PROCEEDING

One Day Online
International Conference on

Recent Advances in Engineering
Science and Technology

ICRAEST-2023

29 March, 2023

In Association with

DBATU, LONERE IJIES, ISSN:2456-3463 **IQAC** Internal Quality Assurance Cell

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Godavari Foundation's
**GODAVARI COLLEGE OF ENGINEERING
& POLYTECHNIC, JALGAON**

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"ICRAEST-2023"

29 March, 2023

In Association with

Dr. Babasaheb Ambedkar Technlogical University (DBATU), Lonere, Raigad (M.S.)

AND

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Editorials - ICRAEST-2023 ISBN Proceedings

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ABOUT the esteemed institute GF's GCOEJ

GF's Godavari College of Engineering, Jalgaon (GCOEJ) (*NAAC accredited*) has started by Godavari Foundation in 1999 to impart quality education in the field of Engineering & Technology. Godavari College of Engineering is just one of the ventures of Godavari Foundation set up by person with high academic record at the behest of very young altruist Dr. Ulhas Patil (Ex.MP) in 1999 at Jalgaon. College is approved by AICTE, New Delhi; recognized by DTE, Govt. of Maharashtra and affiliated to affiliated to Dr. Babasaheb Ambedkar Technological University (Dr. BATU – a Govt. of Maharashtra State Technical University), Lonere, Raigad from 2017. The courses are conducted in the premises having well infrastructure, Computer Labs, Conference halls, Library and other amenities. A Core team of experienced and qualified faculty bears the responsibility to impart knowledge to aspiring students in GCOEJ. A right blend of Industrialists and Academia from various other colleges, come to professionally train our students. Interaction with eminent personalities in their respective field is a continuous activity at the GF's GCOEJ. In addition to giving them value-added skills, College provides the students with a solid foundation base to strengthen their engineering practical knowledge.

We have various courses in following streams:

Bachelor of Technology (B.Tech.):
Mechanical Engineering (intake-60)
Electrical Engineering (intake-60)
Electronics & Telecommunication Engineering (intake-60)
Computer Engineering (intake-120)
Artificial Intelligence & Data Science (intake-60)

Master of Technology (M-Tech):
VLSI and Embedded Systems (intake-09)
Computer Engineering (intake-18)
Thermal Engineering (intake-18)

Engineering Diploma Courses:
Electrical Engg. (intake-60)
Mechanical Engg. (intake-60)
Computer Engg. (intake-60)
Computer Science Engg. (intake-60)

Each course is designed to cater to the requirements of the Industries. The above courses prepare the students for the plethora of experiences that they would face in real life situations in the Technical Industry and entrepreneurial world. Jalgaon, developing as a decent city, with district headquarter, is famous all over India as the center of foremost banana growing area. It has recently acquired the fame as "GOLD CITY" for heavy gold trading and its MIDC has several industries of international repute. The district has been producing intellectual manpower spread not only all over India but through major developed and developing countries in the world.

VISION OF THE COLLEGE:

To develop the Godavari College of Engineering as a center of excellence in technology, where to develop leadership quality, self-driven motivated new technical generation of students with right character and good disciplined citizen of India to ensure India to emerge as a most developed nation by 2020, bringing back the ancient glory of India as a creator.

MISSION OF THE COLLEGE: "*Civilization through Technology*"

To develop extraordinary technical human resource that can drive India always ahead to keep pace with the development process unleashed by the world technical experts to achieve civilized society of India.

About the ICRAEST-2023

One day online International Conference on Recent Advances in Engineering, Science & Technology (ICRAEST-2023), academic year 2022-23 is aimed for interdisciplinary exchange among professionals in the Science, Engineering and Technology sector, ranging from Researchers, Academicians and Business professionals, who are working in this field. This event will also comprise of keynote addresses by experts from leading Institutions and Research Organizations. This unique opportunity that we extend to our speakers and author delegates to abstracts their research in getting global visibility in addition with the networking opportunities before, during and after the conference. Under the aegis of IQAC, the conference is organized in association with Dr. Babasaheb Ambedkar Technological University (DBATU), Lonere-Raigad (M.S.) and International Journal of Innovations in Engineering & Science (IJIES), ISSN: 2456-3463 with a Google Scholar indexed, CrossRef DOI :10.46335 and SJIF: 5.856. The proceeding of the ICRAEST-2023 is with **ISBN: 978-81-949989-3-8.**

Around 101 researches & comprehensive review papers from various tracks are received from various parts of the country like Chennai, Andhra Pradesh, Madhya Pradesh, Rajasthan, Odisha etc. One of the milestone is that **ICRAEST-2023 has also received a paper authored by PG students Mr. Tejas Narkhede et.al., from Germany, Hochschule Ravensburg-Weingarten University in the field of Mechatronics Engineering.**
Major cornerstone has been the key person/researcher present for key notes Prof. Dr. Sandeep R Shinde, Head – Dept of Computer Engg., VIT Pune who has expertise in the fields like Ethical Hacking, Privacy and Security in Online Social Media has guided the audience in Inauguration.

Objectives of ICRAEST-2023:

* This conference emphasizes evidence-based practice, educational innovation, practical application, and peer-to-peer networking.

* The goal is to provide a transformative professional Development experience through bringing together the world's scientific & technical experts to catalyze the most recent research findings and advance scientific knowledge about Intellectual Advancements in Engineering, Technology.

* To encourage the delegates for technical writing and presentation based on their original research work.

* The conference seeks to identify & promote the R&D activities at the individual as well as at the institutional level.

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From Patron's Desk

It is a matter of great pleasure to see that our esteemed Institute GF's Godavari College of Engineering, Jalgaon is organizing One Day Virtual International Conference on Recent Advances in Engineering, Science & Technology - ICRAEST-2023 to be held on 29 March, 2023. I could see the efforts put in by the young and dynamic faculty in organizing this national conference. It is very much heartening to see the immense response received by the conference from the research community for its second edition. A good number of distinguished professors and researchers have also agreed to deliver keynote addresses / invited talks in the conference. Young scholars participating in the conference will immensely benefit from these. I am grateful to International Journal of Innovations in Engineering and Sciences (IJIES, Google Scholar indexed, CrossRef. DOI, peer reviewed) to publish the papers presented in the ICRAEST-2023. I heartily welcome all the distinguished speakers, scholars presenting papers and the participants to this renowned ICRAEST-2023. I am certain that the new measures taken will simplify several procedural aspects and enable a sound climate as an attractive destination. We are confident that with the foundation of ethics and competence instilled in the faculties and non-teaching members by the Institute, will keep up to the expectations, navigate contemporary challenges and deliver value. I wish the ICRAEST-2023 all the success and best wishes to the Institute in all their future endeavors. This proceeding of the conference has been documented with utmost care. I believe strongly that, this will stand as a great source of knowledge and researchers. With great pleasure and pride, I welcome all the participants and convey my best wishes for ICRAEST-2023.

All the Best…!!!

Dr. Ulhas Patil
Hon. President,
Godavari Foundation, Jalgaon
Chief Guest-ICRAEST-2023

From Principal's Desk

It gives me great pleasure to welcome you to the One Day Online International Conference on Recent Advances in Engineering, Science & Technology - ICRAEST-2023 dated 29 March, 2023 through online platform at our esteemed institute GF's Godavari College of Engineering, Jalgaon under the aegis of IQAC. This Technical International Conference will provide a prestigious international platform by bringing together local and overseas technical researchers and students to exchange their experienced knowledge and expertise issues relating to the dominating technology trends.

As organizing chairman of this event, I hope to bring together a good program that stimulates Engineering & Technological knowledge and Scientific Intellect. This will be through a combination of interesting presentations of the esteemed participants that will enrich our current knowledge and technical skills in doing innovative research and writing research papers. A holistic and interactive approach has been employed in planning the ICRAEST-2023 in which we shall discuss the latest techniques and the concurrent innovations. This International Conference will provide the perfect forum for both faculty and participants to interact and possibly discuss future collaborations.

On behalf of the organizing committee, I would like to extend an invitation & warm Wel-Come to our honorable Chief Guest Hon. Dr. Ulhas Patil, President–Godavari Foundation and distinguished Keynote Speaker Prof. Dr. Sandeep R. Shinde, Head – Dept of Computer Engg., VIT Pune, all enthusiastic participants at our esteemed Godavari College of Engineering to join us at this event through online platform. The committee looks forward to meet you in forthcoming International Conference in our esteemed organization.

All the Best…!!!

Dr. Vijaykumar Patil
Principal
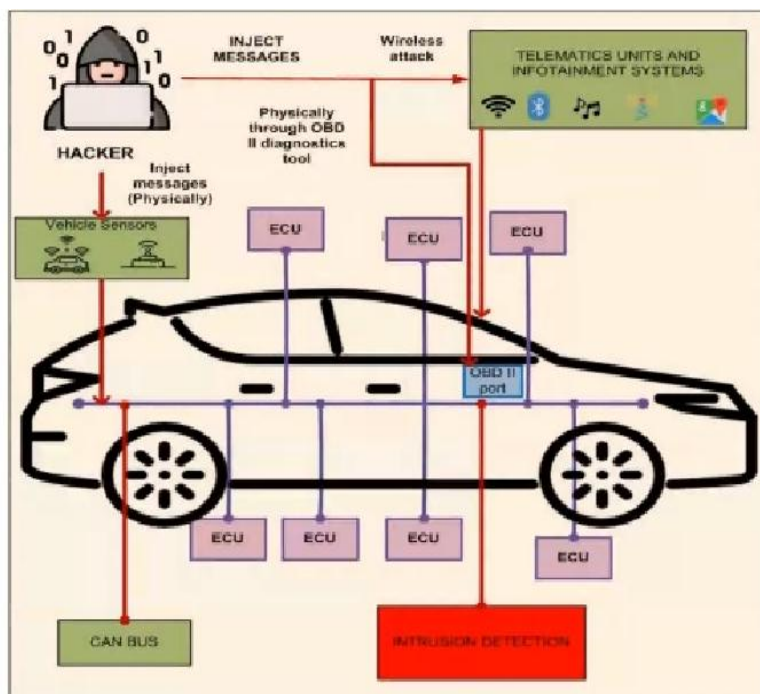Organizing Chair, ICRAEST-2023

Keynote Speaker's Desk

It gives me a great pleasure to be here as a Keynote Speaker in One Day Online International Conference on Recent Advances in Engineering, Science & Technology - ICRAEST-2023 dated 29 March, 2023 through online platform at an esteemed institute GF's Godavari College of Engineering, Jalgaon. I am very much thankful to the ICRAEST-2023 Chair for inviting me to share my views at this auspicious occasion.

