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**2**<sup>®</sup>National Conference on **Emerging Technologies in Applied Science**, **Electronics & Communication, Computer Science**, **Engineering and Technology - 2023** 







**EDITORS** 

Dr. I. Satyanarayana Dr.R.Yadagiri Rao Dr. D. Lakshmaiah

# **SOUVENIR**



# (NCETAECCSET-2023)

## **13<sup>th</sup> & 14<sup>th</sup> October, 2023 Sponsored by**





(AUTONOMOUS)



# 2<sup>nd</sup> National Conference on Emerging Technologies in Applied Science, Electronics & Communication, Computer Science, Engineering and Technology- 2023 (NCETAECCSET-2023)

13<sup>th</sup> & 14<sup>th</sup> October, 2023

# 2<sup>nd</sup> National Conference on Emerging Technologies in Applied Science, Electronics & Communication, Computer Science, Engineering and Technology- 2023 (NCETAECCSET-2023)

13<sup>th</sup> & 14<sup>th</sup> October, 2023

*Editors* Dr. I. Satyanarayana Dr. R. Yadagiri Rao Dr. D. Lakshmaiah



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#### 2<sup>nd</sup> National Conference on Emerging Technologies in Applied Science, Electronics & Communication, Computer Science, Engineering and Technology- 2023 (NCETAECCSET-2023)

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**R. Venkat Rao** Conference Chairman NCETAECCSET-2023 Sri Indu Group of Institutions

As the Chairman of the organizing committee of 2<sup>nd</sup> National Conference on Emerging Technologies in Applied Science, Electronics & Communication, Computer Science, Engineering and Technology-2023 (NCETAECCSET-2023), I would like to cordially invite all interested academicians, researchers and engineers in the multi disciplines of Engineering to attend and/or present at this conference. The topics cover research in the area 5G Wireless Technologies, Advanced Communication Systems, Multi Antenna communication Techniques, VLSI and Embedded Design, Image Processing & Applications, CAD/CAM/CIM/CAPP, Manufacturing processes, Industrial Automation, IC Engines, Surface Coatings, Materials Joining, Robotics, Welding Technology, Role of human-computer interaction, AI and robotics, Software engineering and programming, High-performance computing, Computer science, biotechnology, Machine learning and neuron networks, Engineering, Water Resource Engineering, Geotechnical Engineering. Originally, this conference is intended to boost the publication of Faculty of all Engineering and non-engineering staff as well as becoming a platform for newcomers to learn some experience in presenting technical papers at Conference. However, this conference is also open to all postgraduate students, staff and researchers throughout India to share their research findings. Thus, the conference is not limited to SIIET staff and students only. It will be a good research findings forum and is expected to be an annual event in the future. The conference will be held from 13th & 14th October 2023 at the Faculty of Engineering, Sri Indu Institute of Engineering and Technology

So please mark your calendar, prepare your submissions, visit this website, and keep in touch for updates. Ihope you all will have good deliberations during the conference and wish you all success in your research. Looking forward to your participation in NCETAECCSET-2023.



**R.Anup Chakravarthy** Secretary Sri Indu Group of Institutions

I am extremely delighted to know that SIIET is organizing the 2<sup>nd</sup> National Conference on Emerging Technologies in Applied Science, Electronics & Communication, Computer Science, Engineering and Technology-2023 (NCETAECCSET-2023), held from 13<sup>th</sup> & 14<sup>th</sup> October, 2023 in Hyderabad.

I am sure that this conference will provide a red carpet for all researchers, technocrats and academicians to share knowledge and experience amongst all. Undoubtedly such an event would give birth to innovation in engineering resulting in advancement of technology and identifying a road map for the future. It is a matter of immense pleasure that SIIET is conducting such conferences every year for the last 4 years and the selected papers have been published in a reputed international journal that helps in disseminating the research and information in engineering field.

The conference has been designed and planned to deliver the most recent advancements in the field of engineering. The conference also provides a perfect platform for academicians to upgrade their knowledge in engineering domain. The success of the conference depends ultimately on the many people have worked together. A glimpse of academics is hereby presented in this souvenir taking care to measure the glory and luster of all the talks in the conference. The souvenir would give a chance to read, enjoy and cherish the excellent academics and thoughts of renowned speakers and researchers.

Lastly and importantly, I take the privilege to welcome all the delegates for these special events and wish them to have fun-filled, academically rich and collaborative experience.



**J.Devi Prasad** President

It gives me an immense pleasure and privilege to welcome you all for the "2<sup>nd</sup> National Conference On Emerging Technologies in Applied Science, Electronics & Communication, Computer Science, Engineering and Technology-2023 (NCETAECCSET-2023)", held from 13<sup>th</sup> & 14<sup>th</sup> October, 2023. SIIET has the pride to organize this conference. The prime objective of the conference is to provide a platform to the researchers, scholars and technocrats to share their expertise, exchange their views and discuss their achievements in the field of engineering. It is my longstanding dream and desire to encourage the free interchange of information on a common platform about recent advances in engineering stream amongst the scientific and engineering communities.

With ever expanding knowledge and overload of information, guidance from the experts is required to choose and deliver the best. We are fortunate to have a renowned galaxy of national speakers who have the expertise to create superlative knowledge bank for this event. The endeavor of the conference will be to have an amalgamation of various specialists at a common forum to bring about exchange of innovative ideas.

My heartfelt congratulations to all the creative minds for having chosen this platform to present their research findings. We are sure that this conference would offer numerous exciting talks on cutting edge innovations and technologies for the research community.

I wish all the delegates who have organized and participated in this conference a bright, academic and professional future.



A Rama Krishna Rao Director of Academics

We are all aware that unless an educational system is well administered and administered towards research, it would become obsolete and irrelevant to the changing national needs and international order. As Vivekananda defines it, "Education is the life-building, man-making, character-making, assimilation of ideas". Very happy to know that during the past four decades, there has been a phenomenal expansion of technical education facilities in the country. The growing body of scientific and technical knowledge and its repeated obsolescence call for more frequent occupational updating. Education has to be provided to all, at the same time the quality of education has to be maintained, irrespective of the quantitative expansion of study.

Education must be conceived as an interdisciplinary concept as a factor of multi-dimensional development, of which, man is both the end and the instrument. Education so conceived helps in continual growth of personality, steady development of character and qualitative improvement of life.

If continuous, objective and scientific methods are adopted, the quality of education will improve. With the objective of developing the quality of education and better methods of evaluation, I am very happy to learn that SIIET is organizing an **Sri Indu Institute of Engineering & Technology Sponsored** 2<sup>nd</sup> **National Conference On Emerging Technologies in Applied Science, Electronics & Communication, Computer Science, Engineering and Technology-2023 (NCETAECCSET-2023) from 13-10-2023 to 14-10-2023** and I wish the Conference a grand success.



**Dr. R.Yadagiri Rao** Conference Adviser SIIET

The world is moving at a faster pace and new technologies are coming every day and week. We need to be proactive and enthusiastic in learning about these cutting edge tools and research. New technology's bringing opportunities along with the requirement of new set-off skills and new challenges. This phase of rapid evolution provides endless opportunities to learn experience and share. SIIET is built on such a view in heart.

SIIET is built on a solid foundation of experience and excellence with a vision to provide holistic development of students that comes through the staff who have already a lot of accomplishment. It is my everlasting dream and desire to encourage a free interchange of information on a common platform about the recent and productive advances in all engineering communities. This "2<sup>nd</sup> National Conference On Emerging Technologies in Applied Science, Electronics & Communication, Computer Science, Engineering and Technology-2023 (NCETAECCSET-2023)". Held from 13<sup>th</sup> & 14<sup>th</sup> October, 2023 will cover all the areas related to science, technology and applications of Engineering. Special emphasis will be levied on inviting eminent scientists and engineers of various fields with different backgrounds from all over the world to discuss the recent advances in all emerging areas of engineering and share their experiences especially in design, development, testing and applications.

Further, the tremendous response from various researchers and academicians from India and overseas received in terms of the quality of the research paper shows that modernization is seated here and it is an actual standard from industries and educational institutions.

I am sanguine to say that the delegates and participants will relish with the novel concepts presented in this conference to strengthen their research work towards their next best higher levels. I convey my peerless wishes to this conference and hope that this conference will lay new milestones in the minds of researches with novel thoughts.



