networks. Arduino Nano embedded processor supports for analysing the input from the patient and the results of all the parameters will be stored in the database. The proposed system uses ECG sensor, heart beat sensor and temperature sensor to measure the physical parameters of the patient. Arduino controller controls the complete operations of the proposed system. If the abnormality is sensed then an alert message will be sent to the concerned ward through GSM.

### ***Index Terms***

Arduino Nano, ECG Sensor, Heartbeat sensor, Temperature Sensor.

## Interleaved Boost Converter Based Bldc Motor Drive Solar PV Array Fed Water Pumping System

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**Shashi Bhushan Singh**, Assistant Professor, Electrical Engineering Department, National Institute of Technology Kurukshetra, Haryana, India

### ***Abstract:--***

Renewable energy is a safe and environment friendly source of power. Solar power systems have a long history of research, cheap manufacturing costs, and great efficiency. As energy consumption rises, energy output will no longer be able to satisfy the full load need so in future for fulfillment of energy demand solar energy will be best option. This paper deal with Photovoltaic array fed sustained water pumping framework utilizing Brushless dc motor (BLDC). Perturb and observe (P&O) MPPT controller utilized in order to extract the maximum available power from the solar photovoltaic array. The proposed system consist of an arrangement of solar panels, Interleaved boost converter, three phase inverter and Brushless dc motor. An appropriate control of Interleaved boost converter through the Perturb & Observe maximum power point tracking (P&O MPPT) algorithm offers good starting of the BLDC motor. Interleaved boost converter fed BLDC motor with PID controller has been designed to examine and optimise the performance and efficiency in terms of torque and speed. This paper is going to investigate different operating conditions for solar photovoltaic array for different solar irradiance. The suitability of proposed system at practical operating conditions is demonstrated through simulation result using MATLAB/SIMULINK 2018a.

### ***Keywords:***

Photovoltaic systems, Interleaved Boost converter, P&O MPPT, VSI, and BLDC Motor.

## Conversion of Waste Heat into Electricity Using TEG

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**Anil Kumar T**, student, Electrical and Electronics Engineering, VTU

**Gowtham G**, Assistant professor, RRIT

### **Abstract:--**

More than half of the energy generated worldwide is simply wasted or released as heat in to the environment without doing any work where now a day the deficiency of fuel is facing a problem and the world is more concentrated on renewable energy sources. Even the most efficient power plants convert only about 40% of energy they produce into electricity and the combustion engine used in most vehicles are even worse, yielding only about a third of their energy as usable power.

Recent development of material science, nanotechnology have hinted at a new class of energy harvesting devices thermoelectric generators (TEG) small enough to trap waste heat from even the smallest household appliances and to turn that heat in to electricity. Small thermoelectric generators could be placed around the exhaust system of the car and the exhaust waste heat is utilized to charge the battery of the car and these thermoelectric generators are attached to a stove so that while cooking the food the battery can be charged and can run the emergency lights.

These small thermoelectric generators cannot be connected directly to the battery as the power generated is not constant, if the power generated from the TEG is low to charge the battery; a boost converter is required in between the TEG and the battery.

The output of the boost converter is greater than the input hence the sufficient amount of power is boosted through the converter for the charging of battery. The research has been going on to improve the efficiency of TEG's. The main achievement until obtained from the TEG's is harvesting the power from the waste heat from exhaust pipe of a BMW car to charge its battery.

This technology is fixing for some of its applications because of its cost. This project will be done to apply this technology for home appliances. The heat from the candle is taken as heat source for the TEG's to run the load. We all know that the efficiency of TEG's is so small; this project also explains how we can improve the efficiency.

## Brain tumor detection in MRI images using MAT lab

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**Shiva kumar D N**, Student, department of ECE , RRIT

**Madhu kumar M**, Student, department of ECE , RRIT

**Celeste T**, Student, department of ECE , RRIT

**Divya T M**, Assistant professor Department of ECE RRIT

### ***Abstract:--***

Image segmentation is one of the most challenging techniques in the area of medical image processing. The brain tumor detection is emerging in this field. This paper refers to the detection of brain tumor from MRI images using the interface of GUI in matlab.

## Optimization of Physical Parameters for Production of Antimicrobial Compound by *Aspergillus Flavus* Mtcc 13062 Using Response Surface Methodology

**Shruti Dudeja**, Department of Bio & Nano Technology, Guru Jambheshwar University of Science & Technology, Hisar, Haryana, India.