Topic: An EfficientNet Based Intrusion Detection System for CAN Bus & Marine Ships

Autonomous Vehicles & CAN Bus

Vulnerable Points for Hackers

IDS in Marine Ship

Best Luck to all Researchers-Authors for presenting their work genuinely in this One Day Online International Conference on Recent Advances in Engineering, Science & Technology - ICRAEST-2023…!!!

Thank You…!!

Prof. Dr. Sandeep R Shinde,
HoD, - Computer Engg., VIT Pune
Eminent Keynote Speaker,
ICRAEST-2023

From Convener's Desk

I am delighted to say that ICRAEST-2023 is being organized at GF's Godavari College of Engineering, Jalgaon with all its glory.

The ICRAEST-2023 has been the trend setter in our country; the numbers of author participants are increasing every year.

We have observed a steady rise in the number of quality manuscripts being received in the conferences; ICERA-2012, NACCTESTM-2017, NACCTEST-2018, ICRAEST-2021 which was organized at our esteemed institute have got a very good number of citations of its papers by various researchers.

Major cornerstone has been the key person/researchers present for key notes and discussions in the conference. There are few authors who are attending the conference every year which in itself is an indication that they are getting good inputs from the conference for their research work.

I wish that ICRAEST-2023 will keep on growing in coming years with more impact on the International research community.

I thank the support of all authors, reviewers, IJIES (renowned CrossRef DOI, Google Scholar indexed international journal) executive editor & GF's GCOEJ faculty for making the conference a success.

Best Wishes,

Ingale Hemant T.
Convener,
ICRAEST-2023

From Chief Editor's desk

Dear ICRAEST-2023 Authors,

Thank you for your valuable participation in one day online International Conference on Recent Advances in Engineering, Science & Technology (**ICRAEST-2023**) at event organized on 29 March, 2023, in association with Dr. Babasaheb Ambedkar Technological University (**DBATU**), Lonere-Raigad (Maharashtra) and the renowned International Journal of Innovations in Engineering and Sciences (**IJIES**) (ISSN: 2456-3463) with a Google Scholar indexed, CrossRef DOI :10.46335 and SJIF: 5.856.

With the kind support of eminent advisory Prof. Dr. Karbhari V. Kale, Hon. VC- Dr. BATU Lonere & the authorities, personnel from renowned Industry like TCS and NPS USA, academicians & directorate from AICTE & IIT as well as from renowned Engineering and Technological institutions in Maharashtra & other states, GF's Godavari College of Engineering (**GF's GCOEJ**) is organizing ICRAEST-2023 under the aegis of IQAC and it's my honor to announce the proceeding of the ICRAEST-2023 with **ISBN: 978-81-949989-3-8.** We have received around 101 research papers by authors representing various states of the country. Happy to eye witnessing one of the milestone is that **ICRAEST-2023 has also received a paper authored by PG students Mr. Tejas Narkhede et.al., from Germany, Hochschule Ravensburg-Weingarten University in the field of Mechatronics Engineering.** This is really an appreciable response by the participating authors even in Corona pandemic. The board reviewed & accepted around 65 papers that have registered and will be published in renowned IJIES international journal as well as ICRAEST-2023 proceedings of our esteemed institution.

The ICRAEST-2023 team is very much thankful to all passionate authors for making this event successful through their up to the mark presentation during online platform and giving their best in this fruitful achievement. My heartfelt thanks to my esteemed colleagues & co-editors team for their consistent hands in the presenting this nicely composed ICRAEST-2023 Proceedings.

I am grateful for the support of members of the conference committee, Board of Reviewers, Thematic Session Chairs and to our respected Principal sir Dr. Vijaykumar H. Patil, Vice-Principal Prof. P. V. Phalak sir for giving an opportunity & believing the ICRAEST-2023 team for conducting this event with such an over whelming response, also special thanks to an eminent Keynote Speaker respected Prof. Dr. Sandeep R. Shinde, Head – Dept of Computer Engg., VIT Pune for enlightening the audience during the Inauguration on his expertise in the fields like Ethical Hacking, Privacy and Security in Online Social Media. It is my privilege to honor our dynamic and visionary President - Godavari Foundation, Hon. Dr. Ulhas Patil sir whose consistent focus integrates the faculties of our esteemed institute to move towards this great achievement.

Vijay D. Chaudhari
Chief Editor
ICRAEST-2023

ICRAEST-2023 Program Schedule: Wednesday, 29-03-2023

	TIME	EVENT
WEDNESDAY **29-3-2023** **PROGRAM OVERVIEW**	10.15 AM to 10.20 AM	**WEL-COME to all Guests and Delegates** **Google meet link to join Inauguration:** **https://meet.google.com/jup-sdqq-ifp**
	10.20 AM to 10.30 AM	**ICRAEST-2021 INAUGURATION** **Preface - Dr. Vijaykumar Patil, R/Principal, GF's GCOE Jalgaon**
	10:30 AM to 10:35 AM	**Launching of ICRAEST-2023 ISBN Proceeding** **By Hon. Dr. Ulhas Patil, President – Godavari Foundation, Jalgaon**
	10.35 AM to 10.45 AM	**Address by Hon. President (Godavari Foundation) Dr. Ulhas Patil sir**
	10:45 AM to 10:50 AM	**Vote of Thanks by Prof. V. D. Chaudhari**
	10.50 AM to 11.50 AM	**Keynote Speaker's Introduction by Prof. V. D. Chaudhari, Co-Convener, ICRAEST-2023** *Keynote Address:* **Dr. Sandeep R. Shinde,** Professor & Head, Dept. of Computer Engg., VIT, Pune.
		Inauguration Ends, Technical Session Starts
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		Track ME-03 Mechanical Engineering Google meet link to join: **https://meet.google.com/kfk-kjkd-gug**
		Track EE-04 Electrical Engineering Google meet link to join: **https://meet.google.com/yki-xsyk-ywt**
		Track BSH-05 Basic Sciences and Humanities Google meet link to join: **https://meet.google.com/tns-pkra-fei**
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Track–01 : Electronics and Telecommunication Engineering

(E&TC-1) Analysis of Radio Frequency Radiation from Cell Phone

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Abstract – *The analysis of electromagnetic field radiation exposure from cellular wireless system is expected to become more and more important in research field so that researchers can provide the solution of the effect of electromagnetic field radiation on human living things.Due to drastic use and demand of services by cellular wireless system from the human beings which in turn will increase EMF exposure. Similarly, the development of future connected devices like internet of things (IoT), will also contribute to an increase in EMF exposure. This paper provides a detailed survey relating to the prospective vigor vulnerability linked with EMF exposure and the different metrics that are currently used for evaluating, limiting and mitigating the effects of this type of exposure on the universal community. This paper also reviews the possible impacts of new wireless cellular technologies on EMF exposure and somenovel research directions for updating the EMF exposure evaluation framework and addressing these impacts in future wireless cellular systems.*

Keywords- *Electro Magnetic Field (EMF), Radio Frequency (RF), Global System for Mobile Communication (GSM), Specific Absorption Rate (SAR), Radio Frequency electromagnetic fields (RF-EMF)*

(E&TC-4) Otsu and Double-Dimensional Clustering with Wing suit Flying Search Algorithm (WFSA) for multi-level thresholding in image segmentation

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Abstract – *In recent years image segmentation plays very vital and important role in branch of computer vision. This process of segmentation is divides pixels of particular image into the groups related to image. here in this proposed algorithm we use another segmentation method which based on Otsu and Double-Dimensional Clustering with Wingsuit Flying Search Algorithm (WFSA) for multi-level thresholding in image segmentation (ODDC-WFSA-MTIS) is proposed. This algorithm having fast multilevel segmentation method as compared to other. Segmentation needs threshold level to*

separate the object from the background to read the image properly and identify meaningful content of an image. In this era it has found more attention of researchers. Thresholding is a process, used to split the image pixels in to different group/cluster by comparing the intensity value of image pixels with reference threshold level. The threshold value split the image pixels in a way that pixels having lower intensity-value than fixed threshold level belongs to one cluster while pixels whose intensity- value is more than fixed threshold level belongs to another cluster. Image segmentation method is useul for face recognition, medical image processing image analysis, object detection. In our proposed algorithm we have study about the thresholding technique of image segmentation and implemented in Wingsuit Flying Search Algorithm (WFSA) is used to optimize threshold, and then uses this thresholding value to segment the image.

Keywords- *Wingsuit, Flying Search Algorithm(WFSA), Otsu and Double-Dimensional Clustering*

(E&TC-5) Multi-Level thresholding in image segmentation using Remora Optimization Algorithm

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Abstract – *Image processing is commonly used to record more information that can be understood by humans or machines such as computers. Segmentation, thresholding and edge detection are important techniques used in computer aided vision and image processing. In digital images, visual search or subtraction can be done to reveal inconsistencies in the image to prove authenticity. To analyze the image more easily, the threshold is processed, which is a type of image segmentation that the pixel changes in the image to form the image. Initially, a color or grayscale image, for example, is converted to a binary image. So, simple black and white pictures. According to the number of image segments, the method can be divided into two groups: two-layer and multi-layer. In two-layer thresholding, the image is divided into two regions. In this type of measurement, pixels with a gray value greater than a certain T value are classified as target pixels, and other pixels with a gray value below T are classified as background pixels. And multi-level thresholding is a technique that separates grayscale images into different regions. It sets multiple thresholds for an image and splits the image into some bright areas, changing the background and more. This method is suitable for objects with colored or complex backgrounds where two layers cannot produce good results. This article is designed to improve image recognition performance for Remora optimization algorithm at various levels in image segmentation technology.*

Keywords- *Remora Optimization Algorithm for Multi- Level Thresholding in Image Segmentation (ROA- MTIS), Harris Hawks Optimization (HHO)*

(E&TC-6) An Implicit Multidimensional Parity based Data Coding and Decoding Algorithms with FPGA Implementation in Communication Systems

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Abstract – The usability and use of devices in wireless communication is increasing gradually. The mobility and security of the system and the data integrity in the communication process are the requirements of the communication technology for the system. This is the main reason for the development of low voltage generators. Wireless communication medium consists of multiple signals, low voltage communication that can affect any system. Therefore, in wireless systems operating with low-power signals, it is best to use good data encoding and decoding strategies to send data over the medium. The data decoder can recognize changes in the data transmitted in the communication method and correct the data. This encoding-decoding process is called Detection and Correction of error (EDAC) coding. One of such techniques, most often used in communication, is based on the concept of parity encoding and decoding. In the presented study, a multidimensional parity check based coding-decoding algorithm is proposed based on its results and simulation. With the help of proposed work, the associated process can be effectively used to detect and correct 3-bit errors in data transmission.