**Dr. I. Satyanarayana** Principal SIIET

2<sup>nd</sup> National Conference on Emerging Technologies in Applied Science, Electronics & Communication, Computer Science, Engineering and Technology-2023 (NCETAECCSET-2023) is a progressive realization of the fundamental concepts that are taught in the early days of childhood or in adolescent days. In the process of realization of those concepts a few people make a very big leap and a few take ordinary steps/leaps in their progress.

However, every realization, every progress creates new avenues for the goals to be cleared in one's life. Because life is a kind of journey without a clear road map. Each of us have to search our own routes to reach our own destination with the already available indicators on this road that we are heading to.

This transformation or metamorphosis or what we call paradigm shifts can occur in every sphere/ field of life or in every subject that we learn from basics.

In computer science, Mechanical, electronics and communication, civil, Humanities, we see this evolution of transformation of technologies which are captivating the minds of the creative learners to reach their unreachable goals. Research and technology that are evolving through these subjects are the important parameter that helps the humanity not only to realize their goals but also help them to be proactive in designing new things for the next generation learners.

I appreciate the conveners, organizers, staff and student fraternity for initiating this seminar on "2<sup>nd</sup> National Conference on Emerging Technologies in Applied Science, Electronics & Communication, Computer Science, Engineering and Technology-2023 (NCETAECCSET-2023)" to activate the Frontal Lobes of the Brain of the participants which are responsible for creativity, planning, research and thinking from which a major change can be brought forth through this revolutionary innovative paradigm shift.



Dr.Dayadi Lakshmaiah Convener

It gives me honor, stupendous pleasure and privilege to welcome all the creative participants to the "2<sup>nd</sup> National Conference on Emerging Technologies in Applied Science, Electronics & Communication, Computer Science, Engineering and Technology-2023 (NCETAECCSET-2023)" from 13<sup>th</sup> & 14<sup>th</sup> October, 2023, that is being hosted by SIIET.

In order to build a stronger future we must know how to identify and embrace opportunities. Through the annual conferences, time and again we make an effort to expose ourselves to the opportunities to diversify our scope of improvement in all fields.

Moving in today's scenario we all may notice the dependency on technology and its uses in every field of our life. As our current life is becoming more complicated and there will be more hectic schedule of the work the role of engineering to reduce the pressure of work through its latest technologies.

I strongly hope that this conference will open novel windows in the flourishing areas of existing problem. We intend to take this event ahead as an annual feature, the motive not only is to generate discussions on contemporary issues, but also to propel the culture of academic exchange, which is the only way to achieve excellence in this field. I strongly believe that this conference will unfold new landscape in the subject of new technologies.

I wish all the participants and the crew for hosting it to a great success.

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### Adaptive Algorithm Technique for Real-Time Separation of Lung and Cardiac Sounds

#### S.Naresh<sup>1</sup>, K.Srikanth<sup>2</sup>, M.Ganesh<sup>3</sup>, T.Bhavani<sup>4</sup>

For reliable voice acquisition, active noise control (ANC) can be a good option. Additionally, this method has the potential to reduce the Lombard effect. The well-known Filtered-x Least Mean Squares adaptive method is the most extensively employed in broadband active noise cancellation (FxLMS). We investigate an alternative to the FxLMS algorithm that aims to solve its occasionally delayed convergence without sacrificing cancelling capability. The ALE-FxLMS system is an option provided here, in which an Adaptive Line Enhancer (ALE) is utilised as a decorrelating step for the FxLMS algorithm. The single-channel example (one reference signal, one actuator, and one error sensor) is presented and analysed, as well as three potential system extensions to the multiple channel situation. Without decorrelating pre-processing, the suggested system has been shown to provide faster convergence with reference to a single FxLMS. Since no frequency component is weighted higher than the others when using a white reference signal, the FxLMS method is projected to be faster to convergence. The ALE-FxLMS system is described in this paper, in which an Adaptive Line Enhancer (ALE) is employed as a decorrelating pre-processing stage for the FxLMS algorithm. The ALE-FxLMS system intends to increase computational complexity while improving the convergence of the entire adaptive system. The single-channel scenario is investigated, as well as the system's expansion to the multiple-channel case, where strongly correlated reference signals can be established. Three possible generalisations of multiple channels are shown. The performance of these systems is evaluated without pre-processing, using the single FxLMS as a reference.

**Keywords:** Heart sound signal, HSS, Lung sound signal, LSS, Adaptive line enhancer, ALE, Filtered Least mean square, FxLMS, Active noise control, ANC

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#### Verilog Implementation of an Efficient Logarithmic Multiplier Using Iterative Mitchell's Algorithm

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Multiplication is a basic arithmetic operation. Multiplication operations such as Fast Fourier Transforms, Multiplication and accumulation units, Convolution are some of the computation-intensive arithmetic functions often encountered in Digital Signal processing applications. Generally, Logarithm based multipliers are used in these cases which introduce certain errors. These errors are approximated by various methods. In this paper a simple architecture of a 16X16 logarithm based multiplier is proposed which uses simple combinational and sequential circuits to obtain an exact product. The multiplier has an arbitrary execution time which varies from 0 clock cycles to 15 clock cycles (neglecting the combinational delay) and whose mean delay is 7.5 clock cycles. This architecture is designed and simulated in 'ModelSim' simulation tool.

Keywords: logarithmic multiplication, mitchell's algorithm

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### Nonparametric Spectral Analysis for Movement Identification in Encephalography Signals

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The purpose of the following study is to determine patterns generated by 6 movements: Opening / Closing - Eye, Opening / Closing-Mouth, Concentration, Meditation, Eye Movement Up / Down, and Left / Right Eye Movement recorded in the prefrontal area in the point  $N_z$ , applying nonparametric spectral estimation techniques, using the Fast Fourier Transform (FFT), Barlett's Periodogram, and Welch's Periodogram. For this purpose, the measurements were made externally to 30 subjects in the age range of 18 to 22 years, taking as reference 200 sessions per movement applying 10 seconds of test. The sampling frequency in the recording was equal to  $F_s = 512$  Hz. The results show sampling frequencies in the range of the Delta 0.5-3.5Hz biosignal applying the FFT method and Bartlett's Periodogram, Welch's Periodogram is not recommended for use by applying a rectangular window greater than 4, generating attenuation in the harmonics.

Keywords: EEG, Nonparametrics methods, Delta Biosignal, Prefrontal surface

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### GSM and GPS Integrated SMS-Controlled Car Engine System for Anti-Theft Design and Development

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The latest trend of car theft involves the car being towed away, and also alarm signal capturing where the alarm disabler signal can be traced and duplicated by a thief with the device to capture the signal for disabling the alarm. There are many alternatives to prevent the car theft, common car alarm system which nearly all cars have the system installed. Steering, gear lock, tire lock and hidden "kill" switches which incapacitate fuel flow and many others. These GSM and GPS tracking system for cars project significantly reduce the time, manpower and operates without interference of humanoid. In the modern era, there are many new technologies like GPS, GSM, RFID and Biometric Recognition. Mobile communication which have been integrated with the vehicles for security purposes. In these projects GPS technology is used to find the exact location of the vehicle and GSM is used to send the message to the owner of the vehicle. If at a moment, the vehicle seems to be in theft, the owner can just send an SMS to that vehicle, which means that the vehicle will be stopped and all the doors will be closed then the thief will be locked in the car. The main intention of this project is to inform to the concerned authority through an SMS about the exact location of the stolen vehicle by theft. The system is aimed to locate the position of vehicle continuously, online data transmission method is implemented such that vehicle positions in the form of longitude & latitude values are monitored continuously through concern authorized mobile whenever the individual asks for its location. The demo model is constructed with two DC motors in which one is for the vehicle movement and the other for the door mechanism. Three keys are connected to the controller in which one is for vehicle start, one is for door opening and closing and the last for system reset. The entire control unit is designed using 89C52 controller to which the GSM, GPS and LCD are interfaced. The DC motors are driven through the relays by the controller.

Keywords: SMS Based Car Engine Control System, Prevent Car Theft

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#### A Survey of Slot-Based Microstrip Patch Antenna Literature

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Antenna is backbone of communication system with the advent of technology a lot of innovation happens to develop the antenna. Antenna is smart devices which not only transmits and receive but also work as transducers. This paper presents literature review on microstrip patch antenna based on slots and effect of slots on microstrip patch antenna has been discussed. The effect is shown on bandwidth, gain, radiation pattern, return loss, axial ratio and size of an antenna. The slots on the patch or on the ground plane will help to design an antenna with improved bandwidth and efficiency.