**Anil Kumar**, Department of Bio & Nano Technology, Guru Jambheshwar University of Science & Technology, Hisar, Haryana, India.

### **Abstract:--**

Multidrug-resistance amongst the pathogenic microorganisms is a serious problem all over the world. The development of new drugs with different mode of actions by using potent microorganisms to combat multidrug resistance is the most important concern nowadays. The present study was carried out with the aim of optimizing potent fungal strain *Aspergillus flavus* **MTCC 13062** exhibiting significant antimicrobial activity against bacteria *Streptococcus gordonii*, *Bacillus subtilis*, *Staphylococcus aureus*, *Escherichia coli*, *Salmonella enterica*, *Pseudomonas aeruginosa* and *Pseudomonas fluorescens* and fungus *Candida albicans*. The Box-behnken design (BBD) model of RSM used to optimize physical parameters of strain *A. flavus* and was found to be fit with regression ( $R^2$ ) 0.8416 (*E. coli*), 0.8746 (*S. aureus*) and 0.9143 (*C. albicans*) with insignificant lack of fit. The maximum antimicrobial activity recorded with zone of inhibition 27 mm (*E. coli*) and 28 mm (*S. aureus*) and 30 mm (*C. albicans*) at the selected optimum conditions, which was 22 mm (*E. coli*), 16 mm (*S. aureus*) and 20 mm (*C. albicans*) before optimization. The antimicrobial activity found to be increased by 22% (*E. coli*), 75% (*S. aureus*) and 50% (*C. albicans*) at pH 7.5, 28 °C temperature, and incubation period of 7 days.

### **Keywords:**

Antimicrobial, RSM, BBD, Fungi, Multidrug-resistance

# Model Reduction and Optimization of Interval System Using H-infinity Norm and Genetic Algorithm

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**A.N. Jha**, Instrumentation and Control Division, NSUT, New Delhi, India

## ***Abstract:--***

The paper is organised as follows: Section 1, introducing the system based on previous studies and introduces the problem statement. Section 2 gives impression about interval mathematics as well as modeling of the linear interval system. Section 3 describes the proposed method to reduce the system and to optimize the parameters of the system using genetic algorithm. In section 4, a numerical example is incorporated for the illustration of the suggested technique along with the MATLAB simulation and results. Last section, section 5 gives the comparison of various parameters and concludes the paper.

## ***Index Terms***

Interval System, Model Reduction, Genetic Algorithm, H-inf Norm.

## Trash Can Monitoring System in the Smart Cities

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**Charutha .M.V**, Assistant Professor, ECE dept R.R.Institute of Technology Bangalore, India

***Abstract:--***

In today's world, the trash cans placed in the cities are jam-packed due to the increase in the waste. A lot of stinking and sewage problems causes bad hygienic conditions and leads to deadly diseases & human illness. To avoid these, we have designed a "Smart Trash Can Monitoring System" where it can overcome this in an innovative and efficient way. This idea can be implemented for Smart Buildings, Cities, Colleges, Hospitals, Public spots and Bus stands. Each trash can contain a smart device for level detection of the trash can which transmits the garbage/trash level with its token ID, accessed by the concerned municipal/regional authorities through the mobile app, so that they can take immediate actions to clean the trash can once it gets filled.

## Cost-Efficient Solar Based Multipurpose Crop Cutting Machine

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**Amith M Y**, B.E. Student, Marathwada Mitra Mandal's College Of Engineering, Pune

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**Vishwas Gowda H R**, B.E. Student, Marathwada Mitra Mandal's College Of Engineering, Pune

### ***Abstract:--***

This project is aimed to develop crop cutter machine that works towards reducing manpower as well as saving electricity through the utilization of solar energy. In this project the conversion of solar energy to mechanical energy will be attempted. Extend the concept of solar technology on solar crop cutting as energy alternate device. In addition, a prototype of the proposed system is to be implemented. Finally, functionality of the prototype in terms of crop cutting effectiveness is to be tested.

## Kannada Handwritten Character Recognition (KHCR): A Literature Review

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**Dr.Kiran Y C**, Dept. of Information Science and Engineering, GAT

### ***Abstract:--***

Hand Written Character Recognition (HCR) is major surprising and troublesome examination space nearby Image preparing. Recognition of Handwritten Kannada letter sets have been extensively concentrated in the earlier years. As of now different recognition systems are in notable used for recognition of transcribed Kannada letters in order (character). Application space of HCR is computerized record handling like mining data from information section, check, applications for advances, Visas, charge, medical coverage structures and so forth During this overview we present a blueprint of ebb and flow research work led for recognition of transcribed Kannada letters in order. In Handwritten original copy there is no limitation on the composing procedure. Hand written letter sets are muddled to perceive on account of random human penmanship procedure, contrast fit as a fiddle of letters, point. An assortment of recognition procedures for hand written Kannada letters in order are met here close by with their exhibition.

