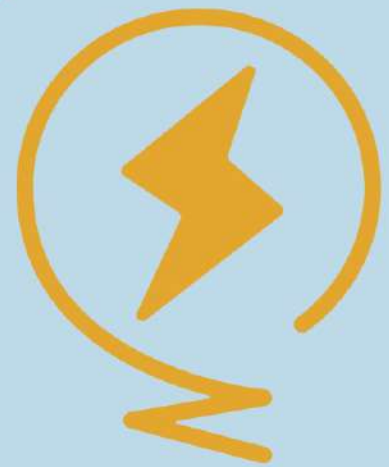




ROHINI

COLLEGE OF ENGINEERING AND TECHNOLOGY
Approved by AICTE and affiliated to Anna University, (An ISO Certified Institution)

International Conference on AUTOMATION, INTELLIGENT COMPUTING AND COMMUNICATION [ICAICC'21]



Organized By

Department of Electronics & Communication Engineering
Rohini College of Engineering and Technology





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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

**2020-INTERNATIONAL
CONFERENCE ON AUTOMATION,
INTELLIGENT COMPUTING AND
COMMUNICATION(2021-ICAICC)**

ORGANIZED BY:

Rohini College of Engineering and Technology

Palkulam, Kanyakumari –Dist., Tamil Nadu

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2021- INTERNATIONAL CONFERENCE ON AUTOMATION, INTELLIGENT COMPUTING AND COMMUNICATION

Editors

DR. S.GANESHRAM

DR. P.K. ARUNESH

Publish By:

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Preface

Conference World and AR Research Publication is fast growing group of academicians in Engineering, Sciences and Management. AR Research Publication is also known for fast reply and zero error work. Conference world has organized a various conferences at renowned places namely Delhi University; New Delhi, Jawaharlal Nehru University; New Delhi, PHD Chamber of Commerce and Industry New Delhi, YMCA New Delhi, India International Centre New Delhi Sri Venkateswara college of Engineering and Technology, Andhra Pradesh, Dhananjay Mahadik Group of Institutions (BIMAT), Shivaji University, Maharashtra, Vedant Engineering Kota and many more places across the country.

We are very pleased to introduce the proceedings of the *2021-International Conference on Automation Intelligent Computing and Communication*. As for previous conferences, the theme was the link between the information provided by conference world and the use made of this information in assessing structural integrity. These were the issues addressed by the papers presented at the conference. The level of interest in the subject matter of the conference was maintained from previous events and over 78 suitable papers were submitted for presentation at the conference.

Papers were well represented in the conference to arouse a high level of international interest. Three countries were represented in the final program from Europe, North America and Asia. In the event, the conference was highly successful. The presented papers maintained the high promise suggested by the written abstracts and the program was chaired in a professional and efficient way by the session chairmen who were selected for their international standing in the subject. The number of delegates was also highly gratifying, showing the high level of international interest in the subject. This is also indicated by the large number of countries, 01 represented by the delegates. This Proceeding provides the permanent record of what was presented. They indicate the state of development at the time of writing of all aspects of this important topic and will be invaluable to all workers in the field for that reason. Finally, it is appropriate that we record our thanks to our fellow members of the Technical Organizing Committee for encouraging participation from those areas. We are also indebted to those who served as chairmen, without their support, the conference could not have been the success that it was. We also acknowledge the authors themselves, without whose expert input there would have been no conference. Their efforts made a great contribution to its success.

BRIEF HISTORY OF THE COLLEGE

Rohini College of Engineering and Technology is the most prestigious institution established by a well-known industrialist and philanthropist, Shri.K.Neela Marthandan in 2012. More than 2750 students are pursuing their studies in 6 Under Graduate and 5 Post Graduate programmes. Anna University has recognized Department of Mechanical Engineering as the Research Centre. The academic system followed is Outcome Based Education. The faculties are well experienced and 21 faculty members are having Ph.D.

About Conference

This Conference will explore the new horizon of innovations from distinguished researchers, scientists, and eminent authors in academia and industry working for the advancements in Science, Engineering and Technology from all over the world. ICAICC-2021 aims to bring together Academicians, Scientists, Research Scholars and Students, to share and disseminate information on knowledge and scientific research works related to Automation, Intelligent Computing and Communication topics and confers the practical challenges encountered and the solutions adopted. The conference will create a path to establish a research relation for the authors and listeners with opportunities for promoting research and developing technologies.