Keywords- Encoder, Decoder, FPGA, HVD, Parity, EDAC, Xilinx

(E&TC-8) Age and Gender Prediction using Deep Learning

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Abstract – Attribute information such as age and gender improve the performance of face recognition. A data of pertained images is taken that are used to train model using HAAR Feature- based Cascade Classifiers and our main objective is to train a model which can predict age and gender in most efficient way. We are using CNN deep learning method because it is time consuming and the process gives defined results of large dataset.

Keywords- Age and Gender prediction, Deep Convolutional Neural Networks, Deep learning, CNN

(E&TC-9) Early Detection System for Epileptic Seizures by using Machine Learning

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Abstract – An epileptic seizure is considered the most conspicuous neurological disorder nowadays that can distress to all ages, people. Around 6 decades million people all over the world are travail from epilepsy. Electroencephalograph (EEG) signals are most commonly used for the analysis and detection of seizures. As EEG signal contains an enormous amount of clatter artifact- included information, so many researchers are trying to support automatic structures for complete feature extraction. This paper provides a review of popular seizure detection methods and performance analysis of the proposed K-Nearest neighbor (KNN), Support Vector Machine (SVM), and Regional Neural Network (RNN) algorithms.

Keywords- Epilepsy, Electroencephalograph EEG, Seizures, Feature extraction

(E&TC-11) An IOT Based Smart Password Protected Door Lock Security System

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Abstract – Our society will always have a need for a low-cost electronic home security system that works in tandem with other security measures to make homes less vulnerable to intrusion. We're developing a system to provide automated door locks that need a password in order to alleviate this issue. We want to employ todays affordable technological tools to construct a comprehensive, individually tailored home security system. We're crossing our fingers that this effort will help deter bandits, thugs, and other bad guys from operating in the area. In everything that we do, our number one priority is always the protection of our loved ones. Every person has an inherent urge to feel protected. The ability to restrict entry at certain doors is a crucial aspect of our overall security system. The security of doors secured with traditional locks has been compromised to the point that they may be easily broken through by any determined intruder. Our goal is to establish a system that is useful around the clock. Password-

protected door locks ensure that only authorized individuals may enter restricted areas. This method allows us to set a password to open the door, so increasing security and preventing illegal entry. This method gives the user options for changing or resetting the password in case they forget the original combination. A more secure and economical method of locking and unlocking, this automated password-based system will bring convenience to the user without sacrificing safety.

Keywords- *Microcontroller (Arduino), Solenoid Lock, Keyboard, Display*

(E&TC-12) Design & Development of Automatic Vehicle Mover Using LIDAR System

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Abstract – The under-development systems will make it possible for previously unachievable technology to function in autonomous or self-driving automobiles. Improvements are done in the areas of vehicle safety and speed in accordance with our work, saving us time. The majority of accidents that occur on our roads are caused by drivers who are unable to react quickly enough to sudden circumstances. The rotating LIDAR sensor atop an autonomous vehicle plays a crucial role in the vehicles ability to navigate its environment. Atop the car, this sensor gathers information about its immediate surroundings, which the navigation system uses to steer the vehicle safely in the desired route. When compared to conventional driving methods, this one has a lot more potential uses. Automated systems that monitor traffic in real time and respond to abnormalities are one solution. The time and effort spent on daily activities can be reduced significantly thanks to this technique. When this system is established or developed for self-driving automated cars, it will make the monitoring and identification of moving objects, which have been the most difficult tasks for decades, much simpler.

Keywords- *Self-driving vehicles, LIDAR sensor, Navigation system, Sensors, Automation.*

(E&TC-13) Smart Breath Bag Unit and Evaluation of Vital Signs Module

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Abstract – *Due to Contraction motion in the diaphragm, reverse pressure is produced. By using this reverse pressure, human lungs suck the air from the environment for breathing. Contradictory motion is used to inflate the lungs by pumping type motion. Normally, Ventilators can generate 10-12 breaths per minute. With the help of Ventilator, we can also be able to monitor patient monitoring parameters like Temperature, SPO2, Heartbeat, Electrocardiogram and Electroencephalogram. The setting to adjust the time duration for inhalation to exhalation ratio is very important. We used a silicon ventilator bag which is coupled driven by DC motors with one side push mechanism to push the ventilator bag. For switching, here we use a relay switch and a variable pot to adjust the breath length and the BPM value for the patient. The vital sign module sensor is mainly used to monitor the necessity of the patient monitoring and display the results on LCD screen. There are different types of existing systems which can be used for operating an artificial manual breath unit bag. Such as Ruler chain mechanism, CAM mechanism, Rack and Pinion mechanism, Lead screw mechanism but here using front and back mechanism with the help of wiper motor function. The ventilator we designed and improved by using Microcontroller and Wi-fi module helps us to develop a low-cost, portable, and reliable Emergency Ventilator.*

Keywords- *Ventilator, ECG, EEG, BPM Value, LCD Screen, CAM Mechanism, Wi-fi Module*

(E&TC-14) Early Warning System for Forest Fires using Surveillance Drone

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Abstract – *Forest fires are one of the major reasons of concern in many regions in the world, causing widespread damage to both mankind and the ecosystem. The development of an efficient system for the early detection of forest fires is crucial to enable rapid response and minimize the damage caused. To address this issue, an early warning system for detection of forest fires has been proposed in this paper. The system comprises of a surveillance drone equipped with a First Person View (FPV) camera and a Machine Learning algorithm that can detect potential fire outbreaks in the forest. The Machine Learning algorithm with the help of Image processing and Computer vision technology, detects the occurrence of forest fire from the FPV camera video feed. If the algorithm detects a fire outbreak, an alert is sent to the forest rangers, allowing them to quickly respond and prevent the fire from spreading. The proposed system has the potential to revolutionize forest fire management by providing a reliable and efficient early warning system for forest fires.*

Keywords- *Forest fire, Convolutional Neural Networks (CNN), Unmanned Aerial Vehicles (UAV), You Only Look Once (YOLO), Inception model, Flight controller mechanism.*

(E&TC-16) Review on Performance Analysis of Lightweight Cryptographic Algorithm-CLEFIA

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Abstract – CLEFIA algorithm is a 128-bit block cipher with its key length being 128, 192 and 256 bits respectively, which is consistent to AES. CLEFIA is a light weight algorithm concerned with block cipher developed by well-known Sony company. CLEFIA name is given to this algorithm with reference to the French word clef which means "key". The block size used is of 128 bits and the key size may be 128-bit, 192 bit or 256 bits. CLEFIA operates on 128-bit block size with three different key sizes: 128-bit, 192-bit, 256-bits. In this Paper the performance analysis of Lightweight Cryptographic Algorithms based on execution time and memory use by algorithm is discussed.

Keywords- Cryptography, CLEFIA, Execution time Light Weight, Memory.

(E&TC-17) Healthcare System for Scheduled Medicine Dispensing and Reminder for Elderly People

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Abstract – The recent growth in technologies was extended into the field of health care to ease the approach towards the medical diagnosis and treatment. After the treatment the medication at right time is essential for the disease to get cured. In general, the patients may forget to take their pills at right time, and some people missed to take the medicines at an appropriate time because of their busy work schedule. The proposed system facilitates such persons by providing an alert according to the dosage schedule and in addition to this dispense the correct medicine as per the prescription to the concerned person with disability. The proposed system consists of a smart medicine box that is designed to help elderly patients taking their medications on time. The main feature of the proposed model is the automatic opening of the box and alarm will be raised to alert the patient to take the medicine. Another distinct feature is a mobile application is associated with the system which gives the privilege to the caretaker of patients to check and program the medicine box as per the medical prescription of the doctor. If the person under care does not take medicine even after the medicine is being dispensed, the caretaker will be informed via the mobile application to remind the patients manually. When the medicine box becomes empty the system

will inform the caretaker through message to the registered mobile number to refill the pill box for further usage. Apart from the medication to the patients at right time, the entire data related to the patient will be available in the cloud for the convenience of assessment of patient health condition at any time. Thus, the proposed system will aid the people to monitor their health with right medication.

Keywords- dosage, pill box, medicine dispensing, reminder, schedule.

(E&TC-18) Raspberry pi based Assistive System for Bedridden Persons

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Abstract – In recent year many assistive systems for disabled have been developed. In this paper we present a unique assistive system for bedridden persons they cannot move anywhere which work on Human machine interface using raspberry pi. Tetraplegia and quadriplegia is a paralysis condition where a patient cannot move parts below neck. Such persons may face some problem like dumb, deaf etc. The proposed assistive system is to enable communication between tetraplegic patient and caretaker. The proposed system work on voice based command and performs the action against the input. The patient can also use this system for device automation, for controlling fan, light and other devices HMIs to monitor and configure set points, control algorithm, send commands and adjust and establish parameters in the controller. Used python programming language.

Keywords- Raspberry pi, Human Machine Interface, Voice Command Algorithms.

(E&TC-20) Smart Assistant For Blind Person

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Abstract – This paper represents about smart walking stick that alerts blind people over obstacle like vibration of stick and image processing part that detect object through camera and give message to blind person through Bluetooth headset.