### ***Keywords***

Hand written Character Recognition (HCR), feature extraction, Optical Character Recognition (OCR), classifiers, Pre-Processing

## Assessment of Surface properties of Benincasa hispida and Cucurbita peels for Chromium uptake

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**Thiyam Tamphasana Devi**, National Institute of Technology, Manipur

**Potsangbam Albino Kumar**, National Institute of Technology, Manipur

### **Abstract:--**

This study investigates the chromium adsorption feasibility by agricultural waste based activated ash gourd (AGP) and activated pumpkin peels (APP) by employing Kinetic models (Intra – particle diffusion, Elovich, First order and Second order models) and non – linear isotherms (Langmuir and Freundlich) models. The surface morphology and pore size distribution of AGP and APP were measured using Scanning Electron Microscope (SEM), Energy Dispersive X-ray Measurements (EDAX), and Brunauer Emmett Teller (BET). The adsorption data reveals fixing on Elovich equation with correlation coefficient ( $R^2$ ) of 0.97 and 0.94 respectively for AGP and APP as compared to 0.89 and 0.91 for diffusion model. These finding suggest the predominantly physical adsorption behaviour of total chromium by both the adsorbents. Freundlich's isotherm model showed a better fit than Langmuir's equation for AGP and APP with lesser Chi square ( $\chi^2$ ) error of 0.31 and 1.11 respectively against that of Langmuir with 8.11 and 11.14 indicates the heterogeneous surface of these agricultural based adsorbents.

### **Index Terms**

Bioadsorbents, Elovich, Intra-particle diffusion and Non-linear Regressions

## Indoor Navigation Using Beacons

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**Veena.S**, Assistant Professor, Dept. of ECE, PES University, Bengaluru, India

### ***Abstract:--***

Invention of Indoor Navigation system (INS) is widely adapted in past few years. Due to the inefficiency of Global Positioning System (GPS) signals in the indoor environment, several other technologies such as Wi-Fi, Digital Compass Technologies, QR Code, RFID etc. are used. This paper presents the use Bluetooth Low Energy (BLE) Beacon for INS as it is most prominent in terms of accuracy, range, and privacy. BLE is a wireless technology designed and marketed by Special Interest Group (SIG). Beacons emit radio frequency signals that can be used for distance calculation and in turn the user's location is estimated. For this purpose, a mobile application is developed that helps to track the user's current location with the help of BLE Beacon signals as reference points. It also provides the shortest path using Dijkstra's algorithm and navigates the user from one location to their desired location based on these signals.

### ***Keywords-***

Beacon, Dijkstra Algorithm, Indoor Navigation, Trilateration.

## Design and Implementation of a Vehicle To Vehicle Communication System Using Li-Fi Technology

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**Mr.Mohan Kumar B N**, RRIT,Bengaluru

**Vani K**, RRIT,Bengaluru

### ***Abstract:--***

Vehicle to vehicle communication are advanced applications which provide various services to facilitate road safety and traffic management. This system uses wireless communication system which provides warning signals In order to reduce road accidents and congestions. This system improves the efficiency of driving by enabling the vehicles to communicate accident related messages. This also assists the driver to take the proper decision and avoid collision. This paper deals with the vehicle to vehicle communication using Li-Fi (light fidelity). The proposed system uses Li-Fi technology comprising mainly light- emitting diode (LED) bulbs as means of connectivity by sending data through light spectrum as an optical wireless medium for signal propagation. The usage of LED eliminates the need of complex wireless networks and protocols. Vehicle's speed can be controlled by the switch using PWM concept. Hence multiple information can be communicated with the other vehicle efficiently.