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**DEPARTMENT OF ELECTRONICS AND COMMUNICATION
ENGINEERING***Organizes***INTERNATIONAL CONFERENCE ON AUTOMATION,
INTELLIGENT COMPUTING AND COMMUNICATION****ICAICC – 2021****PROCEEDINGS**

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Design Of Wearable Patch Antenna For Wireless Body Area Networks

¹Dr.S.Mohanalakshmi, ²Marlia I, Nanthini N, Sapna V R, Sulaiha Shahema Ansari

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A low profile wearable microstrip patch antenna is designed and suggested for military purposes and constant observation of human vital signs using Wireless Body Area Network (WBAN) technology. The antenna receives various signals from the sensors placed in the human body as the input and transmit it to the receiving station. The proposed antenna is designed to achieve better Return loss, VSWR and Gain when compared to other existing wearable antennas. High-Frequency Structure Simulator (HFSS) is used to design and simulate the proposed antenna. An antenna that is integrated into the clothing of the wearer is called a wearable antenna. Some vital signs of the human body need to be monitored regularly. Therefore, multiple sensors should be placed on the human body to monitor those vital signs. In military, tracking the location of the soldiers, transmitting audio and video signals from the wearable recorder can be done by the proposed antenna. The body-worn sensors store information regarding various physiological parameters and transmit them to the wearable devices, which further transmit them to the nearest receiving node. On-body communication term is used when a wearable antenna communicates with a wearable medical and recording device. Whereas, off-body communication is between the on-body transceiver device to external wireless transceiver device.

IOT Based Smart Helmet for construction workers

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Day by day the death rate of the construction workers at the construction site is increasing. But still there are no such remedies to reduce this fatality rate. To provide continuous monitoring of the workers and to prevent them from any health hazards during working, this system proposes a smart flexible helmet for the construction workers to provide security and rescue measures in case of any emergency conditions. The proposed system describes a smart

inexpensive helmet for the construction workers made up of chromium embedded with Accelerometer and Gyroscope sensor. The Gyroscope sensor is used to indicate the rotation and orientation of the person with respect to gravity whereas the Accelerometer sensor is used to measure the linear acceleration or motion of the worker. Both these sensors are used for fall detection that may result from drowsiness, fatigue, etc. The helmet monitors the physical conditions of the construction workers and sends notification to the Contractor via the Mobile.

A Compact Wearable Antenna For Wban Application

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In this paper, a compact flexible and wearable meandered structure microstrip patch antenna to resonate at 2.45 GHz frequency (ISM band) has been proposed. The proposed antenna substrate is designed using polydimethylsiloxane (PDMS) substrate with a dielectric constant of 2.71, loss tangent of 0.0134 and thickness of 1mm. The silicone polymer is highly flexible and well suited for wearable applications. The overall size of the proposed flexible antenna is $33 \times 30 \times 1 \text{ mm}^3$. The parameters such as gain, return loss, directivity, VSWR, radiation efficiency and the surface current distribution of the designed antenna are analyzed and validated using finite element method based Ansys HFSS (High Frequency Simulator Software) software. The simulation results show that the antenna has a gain of 1.9 dB, -26.82 dB return loss, 100 MHz bandwidth (2.4 GHz - 2.5 GHz) based on $|S_{11}| \leq -10 \text{ dB}$, a directivity of 2.1 and 92% radiation efficiency. The compact size and high flexibility of the proposed antenna makes it suitable for Wireless Body Area Network (WBAN) applications.

Convolutional Neural Network with Pyramid Pooling Module Based Kidney Lesion Detection for CT Images

**¹Mrs. Jasmine J C Sheeja, ²Pon Arasi T, Rinilda Sahaya Rivin A , Subitha M, Vijaya
Nathiya S**

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² Student, Rohini College of Engineering and Technology

Diagnosing and locating lesions in the kidney. New method to perform kidney lesion detection for CT images. Relies on a FCNN which combines a PPM. Implemented as an end-to-end learning system directly on CT images. Use of the spatial contextual information to improve the segmentation of the kidney. Framework to perform accurate segmentation of kidneys in CT angiography images. Propose CNN with PPM for kidney lesion detection. The main contribution of this method is that a new fully convolutional network incorporating a pyramid pooling module (PPM) named FCN_PPM is implemented. Neural network can extract the feature maps based on fully contextual information. The morphological coherence of the kidneys and the tumor lesions can be improved. The pyramid pooling module aims to concatenate the features of different scales. These pyramid modules separate the feature map into different subregions and form a pooled representation.