Keywords: Microstrip patch antenna, Radiation pattern, Gain, Bandwidth

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#### Arduino-Based System for Automatic Speed Detection and Reporting

#### K.Padma<sup>1</sup>, K.Rajender<sup>2</sup>, A.Vaani<sup>3</sup>, P.Srilatha<sup>4</sup>

From the advent of increased transportation, over speeding of vehicles has become one of the major causes for accidents and killing many lives. This paper presents a system, developed for over-speed detection of the vehicle or human beings and alert corresponding persons by giving buzzer automatically and also sends messages to their mobiles. Presently, RADAR gun or LIDARS are extensively used for over speed detection but it requires a person to pull the trigger for detecting the speed. In this work it has been proved that automation provides better performance than a human handled system.

Keywords: Doppler Effect, IR sensors, Arduino Uno, RADAR gun and Traffic logger

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### HVAC Systems: IoT-Driven Smart Sensors for Temperature and Humidity Measurement

P.Srilatha<sup>1</sup>, K.Padma<sup>2</sup>, K.Rajender<sup>3</sup>, A.Vaani<sup>4</sup>

The initials HVAC stand for Heating, Ventilation and Air Conditioning. They describe the functions of an HVAC system. This mechanical system's design is primarily an attempt to take control of the environmental conditions inside the space of work. It achieves this by controlling the temperature of a room through heating and cooling. It also controls the humidity level in that environment by controlling the movement and distribution of air inside the room. For determining the temperature and humidity, costly sensors are required. Hence here I am proposing a SMART HUMIDITY AND TEMPERATURE SENSOR which is economical and supports automatic reading of the sensors, and sends the reading to a secured server and automatically controls the temperature and humidity of the system.

Keywords: HVAC System, Humidity control, Temperature control, Arduino

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### IoT-Based Monitoring System for Patients in Coma

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A sophisticated system that allows real-time monitoring and analysis of patients' vital signs in a comatose condition is the IoT (Internet of Things) based monitoring system for comatose patients. The system uses a number of sensors, including blood pressure, oxygen saturation, temperature, and pulse sensors, to gather and send data to a central server over a wireless network. To find patterns and trends in the patient's condition, the collected data is examined using machine learning algorithms. The device also has an alarm system that goes out when it detects a critical change in the patient's vital signs. The technology can greatly lessen the strain of medical workers and offer constant monitoring, ensuring that any condition that could be life-threatening is swiftly treated.

**Keywords:** IoT, monitoring system, patients who are unconscious, sensors, in-the-moment analysis, vital signs, machine learning, warning system, and wireless network.

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### Real-Time Analysis and Prediction of Mental Health Disorders Using Machine Learning

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Real-time analysis and prediction of mental health disorders using machine learning is an area of growing interest in the healthcare industry. With the increasing prevalence of mental health disorders, there is a need for accurate and timely diagnosis and treatment to improve patient outcomes. Machine learning algorithms can be trained on large datasets of patient information, including symptoms, medical history, and demographic data, to identify patterns and predict the likelihood of different mental health disorders. Mental health is the aggregation of emotional, social and psychological well-being of a person. It effects on the person's thinking, acting and feeling capability. Mental health is a measure of handling stress and decision making with every step-in life. There is so much data available that we are now able to compile data for mental health professionals by applying this approach they will benefit to clinicians the opportunity to personalize the professional & able to perform their job in better way in. Machine learning algorithms could help determine key behavioural biomarkers to aid mental health professionals in deciding if a patient is at risk of developing a particular mental health disorder. Additionally, the algorithms may assist in tracking effectiveness of a treatment plan. This paper reviews about the application of ML to mental health prediction, which includes a range of benefits across the areas of diagnosis, treatment and support, research, and clinical administration. With the majority of studies identified focusing on the detection and diagnosis of mental health conditions.

Keywords: Machine learning, Appetite, Mental illness, Depression, Schizophrenia

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### A Comparative Study on CNN for Face Detection Techniques

Dr.K.Srinivasa Reddy<sup>1</sup>, S.Alekhya<sup>2</sup>, P.Kavitha<sup>3</sup>, Y.Raju<sup>4</sup>

The face detection task has been studied in depth. There are may efficient face detectors which utilize specialized designs in different aspects for the detection task for faces, making the detection algorithms and models more and more complex. As a result, the computational and time cost becomes higher. In recent years, many studies are carried out aiming at reducing the algorithm and model complexity. These simpler face detectors make the detection faster while ensuring detection accuracy. In this paper, we select three different face detection models that simplify the face detection algorithms or model structures based on common CNN networks and YOLO structures, they are, YOLO5Face, DSFD and TinaFace. We first analyze the algorithm and model structure of the selected face detectors and then test them on several datasets to evaluate the generalization ability of the models. The experiment result show that the selected face detectors can efficiently complete the face detection task while YOLO5Face has the best performance on the datasets.

Keywords: Face detection, CNN, YOLO, datasets

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### Artificial Intelligence-Driven Interactive Learning Systems for Educational Institutions

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Interactive Learning platform for students utilizing AI Techniques and database-based solution. Interactive E-learning is essential to improve student engagement and flexible learning by utilizing digital technologies. Online and offline mode of classes are conducted in the many schools now due to after effects of COVID 19 pandemic, it is optional for school students. Our aim is to provide a web application which is relevant and interactive concepts for the school syllabus. A simple and easy to use interface would enable students and teachers to access the content on a web browser using mobile phones, laptops, and tablets. The purpose of this paper is to provide an interactive application which enables pupils to learn syllabus concepts which are assigned by their tutors. The platform is stored on the Database which maintains academic syllabus, students' profile, tutor notes and classroom recording. Additionally, a global search SMART engine based on artificial intelligence algorithm which would enable students to search the appropriate topics and other useful information and a handwritten letter & digits recognition using deep learning.

Keywords: Interactive, Web application, Cloud Database and AI SMART Search

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### Authentication Using a Multimodal Biometric System

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An automatic authentication system based solely on fingerprints or faces is often not able to meet the system performance requirements. Face recognition is fast but not extremely reliable, while fingerprint verification is reliable but inefficient in database retrieval. This work proposes a system, which integrates face and fingerprint modalities. The system overcomes the limitations of face recognition systems as well as fingerprint verification systems. The proposed system operates in the verification mode with an admissible response time. The proposed face modality incorporates the Gabor Wavelet features and the Local Binary Patterns Variance (LBPVar) features. Those two facial descriptors are complimentary in the sense that LBPvar captures small appearance details, while the Gabor features encodes facial shape over a broader range of scale. Both feature sets are high dimensional, so it is beneficial to use the Principal Component Analysis (PCA) to reduce the dimensionality prior to normalization and integration. The Kernel Discriminative Common Vector (KDCV) method is then applied to the combined feature vector to extract the discriminant nonlinear features for recognition. As for the fingerprint module, an algorithm based on extracting finger Minutia is adopted to build a feature vector for each sample fingerprint. The two modalities are fused at the score level using a simple rule. The proposed system performance is evaluated over CMU Multi-PIE face and CASIA-FingerprintV5 public databases. The performance of the proposed model in the verification mode surpasses the performance of a number of multimodal biometrics state-of-the-art systems with a maximum verification accuracy of 99.2%.

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Keywords: LBPVar, Gabor Wavelet, PCA, KDCV

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### Optimized Google Net for Detecting Defects in Solar Cell Images

N.Aparna<sup>1</sup>, B.Jyothirmai<sup>2</sup>, P.Rajendra<sup>3</sup>, D.Aruna Kumari<sup>4</sup>

In order to deal with the energy crisis, people focus on renewable energy. Solar energy is playing an increasingly important role. As the core component of photovoltaic power generation, the flaws of solar cells will lead to low utilization of solar energy. Therefore, it is very important to detect the defects of solar cells. In this paper, an optimized GoogLeNet model is used to detect the image defects of solar cells. By adjusting the network structure and optimizing the activation function, the accuracy of the model reached 95.92%.