### ***Keywords –***

Air Mattress, Bedsores, Pressure Ulcers

## Design of Hybrid Electric Vehicle with Solar Energy and Wireless Charging

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**G Gowtham**, Assistant Professor, Electrical and Electronics Engineering, RRIT/VTU

**Ramachandra C**, Assistant Professor, Electrical and Electronics Engineering, RRIT/VTU

### **Abstract:--**

With the advancement in 21<sup>st</sup> Century, there has been increase in usage of Oil and Gas leading to problems like Global Warming, climate change, shortage of crude oil, etc. Due to these reasons Automobile Companies have started doing research for making Hybrid Technology usable into the daily life. The technologies used in the making of Hybrid Cars such as “Hybrid Solar Vehicle”, “Hybrid Electric Vehicle” and “Plug in hybrid electric vehicles”. On this bases the explanation of such technologies, their function, drawback of this technology, efficiency of Hybrid Cars, and Case studies on the present commercial hybrid cars and the fuels and raw materials used in the Hybrid Cars. The advantages and disadvantages of Hybrid Electric Cars and technologies which will take over the world in future and would become the alternative of Petrol and Diesel Cars.

Electric vehicles (EVs) as the next generation of vehicles are becoming more reliable. Battery charging system is an important challenge to make the EVs popular. Wireless charging are user friendly and safe systems. It proposed to overcome consumer’s concerns regarding charging battery and driving range. The wireless power transfer (WPT) circuit topology for EV charging applications are presented. The coil and ferrite shapes have been discussed. The health and safety issues as the highest priority for electrical, coupling fields and fire hazards are also discussed addressing related standards for WPT.

## Bearing Fault Detection Using Case Western Reserve University Dataset with SVM Approach

**Tushar Anand**, Netaji Subhas University of Technology, New Delhi

**Bhavnesk Kumar**, Netaji Subhas University of Technology, New Delhi

### ***Abstract:--***

Three-phase induction motors (IM) are widely used in industry for a variety of reasons, including inexpensive maintenance, simple and strong construction, self-reliable operation, and higher efficiency than any other motor available. If a flaw in an IM is not discovered early on, it can lead to unanticipated malfunctions, financial loss, and even disastrous effects for the industry. Keeping this in view, this paper presents a bearing fault detection scheme of three-phase induction motor using Case Western Reserve University (CWRU) Dataset with SVM Approach. Various methods based on machine learning (ML) algorithms have been developed in recent decades to detect bearing faults. This paper presents a fault detection system for induction motors using the SVM (Support Vector Machine) approach. Furthermore, a comparative study with various kernels of SVM and varying train-test split is presented, and accuracy is compared, and confusion matrix is plotted in each case. The proposed approach outperforms the traditional data-based models/techniques in the accuracy under all working conditions.

## Electronic Voting Machine using Face and Fingerprint Recognition

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**Sugnyani Patil**, Assistant Professor, ECE Department, R.R institution of Technology, Bengaluru

**Asha L**, Student ,ECE Department, R.R Institution of Technology, Bengaluru

**Sowmya**, Student ,ECE Department, R.R Institution of Technology, Bengaluru

**Mohit Kumar Singh**, Student ,ECE Department, R.R Institution of Technology, Bengaluru

### ***Abstract:--***

The primary right of voting in the election is the fundamental yardstick of a democratic citizen. During the modern era, Electronic Voting Machine has been introduced which has marked a significant change in the conventional voting system in India replacing ballot papers and boxes which are used earlier. We all know that, fake voting is still a major drawbacks in the Elections. In order to overcome this we are designing a Smart Voting machine based on face and fingerprint recognition.

### ***Index Terms***

Electronic Voting Machine, Face Recognition, Fingerprint Recognition, Arduino uno.

## RADAR System using Arduino and Ultrasonic Sensor

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**Bharath KL**, Student, Electrical and Electronics Engineering, RR Institute of Tecnology

**Prarthan SB**, Student, Electrical and Electronics Engineering, RR Institute of Tecnology

**Tashi W B**, Student, Electrical and Electronics Engineering, RR Institute of Tecnology

**Sunanda CV**, Assistant professor, Electrical and Electronics Engineering, RR Institute of Tecnology

### ***Abstract:--***

This project is about Radar System controlled via Arduino. This RADAR system consists of an ultrasonic sensor and servo motor, these are the major components of the system. This system can detect objects in its defined range. Ultrasonic sensor is attached to the servo motor. It rotates at angle of 180 degree and gives visual representation on the software called processing IDE. Processing IDE gives graphical representation and it also shows the angle/position and distance of the object. This system is controlled through Arduino. Arduino UNO board is used here to control ultrasonic sensor and also to interface the sensor . While Researching, we learnt about existing navigation and obstacle detection innovations and different systems where ultrasonic sensors are used efficiently. Navigation, Positioning ,Object identification ,Mapping ,Spying/Tracking are its applications.