Keywords- Node MCU, Bluetooth Headset, Camera, Ultrasonic sensor, Aurduino, buzzer.

(E&TC-22) Dynamic Pollution Under Control by Using IoT

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Abstract – *According to the 2023 report of the world population review, India is the third-most polluted country in the world, with an average PM2.5 concentration of 51.90. Out of the 50 most polluted cities in the world, 39 of them are located in India. Also, according to a Switzerland firm known as IQAir recently released its report on world air quality 2022 where India is at the 8 th spot out of the 10 most polluted countries in the world. In India, the transportation sector contributed almost 20-35 per cent of the PM2.5 pollution. Therefore, we can say one of the main sources of air pollution is transportation sector or fuel vehicles. Our project is mainly focused on measuring, displaying, monitoring and analyzing the harmful poisonous pollution causing gases that are carbon monoxide and hydrocarbons.*

Keywords- IoT, Node MCU, Dynamic, Sensor

(E&TC-24) Smart System for College Regular Operational Management

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Abstract – *The smart system for college Regular operational management is used to maintain college activities like to maintain the student attendance provide information of student to their parents through message. In this paper with the help a GSM module we operate the opening closing door smartly.*

Keywords- Microcontroller, Relay Module, Resistor, Capacitor, DC motor, Diode, PIR Sensor, GSM module, Led Transformer, Connectors

(E&TC-25) Devanagari Script based Fancy Vehicle Number Plate Recognition using Machine Learning Approach: A Survey

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Abstract – *It is important to ensure that all vehicles have a standard number plate as required by law to ensure proper identification and safety on the roads. The vehicle number plate recognition systems are a useful tool for improving security, traffic management, and overall efficiency in various industries. Currently, many techniques have been developed to detect vehicle number plate and recognize the characters but work related to fancy number plate detection specifically in Devanagari script is untouched yet. This paper surveyed various methods to detect and recognize the vehicle number plate depending on specified applications. We implemented the system using embedded devices and developed the number plate localization method. Finally, we proposed the machine learning approach to recognize the character from fancy number plate.*

Keywords- *Character Segmentation, Global System for Mobile Communications, ESP Module, Fancy Number Plate Recognition, Machine Learning, Regional Transport Office.*

(E&TC-26) CHATBOT USING PYTHON

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Abstract – *The days of solely engaging with service through a keyboard are over. Users interact with the system more through voice assistant and chatbot.A chatbot is a computer program that can converse with humans using artificial intelligence in messaging platforms. Everytime the chatbot gets input from the user it saves input and response which helps the chatbot with little initial knowledge to evolve using gathered responses. With increased responses, chatbot precision also gets increased. The ultimate goal of this project is to add a chatbot feature and API for Smt. Indira Gandhi college of engineering. This project will investigate how advancements in artificial intelligence and machine learning technologies are being used to improve many services. Specifically, it will look at the development of chatbots as a channel for information and distribution. The program selects the closest matching response from the closest matching system that matches input utilizing WordNet, it then chooses responses from known selection of statements for that response. This project aims to implements online chatbot system to assist user to access college website, using tool that expose artificial intelligence method such as NLP, allowing user to communicate with college chatbot and using a chatbot that can respond to natural language input and has beencreated using appropriate machine learning techniques.*

Keywords- *NLP, Chatbot, MySQL, DJANGO*

(E&TC-27) A Review on Grid-Tied Solar Photovoltaic System

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Abstract – *Solar energy is available tremendous in nature and solar photovoltaic panels generates clean energy, its efficient use thus contributes to sustainable development. As energy need continuously increasing and fossil resources decreasing, the research and development of grid-connected photovoltaic energy has become an important part of the secondary energy source in the majority of countries. This paper presents a detail review of the advances and recent technological developments of the Grid Tied Solar Photovoltaic Systems (GTSPVS). The framework of the grid-tied PV system consists of Photovoltaic (PV) array, Maximum power point tracking (MPPT) techniques, Direct Current to Direct Current (DC-DC) converters, Inverters, and control algorithms for power quality improvement which is thoroughly reviewed for better understanding of GTSPVS. Here in this paper we have also discussed the power quality issues and regulations of Grid-Connected PV System, types of DC-DC Converters, Inverter topologies and different control techniques for GTSPVS to make a significant contribution to sustainable power system for high efficiency gains of PV systems with reliable integration into the grid. This paper presents GTSPVS architecture in details along with its benefits to promote maximum and efficient use of GTSPVS. The fast advancement, innovations and developments in GTSPVS will play a significant role in efficient solar power generation along with local employment in coming days.*

Keywords- *Grid Tied Solar Photovoltaic System, Photovoltaic, Maximum Power Point Tracking, Total Harmonic Distortion*

(E&TC-28) Hawk Eye Radar System

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Abstract – *In recent years, there have been many advancements in RADAR technology and signal processing techniques, leading to new applications beyond traditional uses in defense and space [1][8]. RADAR, short for Radio Detection and Ranging, is a detection system that employs radio waves to identify characteristics of detected objects such as range, height, direction, and speed. In this paper, we present a novel radar system that utilizes ultrasonic sensing technology for non-contact detection of objects [2]. The sensors movement is controlled by a small servo motor, and an Arduino Uno board is used as the microcontroller for the system.*

Keywords- *Radar, Ultrasonic sensor, Non-contact echnology, Arduino UNO, SONAR.*

(E&TC-29) EXPERIMENTAL ANALYSIS OF LIDAR POINT CLOUD DATA

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Abstract – Our goal in this paper is to determine how many points of the Lidar point cloud do come fro measurements of the Car. The Data is recorded by different sensors like Camera, Blickfeld Cube sensor and Velodyne Puck sensor for forward and back-word movement of the car[1]. For this case, 240 distinct frames of Blickfeld and Velodyne sensor recorded over 25m distance. We need to compare the number of points we can expect in what distance for all recordings. A typical LiDAR data product is an extensive collection of points cloud data of accurate 3D points with other attributes like intensity and GPS time. There are plenty of tools and softwares to work with LiDAR point cloud data like Desktop-based(QGIS), Web-based(Plas.io).

Keywords- Blickfeld Cube sensor, Velodyne Puck sensor, Desktop-based(QGIS), Web-based(Plas.io), intensity, GPS time.

(E&TC-30) Machine Learning for COVID-19 Image Analysis

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Abstract – COVID-19 is a worldwide epidemic, as announced by the World Health Organization (WHO) in March 2020. Image Processing methods can play vital roles in identifying COVID-19 patients by visually analyzing their chest x-ray images. As the cost and required time of conventional RT-PCR tests to detect COVID-19, researchers are trying to use medical images like X-Ray and Computed Tomography (CT) images to detect it with the help of Artificial Intelligence (AI) based systems. In this paper, we analyze different classification methodslike GLCM and Gabor features. Performance of SVM, KNN and Naïve Bayes emerging AI-based models that can detect COVID-19 from medical images using X-Ray or CT of lung images. We clant COVID images ssified by usng datasets, preprocessing techniques, segmentation, feature extraction, classification and experimental results which can be helpful for finding future research directions in the domain of automatic diagnosis of Covid-19 disease using Machine learning,

Keywords- COVID-19, SVM, KNN, Machine Learning

(E&TC-31) Object based vehicle track navigation system

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Abstract – An Intelligent object and tracing autonomous vehicles are required in various applications such as space, transportation, industry, and defence. Mobile robot vehicles can also handle material handling, disaster relief, patrolling, and rescue operations. Therefore, a simple and reliable vehicle is required to travel freely in a static or dynamic environment. Smooth and safe navigation of mobile vehicles through the cluttered environment from the start position to the goal with following a safe path and producing optimal length is the main aim of tracking object navigation. Regarding this matter, researchers have explored several techniques for navigation path planning, out of which this sensor and tracing of already decided track navigation is adopted here in the implementation. This system has tried to develop navigation techniques that are well-suited for static and dynamic environments and can be implemented for the real-time navigation of mobile vehicles.

Keywords- Navigation, track, object, vehicle, path

(E&TC-32) Plant nurturing and disease detection system

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Abstract – This system has developed an automated system to determine whether the plant is normal or diseased. The normal growth of the plants, yield and quality of agricultural products is seriously affected by plant disease. This paper attempts to develop an automated system that detects the presence of disease in plants. An automated disease detection system is developed using sensors like temperature, humidity and colour based on plant leafs health conditions variations. The values based on temperature, humidity and colour parameters are used to identify the presence of plant disease.

Keywords- Plant, detection, sensor, temperature, humidity, color

(E&TC-36) Raga Identification Using Mel Frequency Cepstral Coefficient

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Abstract – Now a days most of the people wants to listen music but very few people can tell the type of Raga in music. Ragas are the soul of Indian classical music. Raga is most important part in Indian music. Raga plays a key role in the distinctive sound of Indian classical music. It is a melodic sequence that serves as the basis for improvisation and composition in Indian music. Each style of raga has its own scale, distinct set of notes, melodic patterns, and even spiritual associations. With Raga you can explore these styles and dive into the rich history behind them. Swaras are not just about learning the nuances of music. It is a concept which has been designed to blossom and be explored by musical artists. It consists of many features that help provide the best melodies out of any piece. By understanding and using these features, you can take your singing and music to a whole new level. Raga identification was performed on three ragas: Darbari, Khamaj, and Malhar. In this paper, we offer a method for determining the ragas of an Indian music signal. Raga recognition offers a wide range of applications in digital music indexing, recommendation, and retrieval. In this paper, we attempt to solve the raga classification problem utilising MFCC (Mel Frequency Cepstral Coefficient) in a non-linear SVM (support vector machine) framework. We tested the proposed strategy on our own raga dataset and found that using information from features relevant to Indian music improved accuracy by 92.47%.