Keywords: solar cell, deep learning, defect detection, convolutional neural network

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### Using Deep Learning CNN to Detect Face Masks

D. Aruna Kumari<sup>1</sup>, N.Aparna<sup>2</sup>, B.Jyothirmai<sup>3</sup>, P.Rajendra<sup>4</sup>

The COVID-19 pandemic redefined many aspects of our definition of normal life in which social distancing and wearing of face masks plays a vital role in controlling the spread of the virus. But many people are not adhering to the social precautions that were once essential of wearing face masks in public places which increases the spread of viruses. Hence to avoid such situations we must scrutinize and make people aware of wearing face masks. Manual real-time monitoring of face mask wearing for a large group of people is becoming difficult. Humans cannot be overly involved in this process, due to the chance of getting affected by the coronavirus. This can be combated using arti?cial intelligence and deep learning, which is the main theme of our study. The proposed approach is based on two steps. One step aims to create a DL model that detects facemasks and whether they are correctly worn. An online step that deploys the DL model at edge computing in order to detect masks in real-time. We have used a pre-trained CNN model of the VGG19 class for image classification and identification. A dataset from Kaggle will be used for both training and testing purposes. Overall training accuracy of over 95% is targeted.

Keywords: Facemask detection, Real-time, COVID-19, Deep Learning, Convolutional Neural Network

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### Enhanced Inception-ResNet Model for Graph Semantic Extraction in Power Grid Fault Diagnosis

P.Rajendra<sup>1</sup>, D.Aruna Kumari<sup>2</sup>, N.Aparna<sup>3</sup>, B.Jyothirmai<sup>4</sup>

Traditional power grid fault diagnosis methods have problems such as large parameters, poor real-time performance, susceptibility to malformed data interference, and low accuracy. In order to solve the above problems, a power grid fault diagnosis method based on improved Inception-ResNet graph semantic extraction is proposed. Real-time monitoring of each node of the power grid based on PMU measurement data. The semantic reconstruction of PMU data is realized by converting data features into image features, thus completing the conversion from quantitative analysis of data form to qualitative analysis of image form, greatly reducing the influence of malformed data on fault diagnosis. The improved Inception-ResNet algorithm is used to extract the semantic features of the fault image, and the corresponding fault type is obtained according to the fault feature and the fault diagnosis result is output. Experiments and simulations show that this method can effectively reduce training parameters and training time, shorten diagnosis time, and improve diagnosis accuracy.

Keywords: PMU Graph Data, Power Grid Fault Diagnosis, Deep Learning, SE-Inception-ResNet

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### Cluster-Based Strategy for Minimizing Transmission Delays in Wireless Sensor Networks

B.Jyothirmai<sup>1</sup>, P.Rajendra<sup>2</sup>, D.Aruna Kumari<sup>3</sup>, N.Aparna<sup>4</sup>

In Wireless Sensor Network (WSNs), nodes are interlinked that establish communication wirelessly for data collection in the surrounding environment. It regards as a structured and heterogeneous network where the sensor nodes have some energy which is power by external sources and it is constructed using a collection of several tiny sensor nodes. In WSN, all sensor nodes are powered by battery in which a very small battery is placed over the sensor nodes, which is normally not simple to replace by which communication could be interrupted. Thus, energy efficiency and hence transmission delay is a major need in WSNs to make interrupt free communication in wireless manner. In presented approach, cluster-based routing protocol named as Low Energy Adaptive Clustering Hierarchy (LEACH) is utilized to find the path that consumed minimum energy and helpful to reduce the transmission delay. For this purpose, K-means with Artificial Neural Network (ANN) is integrated. Here, the ANN approach is utilized with the aim to minimize the transmission delay in the network. The performance evaluation of presented approach is done on the basis of QoS parameters such as Throughput, Packet Delivery Ratio (PDR), Transmission Delay and Energy Consumption, etc. The significant amount of improvement has been observed in terms of considered parameter. Both PDR and throughput using ANN has been observed as 7% and 22% respectively. The reduction in delay and energy consumption is decreased by the amount of 35% and 4% respectively. So, it has been examined that by using ANN classifier, the presented work performs better.

**Keywords:** Wireless Sensor Network, Low Energy Adaptive Clustering Hierarchy, Artificial Neural Network, K-means, Transmission Delay

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### Predicting Stock Prices with Long-Short Term Memory Techniques

I.Venu<sup>1</sup>, G.Nirmala<sup>2</sup>, T.Naresh<sup>3</sup>, Dr.S.Suresh<sup>4</sup>

Stock Market is a source of investment for nearly every person. People invest their complete earnings and savings to make easy money. They are not aware of the spontaneous nature of the market. This nature of the market can lead to people making huge profits or losing everything. This uncertainty in the market may lead to people losing faith while investing their money in stock market. In order to make people aware of the stock market's nature and providing them knowledge on how to invest, this paper proposes a model built on the concept of Long-Short Term Memory. It is a special type of recurrent neural network that can remember the important past sequences of time-series data. The model will predict the future stock prices and will provide a comparative report to determine the model's accuracy and for better analysis, while investing in stocks.

Keywords: Stock Market, Stock Prices, Prediction, Machine Learning, Long-Short Term Memory, Recurrent Neural Network

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### Prioritized Satellite Data Product Dissemination: A Novel Method for Data Retrieval in Hierarchical File Systems

#### Dr.S.Suresh<sup>1</sup>, I.Venu<sup>2</sup>, G.Nirmala<sup>3</sup>, T.Naresh<sup>4</sup>

Satellite Data is being acquired by various Indian Remote sensing satellites and being widely used for various applications. Applications include resource management, disasters, crisis-management and relief support. These applications demand immediate and timely satellite data products support which is of paramount importance in order to make predictions, decision making during disasters like floods, Earthquake, landslides, forest fires, etc. and are considered as Priority products. These Priority products are to be supplied within an hour from the time the request is received from the order processing system. The entire process of ordering, processing the requested data imagery and disseminating the product to the requestor is entirely digitalized. The work flows and data processing is handled by a chain of software applications running on top of the respective IT infrastructure chain in the IMGEOS data center. SAN- large-scale data storage which is one of the major components of IT infrastructure is shared by different operational entities functioning in the organization. The resource sharing model implementation has an impact on processing and dissemination of Priority data products. One of the factors for the delay in data dissemination is translated as the delay in data retrieval from the underlying data storage systems viz., Disk and tape storage medium. This paper presents a customized software framework developed for the efficient data retrieval of the priority data sets from the wide range of archived data store. This is envisaged by lodging multiple files under single data request and enables special priority at the retrieval queue to reduce the request queue latency, which has helped in maintaining the overall Turn-around-Time (TAT) for the product generation and dissemination. Additionally, it improves retrieval requests queue length and improves the health of storage hardware.

**Keywords:** DM, IMGEOS, HSM, IT, LTO, LUN, LVM, MD, MSM, NRSC, OS, RF, SAN, TAT, TSM, WOF

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### IoT-Enhanced Shoes and Glasses for the Visually Challenged

#### T.Naresh<sup>1</sup>, Dr.S.Suresh<sup>2</sup>, I.Venu<sup>3</sup>, G.Nirmala<sup>4</sup>

The most valuable gift we possess is probably our eyes, which play a significant role in our daily life. We are fortunate to have eyesight, which allows us to see this world. However, there are certain people who struggle to visualize these things. As a result, they face a lot of difficulty moving around freely in public spaces. A new IoT based smart shoe system for the blind is being proposed with the help of an ultrasonic sensor paired to an Arduino Nano and NodeMCU ESP8266 board. Internet of things is all about making physical stuff communicate with humans. It is an enabling technology which is developing rapidly in the market. Almost 40 million people in India are blind, including 1.6 million children. Blind people cannot live independently. In many areas of their lives, they must rely on others. The main problem is when they walk on road. They can't detect every obstacle in their path with a stick in hand. The smart shoe technology offers a long - term solution for the blind people to independently walk on roads. It is built using IoT technology in which the shoe will be embedded with various sensors, microcontroller and vibrators. The shoe warns the user by creating vibrations when he/she walks in front of an obstacle. To improve the efficiency smart glasses are designed using IoT, which is also embedded with sensors and helps in detecting the objects by covering the area at head level.

Keywords: IOT, Arduino Nano, NodeMCU 8266, Ultrasonic sensor

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### Leveraging AI/ML for a Charitable Donation Platform

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Poverty has worsened, so food inflation has increased, implying that millions of people do not have enough food to eat. The laborious process of managing food and distributing it to recipients, on the other hand, is difficult. Food banks now require a unified management platform that is both efficient and effective. Users can check web applications for their food, clothes, book, etc donations to be verified and processed. The existing procedure takes a long time and demands a lot of effort. There is an obvious need for a system that will allow easy and fast donations and distributions of food to the Ngo's. The researchers of the study will address the problem by developing an online platform for food, clothes, and other goods management services using some AI/ML concepts that would help in the easy segregation of items and gives the organization easy access to the items requested. The project is designed to automate the management of food donors and NGOs. In this paper, we are going to describe a new E-service application. This application will use the concept of image processing at the donor's end. This application follows the Convolutional Neural Network technique in developing the system. The implementation of the system will increase the operational efficiency of necessity reserves in providing food, clothes, books, etc to people who are in need.