## Case Study on the Effect of Chilling To Reduce Shrinkage Defect on Cast-Iron Castings

**Veeresh Gurav**, Mechanical (Machine Design), KLS Gogte Institute of Technology

**Veeranna**, Mechanical (Machine Design), KLS Gogte Institute of Technology

### ***Abstract:--***

Casting is one of basic/primary manufacturing process to shape the material into desired shape and size. There are too many imperfections to be discovered during casting, some deformities are actually found here and some deformities are difficult to track down. These deformities are a consequence of some assembly factors, distinguishing the elements that cause the imperfections is the problematic task. Part of the normal projection imperfections found in casting during projection deformity investigation are gaps, shrinkage, cold close, slag consideration, hot tears, and more. To solve these projection problems and create flawless castings, foundries face a number of problems. The cementation cycle is of a bewildering nature and some of the deformities occur during the hardening measure, so to speak. In foundries, the expectation of shrinkage deformity has become the fundamental part of the projection. In this article we mainly think about addressing the shrinkage imperfection in the articles by giving shivers to the projected shape of the sand, gives a significant effect on the nature of the projection, and can also expand the projection performance.

### ***Keywords***

Casting, Deformities, Shrinkage, projection.

## Design of Single Axis Solar Tracker

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**Amithkumar Yadav**, RR Institute of Technology

**Saikat Barman**, RR Institute of Technology

**Rambati N**, RR Institute of Technology

**Asst Prof. Anshu Deepak**, RR Institute of Technology

### **Abstract:--**

This project discusses on the development of horizontal single axis solar tracker using Arduino UNO which is cheaper, less complex and can still achieve required efficiency. For the development of horizontal single axis solar tracking system, light dependent resistors (LDR) have been used for sunlight detection and to capture maximum light intensity. A servo motor is used to rotate the solar panel to maximum light source sensing by the light dependent resistors (LDR) in order to increase the efficiency of solar panel and generate the maximum energy. The efficiency of the system has been tested and compared with the static solar panel on the several time intervals. A small prototype of horizontal single axis solar tracking system will be constructed to implement the design procedure presented here. As result of solar tracking system, solar panel will generate more power, voltage, current value and higher efficiency.

The key idea of this article is implementing an automatic single axis solar tracking system. Arrangement of solar panel with sunlight for getting maximum solar radiation is tested. This system tracks the extreme intensity of light in terms of power point. This article shows operation and analysis of single axis solar tracker, while various solar axis tracker are available in the marketplace. In the meantime, the proposed method is able to identify axis quickly and associated with sun rays in order to achieve MPP (maximum power point) as the output irrespective motor speed.

### **Key words ;**

Solar panel, Sensors, Servomotors, MPP, Solar energy, Solar cell arrays, Arduino Uno platform, Solar photovoltaic cells.

## Experimental Investigation and Vibration Analysis of Laminated Composite Beam with Multiple Edge Cracks

**Vishal Omprakash Jadhav**, MET's I.O.E., BKC NASHIK, Savitribai Phule Pune University, Pune.

**Prof. Dr. Harshal Ashok Chavan**, MET's I.O.E., BKC NASHIK, Savitribai Phule Pune University, Pune.

### ***Abstract:--***

Crack developed suddenly in the vibrating component may cause disastrous failures. The occurrence of splits changes the physical features of a structure that changes its dynamic response. So the effects of broken structures must be understood. The essential parameters are the number of crack, the depth and placement of crack. Therefore, changes in structure response parameters are important for structural completeness, performance and security to be monitored. The finite element model is presented with the vibrational Composite laminated beam analysis, including open transverse cracks. Experimental validation under six damage scenarios for a laminated cantilever beam is also accomplished through ambient vibration tests. The three-dimensional model of a split beam was designed using CATIA V5. FFT analyzer was performed for the experimental testing. The analysis was conducted using the program ANSYS 19. New results were analyzed in comparison with both cracked and uncracked beam. The results and conclusion of the comparative analysis were drawn.