Keywords- swaras, raga identification, SVM, MFCC and chromagram

(E&TC-41) Security monitoring and self-control system for home

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Abstract – In this paper with the increase in energy consumption and population, there is a grave need to conserve energy in every way possible. The inability to access and control the appliances from remote locations is one of the significant reasons for energy loss. The users use a web or an Android application to instruct these systems. This system can use various communication methods such as Wi-Fi, GSM, Bluetooth, and Zig Bee. Different controlling devices and configurations can be found in existing systems. Such systems have already been found in many places for various applications. This project presents a home automation system using Wi-Fi, an Android application and google firebase. It's a real-time database system

Keywords- Embedded Systems, Remote access Systems, Mobile Applications, Web Applications and Home Automation System

Track–02 : Computer Science & Engineering

(CSE-1) Fitness And Healthcare App

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Abstract –*Exercise and body workout are referred in the action of being fatter, fitter, stronger and inactive in day to day life. There are numerous android apps goaling to replace or justify a personal assistant is growing. However, due to this arises a question about the reliability, safety, integrity, and even security of the information and facts provided by such android systems. In this study, we researched android apps that treat as renown virtual personal assistant. We present a systematic review of top 10 popular android apps, clustering them according to their characteristics and properties and attributes. The choosing polls considers the following set of keywords: "fitness", "Android App", "features", "daily plan", "systematic review", "diet plan". Based on the review of the popular android apps, we promote a new research and present in detail guidelines on generating android apps for personalized workouts and exercises. Finally, we researched and investigated how an android app will promote health, fitness, active and well-being lifestyle of users and either the popular applications are used in any studies.*

Keywords- *health, Android App, features, daily plan, systematic review, diet plan.*

(CSE-2) EFFECTIVENESS OF MACHINE LEARNING AND DEEP LEARNING MODELS FOR DIABETES PREDICTION

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Abstract*- Hyperglycemia alters blood sugar levels. Hyperglycemia, often known as high blood sugar, is the result of uncontrolled diabetes, which may cause nerve and blood vessel problems. Hyper-glycemia, or high blood sugar, is a typical result of insufficient glucose management and is associated with several significant health complications, most notably those affecting the nerves and blood vessels. Machine learning (ML) and deep learning (DL) predictive models have seen tremendous development throughout industries, including health care, making early diagnosis of diabetes a breeze. The treatment of chronic diabetes, one of the world's most prevalent illnesses, might benefit greatly from improved diagnostic efficiency. Here, we examine the relative merits among several ML and DL approaches to the problem of early diabetic illness prediction. The*

primary objective of this research study is to organize and conduct out diabetes diagnosis and prognosis with several machine learning approaches and then analyze the results of these methods to determine which one is the most accurate classifier. In this work, we take a multifaceted approach to diabetes and its prediction by investigating a wide range of disease-related characteristics. Many Machine Learning classification methods, including Random Forest (RF), Logistic regression (LR), Support Vector Machine (SVM), Multilayer Perceptron (MLP), and Decision Tree (DT), Gradient Boosting, are applied to the canonical Pima Indian Diabetes Dataset (PIDD) (GB). There is a wide range of precision amongst the models used here. A technology that can accurately predict diabetes is shown in this research. The results of this research indicate that one of the Data mining models, random forest network models have superior accuracy in making diabetes forecasts.

Keywords- Diabetes prediction; Machine learning; Deep learning; Classification; ANN.

(CSE-3) Detection of Diabetic Retinopathy Using Deep Learning

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Abstract- Diabetic retinopathy is a major problem worldwide and many people are losing their vision because of it. The disease gets severe if it is not treated properly at its early stages. In this disease, the retinal blood vessel gets damaged due to high blood sugar levels which eventually blocks the light that passes through the optical nerves, making the patient with Diabetic Retinopathy blind. Diabetic Retinopathy is detected using manual screening, but this requires a skilled ophthalmologist which may not be available everywhere, and thus diagnosis takes a lot of time. Therefore, we decided to build a deep learning model using which we will be able to detect multiple stages of severity for Diabetic Retinopathy. So, we studied and built widely-discussed models - Support Vector Machine (SVM) and Convolutional Neural Network (CNN) - and conducted a comparative study to determine the most suitable model. We found that CNN outperformed SVM in terms of accuracy and efficiency, making it the most suitable model for detecting multiple stages of severity for Diabetic Retinopathy. Thus, this automatic diabetic retinopathy detection model built using CNN can replace manual screening, enabling ophthalmologists to focus on patient care. Additionally, this model can assist inexperienced ophthalmologists in accurately diagnosing diabetic retinopathy.

Keywords- Diabetic Retinopathy, Blind, Retina, Deep Learning, Ophthalmologist, Manual Screening

(CSE-5) Predicting Socio-Economic Development Using Deep Learning

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Abstract- *For Uniform growth across the country there is a need to find socio-economic status and monitoring of remote areas. It is about the current state of development or the process state of socio-economy of that place. In our paper, we will predict the development in an location using satellite images provided by various sources using a model that we create which will perform classification and use various image preprocessing techniques. The top things considered during monitoring are the roof top of houses, agriculture, water bodies and constructed roads etc. Convolution neural networks are known for its inbuilt libraries such as OpenCV, NumPy etc. OpenCV is good library has it known for increasing speed of process that is executing and also classifying the image. CNN also provides better accuracy for deep learning processes. In this paper we have use basically three modules: preprocessing of image, CNN classification and predict the social economic status by using the four basic parameters agriculture land, water resources, roads, and structure.*

Keywords- *Numpy, OpenCV, Satellite dataset, CNN, google Maps*

(CSE-9) AGRIBOT: THE AGRICULTURAL ROBOTS

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Abstract- *An agricultural robot or "Agribot" is a robot used for agricultural purposes. The introduction of robots in agriculture has dramatically increased agricultural productivity and production in several countries. In addition, the use of robots in agriculture has reduced the operational costs and lead time of agriculture in various fields of agriculture. Agriculture is the most important and important economic activity of all time. Pre-industrial agriculture was usually a household/subsistence where farmers grew most of their crops for their own consumption rather than for trade. But now a structural change is taking place in agriculture, which is leading to a crisis situation. The growth rate of agricultural production has gradually slowed in recent years due to labor shortages and rising costs. Also, the prices of seeds and chemicals are increasing, which creates the need for their effective use. A recent study shows that the world should double agricultural productivity to feed a growing population by 2050. At that time, effective management of natural resources meets the growing demand by adopting modern technology in agriculture to increase agricultural productivity. So, as farmers struggle with higher prices for seeds and chemicals, labor shortages and global food demand are forcing them to think about innovative and more efficient farming methods.*

Keywords- *Agribot, BoniRob, GPS, Robot, Weeding Crops , Spraying Drones*

(CSE-10) Retail Store Analytics using Facial Recognition

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Abstract—In this paper, we present a system for real-time age, gender, and emotion detection using webcam and machine learning techniues. The system is designed to capture real-time video footage of customers in a retail store and extract demographic and emotional information to perform retail analytics. We used the UTKFace dataset to train our age and gender model and the FER dataset to train our emotion model. The trained models were integrated with OpenCV and TensorFlow to detect faces, predict age, gender, and emotion in real-time. The system stores the collected data in a MySQL database, which is then used to perform various analyses to gain insights into customer behavior. We provided analysis using Flask and built a web interface for getting the insights on our data. The results show that our system is effective in capturing and analyzing customer information in real-time and can provide valuable insights for retailers to make informed decisions. Our system can be extended to include other features such as customer segmentation, heatmaps, and customer journey analysis. Overall, our system provides a powerful tool for retailers to understand customer behavior and improve the shopping experience.

Keywords— UTKFace, FER dataset, age, gender, emotion, Flask

(CSE-15) FACE SKETCH CREATION AND IDENTIFICATION

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Abstract – Forensic face sketching is a technique used by Investigatory organizations to help identify suspects in criminal investigations. This paper will discuss the process of forensic sketch construction and identification. The paper will begin by providing an overview of the history of forensic sketching and its role in criminal investigations. It will then describe the process of creation of a face sketch, including the initial interview, sketching techniques, and finalizing the sketch. The paper will also discuss the challenges and limitations of forensic sketching and identify potential solutions to these challenges. The paper will conclude by giving a summary of the present status of the research in this field and proposing possible areas for further study.

Keywords: Face Sketch and Construction, Face Recognition, Criminal Identification, Deep Learning,Cloud Computing, AWS.

(CSE-16) Android Based Smart Healthcare Application

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Abstract: *Hyperglycemia alters blood sugar levels. Hyperglycemia, often known as high blood sugar, is the result of uncontrolled diabetes, which may cause nerve and blood vessel problems. Hyper-glycemia, or high blood sugar, is a typical result of insufficient glucose management and is associated with several significant health complications, most notably those affecting the nerves and blood vessels. Machine learning (ML) and deep learning (DL) predictive models have seen tremendous development throughout industries, including health care, making early diagnosis of diabetes a breeze. The treatment of chronic diabetes, one of the world's most prevalent illnesses, might benefit greatly from improved diagnostic efficiency. Here, we examine the relative merits among several ML and DL approaches to the problem of early diabetic illness prediction. The primary objective of this research study is to organize and conduct out diabetes diagnosis and prognosis with several machine learning approaches and then analyze the results of these methods to determine which one is the most accurate classifier. In this work, we take a multifaceted approach to diabetes and its prediction by investigating a wide range of disease-related characteristics. Many Machine Learning classification methods, including Random Forest (RF), Logistic regression (LR), Support Vector Machine (SVM), Multilayer Perceptron (MLP), and Decision Tree (DT), Gradient Boosting, are applied to the canonical Pima Indian Diabetes Dataset (PIDD) (GB). There is a wide range of precision amongst the models used here. A technology that can accurately predict diabetes is shown in this research. The results of this research indicate that one of the Data mining models, random forest network models have superior accuracy in making diabetes forecasts.*

Keywords—*Diabetes prediction; Machine learning; Deep learning; Classification; Artificial Neural Network (ANN)*

(CSE-18) Privacy Protection for Cloud Based Online Transaction Using Steganography & Visual Cryptography

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***Abstract –** In the present days, we are moving towards modern technologies of cashless transactions. Whenever we are doing online transactions, some data is produced. Day by day the production of data is increased to manage such data cloud computing is the best solution, it is based on pay as per use strategy, but while sharing the personal data in cloud environment security is important issue and this can be solved by using Steganography and visual cryptography. In this study, we are providing secure solution for the online transaction with the combination of steganography and visual cryptography by introducing new certified authority in between the customer and merchant. The certified authority prohibits the merchant to access and store the customer's confidential data.*

***Keywords-** Steganography, Cryptography, Steganoimage*

(CSE-19) A Review on Diabetic Detection using Machine Learning

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***Abstract –** Healthcare data typically consists of a variety of variable types, missing values, and is quite large, complex, and heterogeneous. These days, having access to such knowledge is required. By building models from healthcare data sets, such as those pertinent to patient data sets for diabetes, data mining can be utilized to extract knowledge. In order to predict the prevalence of diabetes using 18 risk factors, three data mining algorithms—Self-Organizing Map (SOM), C4.5, and Random Forest—are used to adult population data from the Ministry of National Guard Health Affairs (MNGHA), Saudi Arabia. Random Forest performed better than other data mining classifiers in comparison.*

***Keywords-** data mining, machine learning, Diabetes, Decision Trees, Healthcare, Logistic Regression, Naïve Bayes, Random Forrest, SVM*

(CSE-21) Review on text-based personality prediction from social media data

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Abstract: One factor that influences how people interact with others is personality. One could consider a person's personality to be a crucial aspect of their behavior. People's interpersonal interactions shape their personalities. The numerous personality prediction studies that have been carried out by different researchers are covered in this paper. This system will be useful for businesses and other groups that hire candidates more for their personality than for their technical expertise.