Keywords: NGO, CNN-Convolutional Neural Network, Needy

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### Automated Seed Sowing Agribot Using Arduino

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A.Arun Kumar<sup>8</sup>

The development of agricultural implements is the fundamental tendency of agricultural improvement, and the discovery of agriculture is the first significant step towards a civilised lifestyle. The project's qualitative approach is now focused on creating a system that uses solar energy to power the agribot to minimise labour costs while also speeding up digging and seeding operations. This machine uses a solar panel to collect solar energy, which is then transformed into electrical energy to charge a battery, which then supplies power to a shunt wound DC motor. To control a robot in the field, a Wi-Fi interface running an Android application is employed together with digital compass and ultrasonic sensors. This reduces labour. A robot for seed sowing and excavating can move over different types of terrain while performing digging, seed sowing, and ground closure. The document details every aspect of the agribot's installation, from hardware to software.

Index Terms-Agribot, Arduino, Android application, Adafruit- IO, Seed sowing, Obstacle detection, Wi-Fi

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### **IOT Based Virtual Doctor Using Node MCU & Webserver**

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With an improvement in technology and miniaturization of sensors, there have been attempts to utilize the new technology in various areas to improve the quality of human life. One main area of research that has seen an adoption of the technology is the healthcare sector. The people in need of healthcare services find it very expensive this is particularly true in developing countries.

As a result, this project is an attempt to solve a healthcare problem currently society is facing. The main objective of the project was to design a remote healthcare system. It's comprised of three main parts. The first part being, detection of patient's vitals using sensors, second for sending data to cloud storage and the last part was providing the detected data for remote viewing. Remote viewing of the data enables a doctor or guardian to monitor a patient's health progress away from hospital premises.



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### High Performance Floating Point Multiplier In VLSI Architecture

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This project is about the design of a Floating Point Unit (FPU), integrate the FPU into RISC32 processor and synthesize the FPU design on Field Programmable Gate Array (FPGA). The stand-alone FPU has been modeled by a senior student in University Tunku Abdul Rahman, Liu Hing Yun. However, there was no integration test made on the FPU to the processor and the aforesaid FPU can only perform operation on single precision numbers. Hence, this project is required to develop a FPU which can perform operation on both single and double precision numbers.

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### **IOT Based Forest Fire Alarm and Alerting Sysyem**

Dr.I.Satyanarayana<sup>1</sup>, Dr.R.Yadagiri Rao<sup>2</sup>, P. Kavitha<sup>3</sup>, B. Tejasri Reddy<sup>4</sup>, A. Gayathri Priya Goud<sup>5</sup>, G. Praneeth Reddy<sup>6</sup>, A.Srikanth<sup>7</sup>

Smart farming, precision agriculture and Agriculture 4.0 all involve the integration of advanced technologies into existing farming architecture. The goal is to increase production efficiency and product quality, as well as reducing overall costs. To this end, the inclusion of Smart technologies into Irish agriculture has been inevitable with increased pressure being placed on farming practices to remain profitable, as well as adhere to environmental regulation. The global Smart Agriculture Solution Market is said to have stood at around US\$10.2 Billion in 2016, and is projected to reach a valuation of US\$38.1 Billion by the end of 2024. The growing adoption of advanced technology in farming, from agricultural drones, precision seeding systems, auto-steering, automatic feeding systems and fruit-picking robots (amongst others), have all incentivised traditional agri- companies to invest in smart agriculture technology. The deployment of advanced agri-tech has the potential to allow for an increased focus on non-profitable tasks, such as farm maintenance and environmental practices. The reduction of heavy labour and tedious tasks can also lead to improvements in the health and work/life balance of farming staff.

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### Design of 64 Bit Mac Unit Architecture

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In computing, especially digital signal processing, the multiply-accumulate operation is a common step that computes the product of two numbers and adds that product to an accumulator. The hardware unit that performs the operation is known as a Multiplier-Accumulator (MAC unit). Design of MAC unit consists of Multiplier unit, Adder and Accumulator. This Paper focuses on review of 64-bit MAC (Multiplier and Accumulator) unit based on Vedic Mathematics using VHDL. Proposed multiplier will be design by using technique of Vedic mathematics and the rule (sutra), Urdhva Tiryakbhyam will be used for enhancing the speed of multiplier. Pipeline is one way of improving the overall processing performance of a multiplier or any processor. Here, Pipeline design will be use to increase the speed of the MAC unit, also it can perform more than one operation in a single time. Design, synthesis and simulation of 64- bit MAC unit will be done using XILINX ISE 14.5. Coding of the proposed design will be done in VHDL (Very high Speed Integrated Circuit Hardware Description Language).

Keywords: MAC, Vedic Mathematics, XILINX ISE, VHDL.

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### Implementation of FSM Architecture Based Traffic Light Controlling Unit

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The purpose of this paper is to design and implementation of smart traffic light controller system using VHDL language and FPGA. A structure of four road intersection has been selected. The intersection to be controlled is between a busy (main street), and somewhat less busy (side street), with sensor for the side street and walk request button. Also, the system contains switches to control the traffic light manually. The intersection uses four timing parameters with ability to change these parameters manually. The system has been successfully tested with VHDL using Xilinx ISE 14.7i software environment and Chip-Scope, while, it is implemented in hardware using Xilinx Spartan 3E FPGA. It is easy to use and the cost for the same is also less as compared to the others. The designed traffic light control system is presented to work correctly as predictable.

Keywords: Traffic Light Controller (TLC); FSM; VHDL; Spartan 3E; FPGA; Xc3s500fg320-4.

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### Smart Garbage Bin Using Arduino

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In our surroundings, many times an observation is made that the garbage bins kept at public places overflows because of increase in the garbage regularly. It results in unhealthy condition for the people and spreads bad smell which results in spreading some serious diseases in Human Beings. So to avoid such a situation, the basic idea is to develop a system named "IOT Based Garbage Monitoring System". In this system multiple dustbins are located throughout the city and these dustbins has micro-controllers which help to track the garbage bins level and a unique ID will be provided for each and every dustbin so it will be easy to identify which particular garbage bin is full.

The device will transmit the level along with the unique ID provided to the concern authorities when the garbage bin will reach defined threshold limit. We will be implementing the k-means clustering algorithm to form the clusters of the days according to the percentage of garbage collected so it will be easy to predict the garbage collection and notify accordingly. These details can be accessed by the authorized personnel from their place and action can be taken in shorter time to maintain the dustbins.

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### **Driver Drowsiness Detection Using Matlab**

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When a driver doesn't get proper rest, they fall asleep while driving and this leads to fatal accidents. This particular issue demands a solution in the form of a system that is capable of detecting drowsiness and to take necessary actions to avoid accidents.

The detection is achieved with three main steps, it begins with face detection and facial feature detection using the famous Viola Jones algorithm followed by eye tracking. By the use of correlation coefficient template matching, the eyes are tracked. Whether the driver is awake or asleep is identified by matching the extracted eye image with the externally fed template (open eyes and closed eyes) based on eyes opening and eyes closing, blinking is recognized. If the driver falling asleep state remains above a specific time (the threshold time) the vehicles stops and an alarm is activated by the use of a specific microcontroller, in this prototype an Arduino is used.

Keywords- Drowsiness Detection, Image Processing, Matlab, Eye Detection

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### Image Defogging Using Advanced Haze Removal Techniques

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Images captured using camera systems in foggy weather conditions often suffer from poor visibility and can be seriously degraded due to atmospheric conditions, which creates a lot of impacts on the outdoor computer vision systems. To solve this problem, image enhancement is very important as this process is used for enhancing the quality of an image, and for this purpose numerous visibility enhancement techniques have been used and applied. The movement of atmospheric particles, which decreases contrast, changes color as well as atmospheric particles difficult to identify by human vision as well as some outdoor computer vision devices, will be used in images captured in hazy or foggy weather conditions. Image dehazing is thus an important issue and has been widely explored in computer vision. The task of image dehazing is to remove weather factors' impact to enhance the image's visual effects and to gain post-processing. We were using a pre-method of dark channels to dehaze images and NPEA to increase the image's naturalness or edge detection to detect edges. The main goal of this project is to understand and reviewing the techniques used for image enhancement. In this paper, we have tried to describe how to enhance an image using different techniques and methods.