## Assessment of Land Suitability for Solid Waste Disposal and Leachate Treatment by waste derived *Parkia Speciosa* (Petai) pods Activated Carbon

**Vivek Laishram**, Department of Civil Engineering, National Institute of Technology Manipur

**Oinam Bakimchandra**, Department of Civil Engineering, National Institute of Technology Manipur

**Potsangbam Albino Kumar**, Department of Civil Engineering, National Institute of Technology Manipur

### **Abstract:--**

A waste derived *Parkia Speciosa* (Petai) pods activated carbon (PPAC) synthesized with 30% H<sub>3</sub>P<sub>04</sub> at an impregnation ratio of 1:1 was employed for organic ions (COD) uptake from landfill leachate collected from Lamdeng Solid Waste Management Plant, Imphal, Manipur which was pretreated in the previous part of this study. To study the sorption mechanism and rate controlling steps, intra-particle diffusion, Elovich model and non-linear Langmuir and Fruenlich isotherm models were used to test the adsorption data. The adsorption equilibrium was practically reached at 90 min contact time yielding 93% COD removal at an optimum dose of 11g/L PPAC in the previous part of the study. The adsorption kinetic studies revealed that the correlation coefficients ( $R^2$ ) for Elovich model was 0.953 as compared to 0.847 for diffusion model signifying the better fit of the adsorption kinetics data on Elovich model. In the previous part of this study, the linearized Langmuir model fitted better yielding a higher  $R^2$  value of 0.998 as compared to 0.497 for the linearized Freundlich isotherm model with lesser Chi-square ( $\chi^2$ ) of 0.56 for Langmuir's isotherm against that of 13.87 for Fruendlich. However, in this part of the study also, the modeling results revealed that the non-linearized Langmuir model ( $R^2 = 0.971$ ) even fitted the data better than non-linearized Fruendlich model ( $R^2 = 0.891$ ) with  $\chi^2$  value of 0.94 and 4.65 for Langmuir and Fruendlich isotherm respectively. From the observations, the organic ions mainly COD is adsorbed on PPAC ( $q_{max} = 180.65\text{mg/g}$ ), the surface of which is mostly homogenous. Monolayer adsorption occurs without lateral interactions between the adsorbed molecules suggesting the nature of adsorption to be predominantly chemical adsorption.

### **Index Terms**

Activated Carbon, Adsorption, COD, Landfill leachate, *Parkia Speciosa*.

## A New Cascaded Two Level Inverter based Multilevel STATCOM for High Power Applications

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**Akshatha R Hegde**, Assistant Professor, Dept. of Electrical and Electronic Engineering, RR Institute of Technology

**Pradeesha J**, Assistant Professor, Dept. of Electrical and Electronic Engineering, RR Institute of Technology

### ***Abstract:--***

A uncomplicated and reliable STATCOM project for static var compensation and refinement of power quality are debated in this paper. The analysis situs consist of combination of two level voltage source inverters. Cascaded inverter is attached to low tension side of three phase coupling transformer. The system is operated as four-level inverter by maintaining dc link voltages of two inverters at a determined proportion. Balancing od dc link voltage is primary challenge For cascaded inverters. MATLAB/SIMULINK is used to look over the system and for balanced and unbalanced conditions results are substantiated.

## Comouflage Based Emergency Vehicles Priority with Intelligent Traffic Control Using Movable Road Dividers

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**Shruthi A.S**, ECE, RRIT

**Yashaswini G**, ECE, RRIT

**Ramya B**, ECE, RRIT

**Anshu Deepak**, Assistant professor, ECE, RRIT

### **Abstract:--**

The main aim of this project is reducing the traffic congestion in our daily life. Road Divider is generically used for dividing the Road for on-going and incoming traffic. This helps keeping the flow of traffic; generally, there is equal width of lanes for both on-going and incoming traffic. The problem with Static Road Dividers is that the number of lanes on either side of the road is fixed. Since the resources are limited and population as well as number of cars per family is increasing, there is significant increase in number of cars on roads. This calls for better utilization of existing resources like number of lanes available.

The other aim of this project is, India is one of the most populous Country in the World and is a fast-growing financial prudence. It is seen that terrible road congestion problems in cities. Infrastructure growth is slow as compared to the growth in number of vehicles, due to space and cost bounds. Also, Indian traffic is non-lane based. Moreover, the situation is getting worse when emergency vehicles have to wait for other vehicles to give way at intersections with traffic lights. This causes a delay of time and may affect the emergency case. Besides, the collisions with other vehicles from other direction might occur at intersections when emergency vehicles had to override the red traffic lights. All these difficulties faced by emergency vehicles can be avoided using this traffic light control system based on radio frequency transmission. It needs a traffic control solution, which are different from the other Countries. The system will reduce accidents which often happen at the traffic light intersections because of another vehicle had to huddle for given a special route to emergency vehicle. As the result, this project successful analyzing and implementing the traffic assistance system for emergency vehicles.