Keywords— Natural language processing; Myers Briggs type indicator; Machine learning; Support Vector Machine

(CSE-24) CNN approach for prediction of Covid-19 from X-ray images

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Abstract: COVID-19 also referred to as Severe Acute Respiratory Syndrome Corona virus-2 (SARS-CoV-2) is a very contagious virus infection and has huge effect on global health. The virus is spread from infected person who talks, sneeze, or cough. The most standard method for diagnosing COVID-19 is RT-PCR, performing RT-PCR to detect COVID might be risky, but the X-rays are easiest way available used for detecting infections in the lungs. Using Artificial Intelligence (AI) techniques and convolutional neural networks (CNNs) have achieved fruitful results in medical image analysis and classification. This study suggests a CNN model using TensorFlow for analysing chest X-rays to predict COVID-19 pictures. The study follows a flexible method of deep learning utilizing the CNN model for detection and prediction if a patient is impacted or not with the disease employing image of a chest X-ray. The trained model produced using TensorFlow achieved an accuracy rate of 97% during the performance training.

Keywords— Prediction, COVID-19, TensorFlow, Convolution Neural Networks (CNN)

(CSE-31) Improving the Deployment of Vehicular Quadrotors in Challenging Environments: Addressing Control, Perception, and Planning Issues with Innovative Solutions

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Abstrat- *Despite the significant advancements in aerial robotics, the deployment of unmanned aerial vehicles (UAVs) in complex, cluttered, and dynamic environments, such as urban areas, remains challenging. Vehicular Quadrotors have emerged as a promising solution combining the advantages of ground vehicles and quadrotors to navigate complex environments. However, several technical challenges need to be addressed to enhance the effectiveness and efficiency of Vehicular Quadrotors. This research aims to investigate the control, perception, and planning problems associated with Vehicular Quadrotors and propose innovative solutions to enable their successful deployment in various applications, such as aerial surveillance, search and rescue, precision agriculture, and transportation.*

Keywords— *aerial robotics, unmanned aerial vehicles (UAVs), complex environments, urban areas, Vehicular Quadrotors, ground vehicles, quadrotors, control, perception, planning, effectiveness, efficiency, technical challenges, innovative solutions, aerial surveillance, search and rescue, precision agriculture, transportation.*

(CSE-32) A Review On Plant Leaf Disease Detection Using Image Processing

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Abstrat- *Agribusiness is crucial to every nation's economy and is dependent on the vast majority of Indians to exist. The disease has invaded certain plants. Diseases must be recognized as soon as feasible. The development of disease detection models necessitates careful monitoring of every plant. This is important because we may use the parameters to impose limitations. Thus, healthy cropping is crucial for the developing agricultural industry. One of several elements that affect crop productivity is the early detection of illnesses.*

Keywords— *Image Acquisition, Image Pre-possessing, Image Segmentation, Image Processing, Feature Extraction, NB Classifier, KNN Classifier, DT Classifier, SVM Classifier*

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(CSE-33) Comprehensive Review on Enhancing Role of Machine learning for Intelligent Data Analysis and Automation in Cyber Security

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Abstrat- Due to the rapid growth of different types of cyber-attacks and threats, traditional security solutions are not sufficient to meet today's security challenges. The use of machine learning techniques is essential to provide automated security systems that are dynamically improved and updated through the analysis of security data. In this article, we give an overview of machine learning technique and its applications , highlighting how they can extract valuable insights from network data and using them for intelligent data analysis and security automation of the network. The future of machine learning in cybersecurity, according to our research, as well as related research directions, are finally highlighted. Our aim is to analyse current and future applicability of machine learning and related methods in cyber security.

Keywords— Data Analysis, Machine learning, Automation in Cyber security, cyber-attacks, Internet of things (IoT)

(CSE-34) Study of Efficient Dynamic Resource Allocation in Industrial Internet of Thing Using Machine Learning

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Abstract – IoT systems are one of the most important areas of developing technology. IoT application solutions are becoming widespread and their usage areas are expanding, one such important research area is Industrial IoT. Therefore, studies to develop IoT technologies are also increasing. Although the benefits of developing technology are enormous, it includes some difficulties. One of the most important challenges in IoT systems is resource allocation and management. Cloud, fog, or edge computing methods are used for storage and computing processes in Industrial IoT. Data perceived from resource-constrained devices reach these computing nodes. Resource allocation and management must be made in the cloud, fog, or edge nodes for computing and storage. The correct and complete resource allocation and management are very important for the performance of the system. Numerous methods are proposed for this. Machine Learning -based methods are one of them. This study reviewed ML based IoT resource allocation and management for Industrial IoT. Also, different ML based, optimization based and reinforcement learning based resource allocation literature in terms of various performance parameters is compared. Future studies can focus on scalability of the proposed work and also expand and implement it in larger and more complex model.

Keywords- Resource Allocation, Dynamic, Internet of Things, Industrial IoT, Machine Learning

(CSE-35) An Analysis on Effective Demand Prediction Using Machine Learning

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***Abstract** – Effective demand prediction is a crucial aspect of business planning, enabling organizations to optimize their operations and make informed decisions. With the increasing availability of big data and machine learning techniques, businesses can leverage these tools to predict demand accurately. This review explores the use of machine learning-based business intelligence data analysis to predict effective demand. The study reviewed the different machine learning algorithms that can be used for demand prediction, such as regression, LSTM, neural networks, deep learning methods. Finally, the study will highlight the benefits, challenges and future scope of using machine learning-based business intelligence data analysis in demand prediction. We can conclude that by leveraging these techniques, businesses can make better decisions, optimize their operations, and improve their bottom line.*

***Keywords-** XGBoost, MAPE, RSME, Forest Network, Kaggle*

Track–03 : Mechanical Engineering

(ME-1) BLDC SPEED CONTROL USING PID, PWM & HARDWARE DEVELOPMENT

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Abstract – *This study sheds light on different types of speed control of a Motor with a powerful simulation model for MATLAB/SIMULINK-based PID-controlled, PWM hysteresis & Hardware Development using IR sensor based brushless direct current motor drive. Using a PID controller, PWM hysteresis & Hardware the Brushless direct current (BLDC) motor can be effectively managed. The BLDC motor mathematical modelling will be confirmed. Using all these models, it is simple to observe and analyze the dynamic properties of BLDC motors (speed and torque), as well as the current and voltages of the inverter components.*

Keywords- *BLDC Speed Control. PID, PWM hysteresis & hardware & MATLAB/SIMULINK..*

(ME-3) A THERMAL ADAPTATION ARCHITECHTURE - HELIOTROPE

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Abstract – *The Heliotrope is a rotating solar infrastructure which gave rise to the Sonnenschiff Solar Development and also the recent German solar sector. It was designed and developed by architect Ralph Disch in 1994 and is able to generate five times the energy it consumes. It is precise in its ability to rotate to adjust the face accordance to the sun, regardless to position in the sky is, which enables the Heliotrope to attain this, with help of triple-pane thermal glass windows, solar thermal pipes and a large solar array mounted on its top roof. The Heliotrope is therefore one of the world's first truly energy-surplus homes. This project deals about the structure of heliotrope building. The efficiency of structure in such manner that it keep worm in side when there is cold outside and vice versa.*

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Keywords- *Heliotrope, Thermal Adaptation, Solar*

(ME-4) DESIGN AND DEVELOPMENT OF THE S-WHEEL SUSPENSION SYSTEM

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***Abstract** – In this paper, designing a self-suspension wheel for cycle or motorcycle. This idea come out as we see in daily life cycle or motorcycle upgrade with new technologies and many more but nothing much consideration for suspension or tyres wheels .After that we decided to accommodate some ideas about suspension and modified with wheel of two wheeler and the small jerks of road that cannot be minimised by the suspension forks of two wheeler that can be eliminated or absorbed by that suspension arms which are arranged radially in wheel rim There is uncomfortable for Rider and pain from this small jerks and this suspension definitely absorbed this jerks and eliminate them and give comfort for rider.*

***Keywords-** S wheel, Suspension , Comfort Ride*

(ME-5) EXPERIMENTAL INVESTIGATION OF KERF WIDTH AND KERF TAPER IN FIBER LASER CUTTING OF ALUMINIUM ALLOY

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***Abstract** – In order to examine the impact of process parameters on the laser cutting process, the laser cutting of Al 6061 is explored in this work using a fibre laser with variable laser power. The Kerf Width and Kerf Taper Angle are considered as a response characteristic. Response Surface Methodology (RSM) approach is used for experimental design. Box-Behnken Design (BBD) method of Response Surface Methodology (RSM) is used to plan the experiment.*