Keywords-Airlight, Image Dehazing, Contrast enhancement, Dark channel prior.

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### Android Controlled Scrolling LED Message Display

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The project aims at designing a LED based scrolling message display controlled from an Android mobile phone. The proposed system makes use of Bluetooth technology to communicate from Android phone to LED display board Android is a software stack for mobile devices that includes an operating system middleware and key applications.

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### IOT Based Smart Air Pollution Monitoring in Vehicles

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Now a days, many people are suffering from number of diseases which is only because of impure/unsafe drinking water. The traditional method of testing Temperature and humidity is to collect samples manually and then send them to laboratory for analysis. However, it has been unable to meet the demands of water quality monitoring today. Air and sound pollution is growing issue these days. It is necessary to monitor air quality for a better future and healthy living for all. We propose an air quality as well as sound pollution monitoring system that allows us to monitor and check air quality as well as sound pollution in particular area through IoT.

Soil moisture is the amount of water in the soil. Soil moisture monitoring system that helps the government authorities to know the information about dry soil areas in the

Agricultural lands within a village, town or even a state so that the necessary precautionary steps can be taken to make such lands fertile. Water pollution is one of the biggest fears for the green globalization. In order to ensure the safe supply of the drinking water the quality needs to be monitor in real time. Here we design and develop a low cost system for real time monitoring of the water quality in IOT (internet of things). The system consist of several sensors used to measuring physical and chemical parameters of the water. The parameters such as temperature, PH, humidity sensor of the water can be measured.

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### Smart Parking Slot Availability System in Shopping Malls

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This paper proposes a management and implementation of Novel parking system in two folds, first based on cameras scanned image of parking lot and second Image Hashing technique for image or data security itself. As the parking problem become one of the key issue of concern to car drivers or motorists, it must be addressed in a good time saving way and secured way to give smooth or comfortable feel to the motorists as well as to the society as a whole. Our system will help motorists to know before entering in parking if there is a place available for their cars or not by show current parking status of parking places beforehand. Information of whether there is a parking free or not and how many parking are free at that point of time with its row - column address. The security to the system is provided by hashing algorithm. We used MATLAB software simulation to enable us to use different image prepossessing methods like detecting and tracking objects using separate background color from the other color objects by using Raspberry Pi microcontroller, Camera, module board, SD card that will increase rate of reliability and will decrease the cost. The Image hashing algorithms

Efficient Image Hashkey Generator will provide authenticity and security. Thus the proposed system will be secure system and support different operating Systems appropriate for various environments.

Keywords: Image hashing, Digital image processing; Efficient parking; MATLAB; Raspberry Pi.

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### Design and Implementation of Women Security Using GSM

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The Micro controller processes this information and this processed information is sent to the user using GSM modem A GSM modem is interfaced to the MCU. The GSM modem sends an SMS to the predefined mobile number. When a woman is in danger and in need of self-defense then she can press the switch which is allotted to her. By pressing the switch, the entire system will be activated then immediately a sms will be sent to concern person with location using GSM and GPS.

This Project presents a women safety detection system using GPS and GSM modems. The system can be interconnected with the alarm system and alert the neighbors. This detection and messaging system is composed of a GPS receiver, Micro controller and a GSM Modem. GPS Receiver gets the location information from satellites in the form of latitude and longitude.

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### AI and ML Based Road Sign Recognition Using Python

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This thesis is focused on the development of a convolutional neural network (CNN)- based model for traffic sign detection and recognition. The increase in automobile ownership and traffic has made it challenging for drivers to accurately identify traffic signs, leading to an increased risk of accidents, loss of life, and property damage. To address this issue, an intelligent traffic sign detector and recognizer is required. Our research demonstrates the potential impact of this model on road safety and suggests that it can be an effective tool for reducing the likelihood of accidents and their associated costs.

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### Android Controlled Scrolling LED Message Display

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The project aims at designing a LED based scrolling message display controlled from an Android mobile phone. The proposed system makes use of Bluetooth technology to communicate from Android phone to LED display board.

Android is a software stack for mobile devices that includes an operating system middleware and key applications.

Android boasts a healthy array of connectivity options including Wi-Fi, Bluetooth, and wireless data over a cellular connection (for example, GPRS, EDGE (Enhanced Data rates for GSM Evolution), and 3G.

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### Design of ALU Multiplexer Implementation in SRAM Architecture

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A processor is a small chip that resides in computers and other electronic devices. Its basic job is to receive input and provide the appropriate output. While this may seem like a simple task, modern processors can handle trillions of calculations per second. Modern CPUs often include multiple processing cores, which work together to process instructions. While these "cores" are contained in one physical unit, they are actually individual processors. This project is going to design & simulate a 8-bit Microprocessor which is near to Reduced Instruction Set Computing (RISC) architecture based processor. The purpose of RISC microprocessor is to execute a minuscule batch of instructions. The designing process is using modules like ALU, Control Unit, Program Counter, MUX, Memory, Register File by using the Verilog Hardware Description Language (HDL).

Microprocessor is a programmable, multipurpose electronic device that reads binary instructions from a storage device called memory, accepts binary data as input and processes data according to those instructions and provides results as output. It executes the sequence of instructions one after the other.

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### IOT Based Advanced Driving Car Using NodeMCU

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Autonomous driving technologies can provide greater safety, comfort and efficiency for future transportation systems. Until now, much of the research effort has been devoted to developing different sensing and control algorithms. However, there has been limited research on how to handle sensor errors efficiently. A simple error in the sensor may lead to an unexpected failure in the whole autonomous driving function. In those cases, the vehicle is then recommended to be sent back to the manufacturer for repair, which costs time and money. This paper introduces an efficient automatic on-line sensor correction method. The method includes four major functions: sensor error detection, human teaching, vehicle learning, and vehicle self-evaluation. The first function is assumed to be ready and the major contribution of this paper is the human-vehicle teaching and learning framework, which utilizes human-vehicle interaction to collaboratively adjust the parameter in the control model in order to compensate for the errors of the sensors. The self-evaluation function is also briefly introduced. The applications of this method to radar and vision sensors to recover adaptive cruise control and lane keeping functions are introduced in detail. Experimental results acquired from high-fidelity 1/10-scale autonomous driving vehicles illustrate the effectiveness and advantages of the proposed approach.

Index Terms- Sensor correction, teaching-and-learning, adaptive cruise control, autonomous lane keeping

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### Implementation of Medicine Reminder Box for Old Age People

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In modern society, busy life has made people forget many things in day today life. The elderly people and the people victims of chronicle diseases who need to take the medicines timely without missing are suffering from dementia, which is forgetting things in their daily routine. Considering this situation study has been done in this. Paper reviewing the technologies of home health care which are currently used for improving this situation by reminding the scheduled of medicine, remote monitoring and update new medicine data of patients, which can be done by prescriber through web. Generally for home based health care the arrangement include communications, imaging, sensing and human computer interaction technologies treatment and monitoring patients without disturbing the quality of lifestyle. Internet of Things (IoT) network will provide active and real-time appointment of patient, hospitals, caretaker and doctors apart from this the secured data transmission from source point to

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destination for the purpose of remote monitoring there is need of the architecture of a low cost embedded platform for Web-based monitoring

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### **Smart Air Pollution Monitoring in Vehciles**

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Now a days, many people are suffering from number of diseases which is only because of impure/unsafe drinking water. The traditional method of testing Temperature and humidity is to collect samples manually and then send them to laboratory for analysis. However, it has been unable to meet the demands of water quality monitoring today. Air and sound pollution is growing issue these days. It is necessary to monitor air quality for a better future and healthy living for all. We propose an air quality as well as sound pollution monitoring system that allows us to monitor and check air quality as well as sound pollution in particular area through IoT.Soil moisture is the amount of water in the soil. Soil moisture monitoring system that helps the government authorities to know the information about dry soil areas in the agricultural lands within a village, town or even a state so that the necessary precautionary steps can be taken to make such lands fertile. Water pollution is one of the biggest fears for the green globalization. In order to ensure the safe supply of the drinking water the quality needs to be monitor in real time. Here we design and develop a low cost system for real time monitoring of the water quality in IOT (internet of things). The system consist of several sensors used to measuring physical and chemical parameters of the water. The parameters such as temperature, PH, humidity sensor of the water can be measured.