In the new evolving world, traffic rule violations have become a central issue for majority of the developing countries. The numbers of vehicles are increasing rapidly as well as the numbers of traffic rule violations are increasing exponentially. Managing traffic rule violations has always been a tedious and compromising task. Even though the process of traffic management has become automated, it's a very challenging problem, due to the diversity of plate formats, different scales, rotations and non-uniform illumination conditions during image acquisition. The principal objective of this project is to control the traffic rule violations accurately and cost effectively. The proposed model includes an automated system which uses IR sensors and camera based on Raspberry PI to capture video. The project presents Automatic Number Plate Recognition (ANPR) techniques and other image manipulation techniques for plate localization and character recognition which makes it faster and easier to identify the number plates. After recognizing the vehicle number from number plate, the SMS based module is used to notify the vehicle owners about their traffic rule violation. An additional SMS is sent to Regional Transport Office (RTO) for tracking the report status.

## Improved Output from Buck-Boost Converter for Commercial Loads

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### ***Abstract:--***

This paper has improved Multi-output Buck-Boost Converter for commercial purpose which deals with the regulation of the output voltage. Several output voltages can be generated and used in different applications such as multi-level converters with diode-clamped topology or power supplies with several voltage levels employing this topology. . It can be employed for both steady state and transient response Dependency of DC-link voltage balancing and the power factor of the load must be reduced and it is challenging to the suppliers to build such multilevel inverter. Multi-output DC-DC converter has a wide range of applications but it has input voltage disturbance. In this paper, the effect of these disturbances from the output voltages can reduced.

### ***Index Terms***

Buck Boost converter, Multi-output converter, PWM

## Electricity Theft Detection

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### ***Abstract:--***

During these days the number of electricity thieves are increasing, so that the electricity boards are facing problems in providing electricity to their consumers in an efficient way. In order to encounter this issue, we need an accurate Electricity Theft Detection (ETD) which is quite challenging due to the inaccurate classification on the imbalance electricity consumption data, the overfitting issues and the High False Positive Rate (FPR) of the previous techniques. To overcome mainly the above given limitations, this paper presents a new model, which is mainly based on the supervised machine learning techniques and real electricity consumption data. At the beginning, electricity data are pre-processed using interpolation, three sigma rule and normalization methods. Since the electricity consumption data is imbalanced, an Adasyn algorithm is utilized to overcome this class imbalance problem. It has two objectives. At first, it intelligently increases the minority class samples in the data. At second, it prevents the model from being biased towards the majority class samples. After all these process, the balanced electricity consumption data are fed into the Visual Geometry Group (VGG-16) module to detect abnormal patterns in electricity consumption. Finally, a Firefly Algorithm based Extreme Gradient Boosting (FA-XGBoost) module is exploited for classification. The simulations are done to show the performance of our proposed model.

### ***Index Terms***

ETD - Electricity Theft Detection; FPR - False Positive Rate; VGG16 -Visual Geometry Group; FA-XGBoost- Firefly Algorithm based Extreme Gradient Boosting

## Longitudinal Stability Analysis of an Aircraft using RBFANN

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### *Abstract:--*

The emergence of neural network is a promising tool for complex system for verifying nonlinear dynamic and stability analysis. One research area that is tremendously benefitted is intelligent control and performance analysis of aircraft this paper presents analysis of longitudinal stability and Develop and on-line control scheme that utilizes a dynamically structured Radial Basis Function Network (RBFN) for aircraft control. By using synthesis approach, the tuning rule for updating all the parameters of the dynamic RBFN which guarantees the stability of the overall system to be derived and Analysed. The robustness of the proposed tuning rule, Perform Simulation studies using the aircraft longitudinal model which demonstrates the efficiency of the method and also show that with a dynamically structured RBFN, a more compact network structure can be implemented for stability analysis of an aircraft.

### *Index Terms*

Radial Basis Function , Gaussian Function, Longitudinal stability.

# A Design Pattern Ranking and Optimization Method Based on Intent

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## ***Abstract:--***

Design patterns are proven solutions to specific software design problems. They are often used to acquire the software knowledge needed to solve software design problems. However, choosing the appropriate design patterns is not an easy task. Design pattern intent is the shortest path to understand design patterns, so sorting design patterns by analyzing design pattern intent is more beneficial for users to obtain the required design patterns. This paper proposes an Intent-based Ranking method, to facilitate the choice of design patterns, defines the relevant similarity calculation method and the corresponding proof is given in the paper, and then through the genetic algorithm in this article, as defined by the parameters for the adjustment and optimization, the final actual problems in the actual development data set with software and design patterns, in the proposed method is verified and analyzed, and the experimental results show that the proposed method compared with other methods in a certain matching rate increased, and sorted the more correct results appear in the front of the plane.