Lossless Robust Image Reversible Watermarking In Its

¹Mr.R.V. Nagarajan, ²H.S. Rinjush, S.U.Rohin, S.Sreeram, R.Praveen

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In this paper, we propose a lossless robust watermarking method by using the polar harmonic transform with reversible and robust watermarking techniques. Firstly, a new quantization watermarking strategy is designed to embed bits into the polar harmonic transform moments. Secondly, the compensation information for recovery of the original image is computed by using the quantized error, the watermarked error and the rounded error to represent the difference between the original image and the robust watermarked image. Finally, the final watermarked image is achieved by reversibly inserting the compensation information into the the robust watermarked image. The proposed method is able to recover the original image lossless in case of no attacks. In case of attacks, the watermark can be directly extracted for copyright authentication. Experimental results show that the proposed method is reversible and provides strong robustness to those content-preserving manipulations. Compared with

previous state of the art methods, the proposed one not only provides stronger robustness to those noise-like image processing operations (e.g., JPEG compression with quality factor 10), but has an ability to resist geometric deformations like rotation and scaling.

Device for Surveillance and Control System Based on IoT

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Our project is aimed at an energy saving electrical device Surveillance and Control system based on IOT. A large amount of energy is consumed by lighting appliances, so making improved efficiency and quick fault detection is a significant challenge. When a vehicle on a side road arrives at a particular region, a sensor will detect it and cycle the lights to allow traffic on the side road to pass through. Then the density of the traffic will be updated to the Things peak server through IoT. For any emergency conditions like Ambulance or fire service vehicle has to move quickly from the traffic there is an emergency switch. In this condition, they allow the higher priorities to move those vehicle.

A Face Recognition Method In The Internet of Things For Security Applications

**¹Mrs. Jasmine J. C Sheeja, ²Priya Dharshini . R, Saranya.V, Shanmuga Bala . T,
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Attack on home, offices, factories, bank etc is on the increase. System is built using an embedded microcontroller capable of detecting motion of an person in a restricted area and then triggering the alaram system. Cameras can deter criminals, but can't stop theft. They can only record the footage and help the law enforcement to catch the criminal later on. They don't alert neighbors or the police like the alarm system means incur losses even if go to court and make insurance claims. The proposed system helps to reduce the theft . The main objective of this project is to protect the home, office by recognizing people and to stop theft. PIR sensors

work best when there is a large difference between the air temperature and the animal. In warm temperature above 80 degrees Fahrenheit, the detection range Will be reduced. In cold temperatures, below 40 degrees, the detection distance will increase. A PIR sensor is used to detect the human presence in a specific area. When a person moving around the system PIR sensor detects the change in the IR levels of surroundings and send a signal to the microcontroller.

An Interactive Smart Mirror Platform For Instant Newsfeed And Weather Report Using Raspberry Pi

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Smart mirrors are the mirrors of the future. It would be able to see news, temperature, weather and more just while looking and grooming in front of mirrors. Proposed system allow for mirrors to receive news online and display it on the mirror screen. This system uses a raspberry pi along with display and IoT based circuitry and temperature sensor interfaced together. It consists of two main sections such as hardware implementation and software implementation. At the hardware implementation, the physical mirror body is designed with the Two-way mirror, LED Monitor and the Raspberry Pi Circuit. Coding the program is done at the software implementation. The purpose of mirror in day to day lives is to observe and interact with ourselves. Smart mirror is to use a two-way glass mirror, LED monitor, frame to hold the glass and monitor, web browser with python to provide the software features and drive the display. Wall mounted mirror which displays weather, time, date, temperature, humidity, news and other fields of interest. Help in automating our work and development of smart houses.

Defogging and Demosaiking for Image Enhancement

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Image defogging is a technique used extensively for enhancing visual quality of images in bad weather conditions. Even though defogging algorithms have been well studied, defogging performance is degraded by demosaicking artifacts and sensor noise amplification in distant scenes. In order to improve the visual quality of restored images, we propose a novel approach to perform defogging and demosaicking simultaneously. We conclude that better defogging performance with fewer artifacts can be achieved when a defogging algorithm is combined with a demosaicking algorithm simultaneously. We also demonstrate that the proposed joint algorithm has the benefit of suppressing noise amplification in distant scenes. In addition, we validate our theoretical analysis and observations for both synthesized data sets with ground truth fog-free images and natural scene data sets captured in a raw format.