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### FPGA Based Error Detection and Correction Using CRC Algorithm

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A common error detection algorithm used in many digital transmission and storage protocols to find problems as they are transmitted via the communication channel is the cyclic redundancy check (CRC). The project's goal is to create and put into use an FPGA-based Cyclic Redundancy Check Error Detection Code. The main objective is to identify data transmission mistakes via noisy or unreliable communication links. A initial line of defence against data corruption is provided by CRCs. For the quick and effective identification of burst faults in digital data transmission and storage, CRC code is offered. Due to its ability to strike a fair balance between simplicity and efficacy, the CRC algorithm is a commonly used technique for error detection.

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### Leakage Current Reduction Techniques in SRAM

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Leakage components are very important for estimation and reduction of leakage power especially in sub micron regimes in which threshold voltage, gate oxide thickness and channel length scale downwards. In present era it provides motivation to design a low power SRAM. This paper presents several techniques for leakage current reduction for SRAM cell.

**Keywords:** low power design, low leakage memory design, SRAM, gate leakage current, subthreshold leakage current

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### Smart Helmet Based on lot Technology for Accident Detection and Protecting System

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A motorcycle frequently called motorbike or two wheelers, which is the most used than another form of automobiles because of its low price. But another side, this is the most unsafe automobile. The accident can happen for driving fast or drunk driving. Safety and security in vehicle traveling are a pre-eminent concern for all. With the rapid urbanization and staggering growth of transport networks like two-wheeler vehicles, safety on the roads and security on the bike has emerged as an inescapable priority for us. It has expanded the rate of accidents, which leads to several damages with loss of lives. In many circumstances, we cannot able to detect the accident's location. A helmet is a form of protecting gear worn to keep safe the head from injuries. More specifically, the helmet aids the skull in protecting the brain. A smart helmet can detect the accident's locations also save lives and makes two-wheeler driving safer from previously. This paper propounds a smart helmet system to avoid the accident. The system divides into three parts helmet circuit, automobile circuit, and mobile application. At first, the helmet circuit has IR and alcohol detection sensor. The automobile circuit has a 3-axis accelerometer, Bluetooth module, relay, and load sensor. The helmet circuit sends a signal to the automobile circuit to start if the helmet is wearied and no alcohol detects. Then the automobile circuit checks the status of the load to start. 3-axis accelerometer senses crash or hit. After detecting an accident mobile application sends the accident location automatically to police and emergency contact number via the database.

Keywords- smart helmet, accident detection, Arduino, IoT, database

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### Mobile Fingerprint Based Smart Low-cost Door Controlling Unit

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Currently, the entire globe is infected with COVID 19, and everyone is doing everything they can do to avoid contracting this serious sickness by adhering to social segregation, wearing coverings, using credit-only exchanges, and refraining from contacting anything to prevent the spread of germs. With the advancement of technology, traditional locks are becoming relics of the past, while new biometric- based locks and Radio Frequency Identification (RFID)-based locks are becoming increasingly in common. The unique finger impression based locks, as well as participation record-keeping devices, are used in the vast majority of offices and universities, however due to the pandemic, it is no longer appropriate to do so. As a result, the proposed system use a solenoid lock to make the door lock.



### **Real-Time Wireless Embedded Electronics for Soldier Security**

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This paper introduces real-time wireless embedded electronic devices for soldier security. Enemy war is an important element of the security of all nations. One of the most important and important roles is played by the military. There are many concerns about soldier health parameters. For security reasons, many devices are attached to them and indicate their health status and the combat equipment they carry. Bio sensing systems include various types of small physiological sensors, transmission modules, and processing capabilities to enable cost-effective wearable health monitoring solutions. GPS is used to record the longitude and latitude so that the outlook can be known easily. These equipment are being added to weapons and shooters, and some military such as the Israeli army are exploring the probability of embedding GPS devices into soldier's vests and uniforms so that field commanders can track their soldier's movement in real time. GSM and GPS module can be used for high-speed, short-range, soldier-to-soldier wireless communications that will be required to transfer information on situational awareness, planned instructions, and furtive surveillance related data during special operations survey and other missions. So by using these appliances we are trying to impose the basic life saving system for soldier in less cost and high reliable.

**Keywords-** Global Positioning System (GPS); Global System for Mobile communication (GSM); Biosensors; Physiological sensors; OS (operating system);

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### Face Emotion Recognition Using CNN Algorithm

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Humans can effortlessly pick out emotions using their senses in which as computer imaginative and prescient seeks to mimic human vision by means of analysing the digital image as enter. For humans to stumble on an emotion will not be a difficult task to perform. Detecting emotion via voice for example detecting 'stress' in a voice with the aid of setting parameters in areas like tone, pitch, pace, volume and so forth in case of virtual photos detecting emotion simply by using analysing photo is novel way. In this model, we are looking to design a convolutional neural network version that may classify the input photo into 7 exclusive feelings. The respected feelings we are going to classify are angry, disgust, contempt, happy, sad, surprise and neutral. In order to classify these emotions, we're implementing Convolutional Neural Networks (CNNs) which can successfully and accurately elucidate semantic information coming from the faces in an automatic manner. We also apply some data augmentation techniques in order to intercept over fitting and under fitting problems. The Results of this version shows that it works higher if it has more set of pics to research. The proposed version achieves the accuracy more than 90%.

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### **IOT Based Forest Fire Alarm and Alerting System**

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Nowadays their area unit numerous occurrences regarding the pirating of trees like sandal, Sag wan and then forth. These trees area unit high-ticket and pitiful. They're utilized within the medicinal sciences, beautifying agents. To limit their sneaking and to spare woodlands around the world some preventive estimates ought to be sent. The wave got designed up a framework that may be utilized to limit sneaking. The structure framework utilizes 3 sensors tilt sensor to acknowledge the tendency of the tree once it's being cut, temperature sensor to determine timberland fires, a sound sensor for the successful discovery of unlawful work for instance so, even the sounds created whereas chopping out the tree area unit in addition detected. Information created from these sensors is consistently observed with the page. As for the sensors, their yield gadgets area unit initiated through a hand-off switch. For a tilt sensor and sound sensor, a ringer is enacted and for the temperature sensor, the water siphon is actuated. Created data is placed away within the cloud Server over the Wi-Fi module. Woods authorities square measure suggested once an occasion happens therefore correct move is created.

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### Autonomous Metal Detector Robot Using Aurdino

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Metal Detector Robot is an instrument controlled by an Android-based smartphone that detects the presence of metal, especially landmines, on a designated location. The usage of landmines causing injury and fatality makes detectors important. The old method of detecting landmines such as direct sweeping is very risky for stepping the landmine unintentionally. In this research, the robot system is equipped with a metal detector useful to detect the metal presence based on coil induction when it's approaching the metal. LCD works as an interface showing frequencies of detected metals. The robot movement is controlled by DC's current motor programmed using Arduino UNO. When the robot detects the metal presence, the buzzer sound will be triggered, and the LCD will show the detected metal frequency. The testing result shows that an Android-based smartphone can control the robot up to 15 meters radius. The detection radius is effective up to 88 milli meters from the detector head.

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### Android Controlled Scrolling LED Message Display

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The project aims at designing a LED based scrolling message display controlled from an Android mobile phone. The proposed system makes use of Bluetooth technology to communicate from Android phone to LED display board Android is a software stack for mobile devices that includes an operating system middleware and key applications.

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### **IOT Based Air Pollution Monitoring**

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Now a days, many people are suffering from number of diseases which is only because of impure/unsafe drinking water. The traditional method of testing Temperature and humidity is to collect samples manually and then send them to laboratory for analysis. However, it has been unable to meet the demands of water quality monitoring today. Air and sound pollution is growing issue these days. It is necessary to monitor air quality for a better future and healthy living for all. We propose an air quality as well as sound pollution monitoring system that allows us to monitor and check air quality as well as sound pollution in particular area through IoT.