## ***Index Terms***

WordNet ; Stanford Parser ; Genetic Algorithm ; Design pattern ; Ranking

## Consumer Behaviour in Rural Market of Hanumangarh

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### ***Abstract:--***

Consumer behaviour tells us how why and what people do when they buy products or avail of some services. It attempts to understand the buyer's decision-making process, both individually and in groups. (definition given by C.L Narayana and R.J Markin)

Consumer behaviour is the totality of a consumer's decisions and dynamic process which is influenced by multiple factors, it is the study of how individual customers, groups or organizations select, buy, use & dispose ideas, goods & services to satisfy their needs & wants. It refers to actions of consumers in the market place and the underlying motives for those actions. It defines how a consumer's emotions; attitude & preferences affect buying behaviour .

Consumer's behaviour emerged in 1940's & 50's as a distinct sub discipline of marketing. It studies all the consumer actions during searching, purchasing, using evaluating and disposing of products and services that they expect will satisfy their needs. The core of marketing identifying unfilled needs and delivering products and services that satisfy

## MPPT based Solar PV System Simulation and Analysis using Matlab/Simulink

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### ***Abstract:--***

Distributed Energy resources (Solar PV systems) plays an eminent role in the economic evolution of a country and India being a developing country has got a notable power sector with sources of power generation from conventional resources to non- conventional energy resources. With the known fact of rising daily demand in power sector, integration of distributed energy resources to grid has gained interest in the field of research. Nevertheless, as a consequence of the grid integration of distributed energy resources (Solar PV systems) and usage of non-linear loads results in power quality issues, which in turn affects most of the client's load and their electricity bills too. Former to the grid integration one should be familiar with the basic Solar PV system structure and its analysis. Since another issue of worry is to maintain the maximum power extraction of a solar PV system, which is dependent on the MPPT technique used in grid integration. As per literature, many MPPT techniques are available from conventional mechanical tracking to electrical tracking. To start with, an effort should be made to firstly to understand the basics of PV system like the converter topologies available with its pros and cons and secondly with MPPT techniques. The frequently used MPPT technique is Perturb and Observe method due to its simplicity. In this paper an effort is made to emphasize the basic Solar PV structure with different converter methods and comparative analysis of P and O method with incremental conductance method of MPPT. Simulation is done using MATLAB Simulink and an analysis will be done for various conditions like change in irradiance and temperature etc., giving the information of Basic PV system analysis and modelling before integrating it to the grid.

### ***Index Terms***

DER, PV, Converter topology, MPPT, P and O, Incremental conductance

## Faster RCNN based Automatic Vehicle Detection System

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### ***Abstract:--***

The aim of this study is to propose a pre-processed faster Regional convolution neural network (faster RCNN) for on-street vehicle identification. The framework includes a faster RCNN preprocessing pipeline. The preprocessing method is used to improve the Faster RCNN's preparation and detection time. To identify pathways, a preprocessing path identification pipeline based on the Sobel edge administrator and Hough Transform is used. A rectangular area is then eliminated from the gallery's organisation, resulting in a less intriguing location (ROI). When compared to faster RCNN without preprocessing, the suggested approach enhances the preparation time of faster RCNN.

### ***Index Terms***

RPN, ROI, Hough Transform, Convolution Neural Network, Sobel edge detection

## Traffic Congestion Studies and Solutions for Kengeri-Hoysala Junction, Bengaluru

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### ***Abstract:--***

Bengaluru occupied top place in the list of top most traffic-congested cities in India and the world in 2019. Kengeri is a prime location situated in south-west Bengaluru and surrounded by several public offices, educational institutions, commercial zones, stone crushing mills, hospitals and IT hubs. Bengaluru's upcoming and well settled IT hub 'Kengeri global village' faces congestion through nearby educational institutions non-functioning traffic signals, insufficient road width to carry current traffic conditions are attributed to the problem. Further increase in population and number of vehicles can further aggravate the situation. Traffic volume is heaviest on bangalore university road and mysore road. It is highest for 2 hours in the morning and 2 hours in the evening. Road widening, relocating parking areas, providing traffic signals, sufficient turning radius, etc., can control the traffic. Constructing a flyover on Bangalore-mysore stretch can ease the traffic flow. The signal-less solution mentioned in this study provides an innovative approach to mitigate traffic congestion.

### ***Index Terms***

Traffic congestion, Junction, traffic signals, signal less solution, median stretch



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