***Keywords-** Laser Cutting, Response Surface Methodology, Laser Beam Machining, Kerf Width, Kerf Taper Angle.*

(ME-8) EXPERIMENTAL ANALYSIS OF HEAT TRANSFER CHARACTERISTICS THROUGH AEROFOIL SHAPED PIN-FIN WITH CIRCULAR HOLES USING PYTHON

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Abstract – *This report presents the results of an experimental analysis of heat transfer enhancement through the use of different sizes of aero foil Pin-fin with circular holes by forced convection. The project aimed to investigate the thermal performance of various types of aero foil shape fins with circular slots of aluminum material, in terms of heat transfer coefficient, Nusselt number, friction factor, and effectiveness of fins. The experiment was conducted on a test section with an internal cross-section along the direction of flow. The experiment was carried out for 12 Pin Fin sets with variations in parameters such as height, number of holes, and diameter of these holes, and velocity was varied from 3m/s to 12m/s. The report outlines the methodology used in the experiment and provides a detailed analysis of the results. Overall, the report concludes that the aero foil Pin-fin with circular holes is a highly efficient heat transfer component with the potential for application in various industrial fields.*

Keywords- *Aero foil Pin-fins, forced convection, thermal performance, heat transfer coefficient, Nusselt number, friction factor, aluminum material, velocity.*

(ME-9) SOLAR POWERED SEED SOWING MACHINE

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Abstract – *Agriculture Sector is the backbone of Indian Economy. There is a need for improvement in agriculture sector, which can be achieved by using advanced technological methods for farming processes like digging, sowing and irrigation etc. This paper represents a machine which can carry out various farming activities simultaneously.Solar Panel is used to convert solar energy into electrical energy and a DC Motor converts this electrical energy into mechanical energy to rotate a cutter for digging operation. This machine maintains seed to seed spacing and row to row spacing. It also decreases the cost of sowing the seeds and requirement of labour.*

Keywords- *Cutter; DC Motor; Mechanization; Seed Hopper; Solar Energy; Water Tank.*

(ME-10) IOT BASE AGRICULTURE MONITORING SYSTEM USING ARDUINO AND NODE MCU

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***Abstract** – Agriculture is an integral part of Indian economy. Over 60% of Indian population based upon agriculture and one third of the income of nations arises from agricultural practices. Hence it plays a vital role in the development of the country. Various issues related to farming is continuously hampering the development of the country. Possible solution for these problems is to opt for modernized agriculture that comprises of modern trends. Hence, agriculture can be made smart using IoT and other technologies. Smart agriculture increases crop yield, decreases water wastage and imbalanced use of fertilizers The highlighting feature of this project is that it measures the different agricultural parameters affecting the yield and it also uses a GPS module to get the information about the location. Secondly it sends all the data to the cloud where it can be further analyzed. Thirdly this project also contains an android mobile app providing an easy access of information to the farmer. Moreover this project presents a smart irrigation system that optimizes water usage*

***Keywords-** IoT, Smart Agriculture, Humidity, Temperature, Soil Moisture, Arduino.*

(ME-11) EVALUATION AND MODIFICATION OF RUBBER MIXING PROCESS

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***Abstract** – The paper Studied the relationship between hardness of rubber, its properties and compounding ingredients. Further it progressed towards enhancing the abrasion properties of same. Increasing the aesthetic appearance and minimizing the losses during processing and post processing is also included the work .Rubber includes both natural and synthetic polymers. Compounding ingredients being the chemicals added to achieve the desired traits. Five steps are used to achieve the result of research. The first step incorporates the observation and analysis of processed/manufactured products to understand defects and issue. The second step, involves findings from the observation done in first method. The third step is dedicated to solving the outcomes of previous step. The*

fourth step, is precise calculation of chemicals and materials to obtain the absolute proportion of all. The final step being the most vital one, deals with instruments and techniques to test the product composition developed .The desired result reflected the success of research. Additives altered the harness and chemical properties of rubber ,thus impacting the overall process time and characteristics of compound .Bound rubber dropped and molar masses of polymers were also reduced .The cross link density was relatively stable and stronger, achieved during vulcanising with the help of accelerator and sulphur .The strength was improved using carbo black at the beginning. There is a relationship between additives and their effect on hardness of compound. The speed of reaction is altered and losses are minimised which occurred due to external chemical and mechanical forces.

Keywords- *Vulcanised, Masticated,Fillers, Additives*

(ME-12) MINIMIZATION AND UTILIZATION OF BYPRODUCT

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Abstract – *Negative effects arising from the presence of waste materials on the environment is a major problem worldwide, requiring emphasizing of the recycling processes and reuse processes. In this context, the objective of the research was based on finding of a for a sustainable development. To date, for a higher recovery of waste rubber is necessary to transform them into reclaimed rubber involving the use of polluting technologies. Thus, through the proposed technology, respectively through the grinding with tools activated in an ultrasonic field, has been possible to decrease rubber particle size and there was obtained a crumb rubber with a particle size of 100–150 µm. It can replace a large proportion of reclaimed rubber from the composition of a type of analyzed rubber, and the obtained results demonstrate changes in the physico- mechanical rubber properties thus produced with effects on the growth of the life of rubber products and reduce environmental pollution. Also, by applying new technology there is a clear improvement of sustainable development indicator (SDI) defined and analyzed in the paper. Currently, worldwide it is put increasing emphasis on ensuring sustainable development through innovation or, in accordance with the European Commission, on eco-innovation (represented by any innovation which may determine economic development and has a positive impact on the environment). Thus, eco-innovation is considered, "key" to competitiveness", given that the manufacturing sector is stimulated to shift from methods such as "end-of-pipe" to the "closed- loop", with positive effects on consumption of raw materials and energy (European Commission). These clarifications were the basis of research conducted in the field of waste rubber regeneration, problem solved now by various methods, but that involving many technological operations, that, in turn, determine some environmental pollution.*

Keywords- *Rubber Waste, Pollution , Recycling.*

(ME-13) DESIGN OF AUTOCLAVE

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Abstract – *Autoclave is known as Steam Sterilizers. The size of autoclave can vary depending on the capacity required and the application. The recommended temperatures for sterilization range between 121°C to 135°C, with the minimum exposure time required to kill microorganisms being determined by the manufacturer. In this paper, the main focus is to create a system in which the waste of material do not take place. By using the spiral binding process over the autoclave to reduce the adhesiveness of the material over the inside wall of the autoclave. It also include research methodology which shows the gap between the previous research and this research. Testing parameters such as design pressure, temperature, working pressure, temperature, and hydraulic test pressure are crucial before using an autoclave in an industrial setting. This paper involve 3-D Designing of Autoclave which was execute in Autodesk Fusion 360.*

Keywords- Steam sterilizers; Autoclavable; Material Selection; Methodology

(ME-14) ELECTRO-MECHANICAL SMART SWITCH SYSTEM USING IOT

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Abstract – *The development of electric vehicles (EVs) has been a major focus of the automotive industry for many years. As technology continues to progress, more and more use cases are popping up that require intelligent control over how an EV interacts with its environment.[1] This research paper investigates how Arduino shows potential as a technology platform to enable smart Switching of electric vehicles. It investigates the current solutions and their limitation and discusses how integration of microcontroller's intelligence with sensing, communication and actuation capabilities can enable more efficient and secure car ignition. The combination of Electrical and mechanical technologies allows for increased levels of convenience and security. Furthermore, this research will propose an optimal approach for using an IoT powered system on cars to enhance the security of their locks and provide enhanced protection from unauthorized access. Finally, future research directions are suggested which could lead to a more integrated approach when implementing such systems.*

Keywords- Mechanical, Electronics, IoT, Sensors, Actuators, Aurdino.

(ME-15) AUTOMATED WASTE SEGREGATION SYSTEM

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Abstract – Urban regions and metropolises have faced an increase in waste segregation problems owing to the rapid population growth. The accumulation of huge quantities of waste has led to health hazards for workers. Scientific studies show that their life expectancy of them including their offspring decreases. Indian waste is not directly segregated as wet or dry waste. The total solid waste generated in the Palghar district is 613.6 MT/D. This main problem is owed to the waste consisting of all types of materials such as metals, plastic, leftovers, etc. In India, Waste segregation is done manually by workers. The above factors and the living conditions of the workers call for an Automated Waste Segregation System at least in the initial stages of separation on the landfills. The proposed system focuses on an Automated Waste Segregation System using conveyor belt, washing unit and other techniques. It emphasizes hardware in tandem with apposite sensors to reduce incompetence and redundancy. In simple words, the proposed system aims to reduce human intervention involved in waste segregation using effective automation suitable for large-scale waste.

Keywords- Waste Segregation, Conveyor belt, washing unit, Automation, Eddy-current separation.

(ME-17) THE EFFECT COOLING WATER TEMPERATURE IN AIR GAP MEMBRANE DISTILLATION FOR BREAKING OF BUTYRIC ACID – WATER AZEOTROPE

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Abstract – Air gap membrane distillation is a membrane separation process operated thermally. In this method, the vapour phase is permitted through a hydrophobic membrane. The vapour pressure difference is created due to the temperature gradient across the hydrophobic microporous membrane, which is the driving force. I have

investigated experimentally the feasibility of Air Gap Membrane Distillation module with PTFE hydrophobic membrane for the breaking of butyric acid-water azeotrope. The separation is possible due to differences in their diffusivity rates in the air. In this work, the effect of bulk feed temperature on the diffusivity of water and butyric acid and the vapour pressure of butyric acid and water was investigated. Also, the effect of cooling water temperature (5-20 ^0C) on total permeate flux, selectivity of butyric acid, and the concentration of butyric acid in permeate and retentate for various air gap (3-11mm) were experimentally studied. During the experimental study, all other parameters were kept constant viz. Bulk Feed Temperature at 80 ^oC, feed flow rate at 2 L/min, and Cooling Water Flow Rate at 2 L/min.