EEG based drowsiness detection using IoT

¹Mr. Venkadesh.R, ²Raga pradeeba B, Siva sankari SL, Saraswathy RV, Sneha J

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Accidents are the most common cause of death for the peoples who drive vehicles. Accidents happen, even to the people who are careful, but many accidents may be avoidable if simple precautions are taken. One of the major reasons for the accident is drink and drive. We can avoid these accidents by providing the EEG to the drivers. The EEG switch responds to the voluntary blink of the eye and requires minimal calibration. It discriminates between voluntary and involuntary blinks. A dedicated miniature bandpass IR light sensor is also proposed and implemented for the low-cost, lightweight, wearable EEG sensor, Heart rate sensor, The proposed system can detect the status of the vehicle driver with respect to drowsiness or fatigue conditions in real time. When drowsiness or fatigue is detected, the active vehicle real light alert mechanism will automatically be flickered to alert following vehicles. The related information will also be concurrently transmitted to a cloud-based management platform. As a result, the proposed system can lead to increased road safety.

Siamese Network For Real Time Face Tracking

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A face tracking method based on Siamese CNNs, which takes advantages of powerful representations of hierarchical CNN features learned from massive face images. The proposed method captures discriminative face information at both local and global levels. At the local level, representations for attribute patches (i.e., eyes, nose and mouth) are learned to distinguish a face from another one, which are robust to pose changes and occlusions. At the global level, representations for each whole face are learned, which take into account the spatial relationships among local patches and facial characters, such as skin color and nevus. In addition, we build a new largescale challenging face tracking dataset to evaluate face tracking methods and to facilitate the research forward in this field.

Wild Animals Alert System In Farm Areas Using IoT

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.Vasanthakumari

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The main aim of our project is to protect the crops from damage caused by animal as well as divert the animal without any harm. Animal detection system is designed to detect the presence of animal and offer a warning. To detect the movement of the animal and send signal to the controller. It diverts the animal by producing sound and signal further, this signal is transmitted to GSM and which gives an alert to farmers and forest department immediately. Crop damage caused by animal attack is one of the major threats in reducing crop yield. The farm areas near forest edges are prominently affected by wild animals. For early detection of the animal at the perimeter of the farm intrusion detection system is installed. Animal entry at the

farm boundary is detected by nodes fixed at the boundary. The nodes in the field are equipped with IR sensors, sound generating devices, light flashers and IoT using WiFi module.

Triple Band Inverted-F Antenna Using QR-OBL TLBO Algorithm for RF Energy Harvesting Applications

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Radio Frequency Energy Harvesting (RF EH) is one of the popular emerging techniques in wireless sensor networks that can sufficiently supply low power electronic circuits. In this project, we apply an optimization technique by utilizing the Quasi-Reflected (QR) variant of Opposition Based Learning (OBL) technique in Teaching Learning Based Optimization (TLBO) algorithm to design a triple-band Inverted F antenna (IFA) for RF energy harvesting applications. The proposed antenna is operating in the cellular communication frequency bands of EGSM-900 and GSM-1800, as well as at the Long Term Evolution (LTE) telecommunication networks frequency band of LTE-2600. The devices connected to the networks need to exhibit autonomous electric power operation. Batteries use was a good choice, but a foreseeable problem is the cost and the difficulty of their maintenance and replacement. Drawing electric energy from Radiofrequency (RF) power resources present all the time in the environment would be a promising solution to this problem. The basic equipment for harvesting ambient RF power, includes an antenna which captures the incident RF power rectifier, potentially a matching network between them, a DC power storage unit, and if necessary, a power management unit.

Microcontroller based Blood Pressure Monitoring System

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International Conference On Automation, Intelligent Computing And Communication (ICAICC – 2021)

Blood pressure (BP) is one of the vital signs measured in a patient during a medical check-up. Abnormality in BP values is an indication or symptoms in most cardiovascular diseases. Innovations were established in dealing with the measurement of BP for the past years. In this paper, the researcher presented a wearable blood pressure monitoring device with SMS notification. Its design and processes were explained in this paper to further demonstrate the content of research. This paper aimed to determine whether the prototype is reliable enough with a novel approach for blood pressure monitoring purposes. The project is a device worn in a wrist using a microcontroller, battery and a cuff. The patient has a mobile app installed in his/her mobile phone. Information should be entered in the mobile app such as contact number and the normal blood pressure of the patient. The mobile phone is connected in the wearable device through Bluetooth. The user or patient will have to wait 5 minutes before the blood pressure will start measuring. This is to let the patient rest for a while. A beep sound indicates that the device starts measuring. After 10 seconds, the cuff will inflate and another 30 seconds time is intended for the blood pressure measurement. The measured value is displayed in the mobile app, and then sends SMS only if the patient's BP is higher than normal. Its design is a microcontroller-based project, equipped with a Global Positioning System (GPS) module to be able to locate the user, a Bluetooth module to be able to connect to a smart phone installed with the Blood Pressure Monitoring App. The device was carefully programmed and tested to ensure its workability.