Keywords- *Air gap membrane distillation, PTFE membrane, Butyric acid-water Azeotrope, effect of cooling water temperature, Titration method*

(ME-18) PERFORMANCE EVALUATION OF NATURAL CONVECTION SMALL SCALE GREENHOUSE SOLAR DRYER FOR DRYING GRAPES

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Abstract – *A small-scale greenhouse solar dryer (GHSD) has been used to dry grapes in order to produce cost effective resins. In this work, the performance of a small-scale uneven shaped greenhouse solar dryer was investigated. Grapes with an initial moisture content of 85% (w.b.) was dried to a final moisture content of 10.0% to 20% (w.b.) in 6 days (129.5 hrs) using uneven shaped greenhouse solar dryer. The GHSD temperature was found in the range 50^0C to 70^0C while relative humidity inside was observed varying 5% to 28% .The weight of 500gm in each tray was found 110gm, 124gm and 121gm. The average weight reduced in all 3 trays was 76%. The grapes took 129.5 hrs to get dried. GHSD helps to dry grapes during adverse weather conditions.*

Keywords- *Greenhouse Solar Dryer, Uneven Shape, Natural Convection, Moisture Content, Drying Time.*

(ME-19) MILITARY SPYING ROBOT

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Abstract – *The intention of this system is to reduce human victims in terrorist attack such as 26/11. So this problem can be overcome by designing the based spy robot which involves wireless technology, So that from this it will be easy to examine rivals when it required. This robot can quietly enter into enemy area and sends us the information via sensors. Robotics has been a staple of advanced manufacturing for over half a century. As robots and their peripheral equipment become more sophisticated, reliable and miniaturized, these systems are increasingly being utilized for military and law enforcement purposes. Mobile robotics play an increasingly important role in military matters, from patrol to dealing with potential explosives. "With suitable sensors to perform different missions, mobile robots are operated remotely for reconnaissance patrol. Now-a-days android smart phones are the most popular gadget. There are multiple applications on the internet that exploit inbuilt hardware in these mobile phones, such as Bluetooth to control other devices. With the development of modern technology and Android Smartphone, Bluetooth technology aims to exchange data wirelessly at a short distance using radio wave transmission comprising features to create ease, perception and controllability. Here we have designed a robot that can be controlled using an application running on an android phone. It sends control command via Bluetooth which is interfaced to the controller. The controller can be interfaced to the Bluetooth module though UART protocol. According to commands received from android the robot motion can be controlled. And hence the required actions can be taken. This project presents a helpful application with a real-time object detection system that can automatically capture the user-defined important objects. By identifying these users defined objects we shall segregate them instantly with the help of a robot. The problem discussed in this article will be solved using object detection using defined sensors and their use. We would also try to present an embedded technique for real-time object detection and recognition*

Keywords- *PICs, RF, spy robot, metal detector, ultrasonic detector*

Track–04 : Electrical Engineering

(EE-2) PREDICTIVE CONTROL OF 1-Φ GRID CONNECTED REDUCED SWITCH 7-LEVEL TRIPLE BOOST INVERTER

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ABSTRACT– *Due to its reliability and great power handling capacity, multi-level inverters (MLIs) have been the preferred option for the majority of industrial applications. This multilevel inverter suggests an innovative 7-level triple boost inverter that can be controlled by the Model Predictive Control (MPC). This design decreases components just by using eight switches, one diode, and two capacitors for 7-level inverter. Two of the eight switches are also used in the path for charging the capacitors. This approach can overcome the limitations of traditional control methods used with MLIs because it is simple to implement. A greater variety of voltages can be obtained by the conventional system. The proposed 7-level MLI is controlled using a Finite Control Model PredictiveControl(FCS-MPC). MATLAB/Simulink can be used to model this 7-level structure. The results shows that the Control scheme can effectively track the load current as well as the system functions properly.*

Keywords – *switched capacitors, triple boost, multi -level inverter, tracking performance, FCS-MPC, THD.*

(EE-6) Two Stage Converter Standalone PV Battery Based On VSG Control

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ABSTRACT– *In photovoltaic (PV) systems, conventional energy conversion architectures are frequently compelled to choose between power generation and conversion efficiency. This work proposes an energy conversion scheme that, although converting just a small fraction of the total power generated, allows each PV element to function at its maximum power point (MPP). To achieve this, only the MPP current mismatch of a group of series-connected PV elements is supplied. Differential power processing improves overall conversion efficiency and provides solutions to issues caused by subpar MPPs (due to partial shading, damage, manufacturing tolerances, etc.). The analysis and comparison of different differential power processing architectures with Monte Carlo simulations. Distributed monitoring and protection are made possible by local control of the differential converters. System reliability has significantly increased overall, according to reliability analysis. simulations and experimental results exemplify the advantages of this strategy at the panel and subpanel levels, respectively, and are included.*

Keywords – *Local control, maximum power point tracking, and differential power processing (MPPT), solar energy, and renewable energy are some index terms.*

(EE-7) MINIMIZATION OF POWER LOSS AND VOLATGE DROP BY DG PLACEMENT IN DISTRIBUTION SYSTEM BY USING BACTERIAL FOREGING OPTIMIZATION ALGORITHM

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ABSTRACT– *Distribution system integration of distributed generation (DG) is essential for achieving voltage stability margin and minimal power loss. Bus voltages need to be kept within reasonable bounds in order to guarantee the high quality of the supply in distribution systems. The major goals of this work are to reduce power loss and enhance the system's overall voltage profile. In order to use the DG units in the system as efficiently as possible while keeping within certain constraints and constraints, optimization techniques are tools that may be used to locate and size the units. Using the Bacterial foraging Algorithm Called (BFOA), the results of 15 and 69 bus radial distributed systems were obtained. The candidate buses into which the DG units will be installed on the system are first chosen in the suggested approach.*

Keywords – DG, Optimization.

(EE-11) Comparison of the Impact of fault current limiter on Distance Relay Protection of Transmission Line for Line to Ground and Line to Line Fault

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ABSTRACT– *The objective of this paper is to determine the impact of the Hybrid superconducting fault current limiter (HSFCL) on transmission lines distance protection for line to ground and line to line fault. The MATLAB software is being used to simulate transmission system with distance relay protection along with Hybrid superconducting fault current limiter (HSFCL). The parameters included in the simulation studies are fault type and fault location. Mostly in context of line to ground and line to line faults, this paper explores the impact of HSFCL on measured impedance at the relaying point. Its installation position, in addition to the degree of constraint, has an impact on the measured impedance. In all situations, the collected research suggests that HSFCL has a negative impact on distance relay performance. The influence of both configurations of Hybrid superconducting fault current limiter (HSFCL) i.e. Resistive and Inductive over distance relay protection for line to ground and line to line faults are to be analyzed and compared.*

Keywords – Transmission Line, Distance Protection, Apparent impedance, Fault current limiter, Impedance trajectories.

(EE-15) Smart Agri Security Pole

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ABSTRACT– *The Smart Security Pole is a revolutionary device that combines multiple features to provide enhanced security and convenience. The pole is equipped with a lightning protection system to prevent damage from lightning strikes, a power fencing system to deter intruders, and a 24-hour monitoring system to alert users of any suspicious activity. Additionally, the pole has a mobile charging system, allowing users to charge their devices on the go, and a spray pump charging system, enabling the device to be used for agricultural purposes. These features make the Smart Security Pole an all-in-one solution for security, convenience, and agricultural needs. The device is designed to be durable, easy to use, and cost-effective.*

Keywords – Security, shock fencing, monitoring

(EE-17) Transformer Incipient fault monitoring using DGA

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ABSTRACT– *Dissolved gas analysis (DGA) is most reliable and trustful tool for monitoring the health status of transformer. Using DGA can monitoring the status of concentration level of various combustible gasous in transformer oil. The concentration of combustible gaseous use as determining the status of transformer oil to diagnose the incipient fault or indicator of undesirable event inside the transformer transformer has may be suffer from incipient fault such as partial discharge, electrical arcing, overheating, hot spot. Here neural network is used to diagnose the status of transformer to reduce human error as well as time. Here DGA data is get from various substation and analyse it and reach to conclusion that which type of fault to be occur in transformer and can save the transformer.*

Keywords – Dissolved Gas Analysis, Neural Network, Fuzzy logic

Track–05 : Basic Sciences & Humanities

(BSH-1) Synthesis and Characterization of novel Poly(amide-azomethine)s for high temperature resistant requirements

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Abstract – *A novel aromatic diamine, 2,5-bis-[4"-aminobenzyl)-4'-benzamide]-3,4-diphenyl thiophene (BATP) containing bulky tetraphenyl thiophene group, methylene spacer and preformed amide linkage was synthesized and characterized by FT-IR, NMR (^{1}H, ^{13}C, DEPT ^{13}C) and Mass spectrometry. A series of novel aromatic poly(amide-azomethine)s was successfully prepared by solution polycondensation of BATP with aromatic dialdehydes, namely isophthalaldehyde (IPA) and / or terephthaldehyde (TPA) in different mole % proportions. All the poly(amide-azomethine)s were characterized by FT-IR Spectroscopy, viscosity measurements, solubility tests, differential scanning calorimetry (DSC), thermogravimetric analysis (TGA) and X-ray diffraction (XRD). The results of characterization shows that these polymers meet high temperature resistant requirements so could find applications as special materials in aerospace, military and microelectronics industries.*

Keywords: *2,5-Bis-[4"-aminobenzyl)-4'-benzamide]-3,4-diphenyl thiophene; soluble poly(amide-azomethine)s; thermal stability; thermogravimetric analysis (TGA).*

(BSH-2) Study on Azo-aldehyde. Part-X: Synthesis, Characterization, Liquid Chromatography and Biological screening of Azo-salicylaldehyde from Nitro and Methyl-anilines

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Abstract – *Azo derivatives of salicylaldehyde (I-II) were prepared by reaction of Salicylaldehyde derivatives (Ic) with diazonium salt of variedly substituted aniline (Ia-b) by diazo coupling sequence (retention of N). These were characterized by Schiff reagent test, analytical (viz. colour, physical constant, TLC and HPLC) and spectral (viz. UV-Vis, FTIR) methods. A simple, fast and accurate method has been developed and reported for the identification and screening of Azo aldehydes by chromatographic method, High-performance liquid chromatography (HPLC) and also the biological potency study were reported.*

Keywords- *Aldehydes, Schiff reagent test, Analytical - Spectral method, HPLC and Biological Potency.*

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