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### Hand Gesture Recognition Master Using Matlab

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Using orientation histograms a simple and fast algorithm will be developed to work on a workstation. It will recognize static hand gestures, namely, a subset of American Sign Language (ASL). Previous systems have used data gloves or markers for input in the system. A pattern recognition system will be using a transform that converts an image into a feature vector, which will then be compared with the feature vectors of a training set of gestures. The final system will be implemented with a Perceptron network. Image identification is becoming a crucial step in most of the modern world problem- solving systems. Approaches for image detection, analysis and classification are available in glut, but the difference between such approaches is still arcane. It essential that proper distinctions between such techniques should be interpreted and they should be analyzed. Standard American Sign Language (ASL) images of a person's hand photographed under several different environmental conditions are taken as the dataset. The main aim is to recognize and classify such hand gestures to their correct meaning with the maximum accuracy possible. A novel approach for the same has been proposed and some other widely popular models have compared with it. The different preprocessing techniques used are Histogram of Gradients, Principal Component Analysis, Local Binary Patterns. The novel model is made using canny edge detection, ORB and bag of word technique. The preprocessed data is passed through several classifiers (Random Forests, Support Vector Machines, Naïve Bayes, Logistic Regression, K-Nearest Neighbours, Multilayer Perceptron) has to draw the effective results.

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### IOT Based Smart Servilience Monitoring Robotic Car Using ESP32

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The robotics and automation industry which is ruled the sectors from manufacturing to house-hold entertainments. It is widely used because of its simplicity and ability to modify to meet changes of needs. The project is designed to develop a robotic vehicle using android application for remote operation attached with wireless camera for monitoring purpose. The robot along with camera can wirelessly transmit real time video with night vision capabilities. This is kind of robot can be helpful for spying purpose in war fields. The wifi technology is relatively new as compared to other technologies and there is huge potential of its growth and practical application.

### Approach for Implementation of Vending Mechine Through Verilog HDL

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A Vending machine is a machine which administers items, for example, snacks, drinks, lottery tickets, goldsmiths and train tickets and so on. It conveys the item after the client embeds cash (coin) or credit into the machine. Vending machines are no doubt understood among US, UK, Singapore, Japan and Malaysia. In these nations the amount of machines is on the top worldwide because of the advanced ways of life which oblige fast food preparing with high calibre. This paper portrays the outlining of proposed Vending machine. This machine acknowledges both either cash (money) or card (credit). In this report we talks about the Vending machine and its working. We composed the Vending machine with the assistance of a Mealy machine state chart. The configuration is demonstrated utilizing

Verilog HDL dialect which is a Hardware Description Language used to portray the computerized framework. Aside from that we likewise brought a few highlights into the machine which makes it a development machine. The confirmation of the created model will be made by recognizing the suitable experiments in a test seat. The Verilog code for the proposed Vending machine model is produced and the recreation results are effectively confirmed utilizing Xilinx ISE 14.7i device. The Vending machine we planned can be gotten to by both cash and card. The card framework will be done.

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# Detecting the Spam Comments on Youtube Videos Using SVM & KNN

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Social networking websites have become an integral part of the day-to-day lives of people. People turn to social media for interacting with other people, sharing ideas, gaining knowledge, for entertainment, and staying informed about the events happening in the rest of the world. Among these sites, YouTube has emerged as the most popular website for sharing and viewing video content. This popularity of YouTube has also attracted scammers, who upload videos with the sole purpose of polluting the system content and causing dissatisfaction among other viewers. These spam videos may be unrelated to their title or may contain pornographic content. Therefore, it is very important to find a way to detect these videos and report them before they are viewed by innocent users. In this paper, we propose a Markov Decision Process approach to model the problem of YouTube video spam detection. We analyze the accuracy of the policy returned by the model and compare it with the accuracy of other data mining algorithms that have been proposed for video spam detection. We find that the proposed model gives superior performance to the other model.

Index terms-Markov Decision Process, spam detection, optimal policy, YouTube.

**Key words:** Keras, Sklearn, LSTM, Tokenize Spam Detection, Innovative Support Vector Machine K-Nearest Neighbor Classifier, Accuracy Rate, you tube Spam.

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### Al Based Automatic Number Plate Recognition Using Phython

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Automatic Plate recognition is one of the techniques used for vehicle identification purposes of it will provide all details about particular vehicle owner. This process usually comprises of steps. First step is the vehicle plate localization, regardless of the vehicle-plate size and orientation. The second step is the segmentation of the characters and last step is the recognition of thecharacters from the vehicle plate. Thus, this project uncovers the fundamental idea of variousalgorithms required to accomplish character recognition from the vehicle plate. This feature of the algorithm mentioned above helped in achieving faster character recognition of the license plate. This process of character recognition consists of steps like Image processing, Defragmentation, Resizing and Character localization that are required to be performed on the image.

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### Early Flood Detection and Alerting System Using IOT

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Flood monitoring and alert system using wireless sensor network is a project to collect flood data in Perak Tengah Region. The project will develop a system that uses a wireless sensor network which consists of a sensor, transceiver to transmit data, and computational device to monitor and predict the flood. Water level, Temperature, and Water velocity data are vital in order to predict the flood disaster. The working principle for this mechanism begin with sensors collecting flood parameters at a specific location, follows by the transmission of these parameters from nodes to the base station.

The system will automatically. Compare the measured parameter. Threshold value. That we set for the probability of flood disaster. Is the measured values exceed the threshold value that are set, an alert message will be triggered through the use of a global system for mobile.

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### Smart Crop Recommendation System for Farmers Based on Environmental Conditions

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Crop Recommendation System for agriculture is based on various input parameters. This proposes a hybrid model for recommending crops to south Indian states by considering various attributes such as soil type, Rainfall, Groundwater level, Temperature, Fertilizers, Pesticides and season.

The recommender model is built as a hybrid model using the classifier machine learning algorithm. Based on the appropriate parameters, the system will recommend the crop.

Technology based crop recommendation system for agriculture helps the farmers to increase the crop yield by recommending a suitable crop for their land with the help of geographic and the climatic parameters.

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### ML Based Brain Tumour Detection Using Nural Network

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The human brain is the major controller of the humanoid system. The abnormal growth and division of cells in the brain lead to a brain tumor, and the further growth of brain tumors leads to brain cancer. In the area of human health, Computer Vision plays a significant role, which reduces the human judgment that gives accurate results. CT scans, X-Ray, and MRI scans are the common imaging methods among magnetic resonance imaging (MRI) that are the most reliable and secure. MRI detects every minute objects. Our paper aims to focus on the use of different techniques for the discovery of brain cancer using brain MRI. In this study, we performed preprocessing using the bilateral filter (BF) for removal of the noises that are present in an MR image. This was followed by the binary thresholding and Convolution Neural Network(CNN)segmentation techniques.

The resultant outcomes will be examined through various performance examined metrics that include techniques for reliable detection of the tumor region. Training, testing,

Will predict whether the subject has a brain tumor or not. The resultant outcomes will be examined through various performance examined metrics that include accuracy, sensitivity, and specificity. It is desired that the proposed work would exhibit a more exceptional performance over its counterparts.

**Keywords:** Brain tumor, Magnetic resonance imaging, Adaptive Bilateral Filter, Convolution Neural Network.

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### Fake News Detection Using Python

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In recent years, due to the booming development of online social networks, fake news for various commercial and political purposes has been appearing in large numbers and widespread in the online world. With deceptive words, online social network users can get infected by this online fake news easily, which has brought about tremendous effects on the offline society already. An important goal in improving the trustworthiness of information in online social networks is to identify the fake news timely. This paper aims at investigating the principles, methodologies and algorithms for detecting fake news articles, creators and subjects from online social networks and evaluating the corresponding performance. Information preciseness on Internet, especially on social media, is an increasingly important concern , but web- scale data hampers, ability to identify, evaluate and correct such data, or so called "fake news," present in these platforms. In this paper, we propose a method for "fake news" detection and ways to apply it on Face book, one of the most popular online social media platforms. This method uses Naive Bayes classification model to predict.

Whether a post on Face book will be labeled as real or fake. The results may be improved by applying several techniques that are discussed in the paper. Received results suggest, that fake news detection problem can be addressed with machine learning methods.

### **Smart Weather Forecasting Using Machine Learning**

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Traditionally, weather predictions are performed with the help of large complex models of physics, which utilize different atmospheric conditions over a long period of time. These conditions are often unstable because of perturbations of the weather system, causing the models to provide inaccurate forecasts. The models are generally run on hundreds of nodes in a large High Performance Computing (HPC) environment which consumes a large amount of energy. In this paper, we present a weather prediction technique that utilizes historical data from multiple weather stations to train simple machine learning models, which can provide usable forecasts about certain weather conditions for the near future within a very short period of time. The models can be run on much less resource intensive environments. The evaluation results show that the accuracy of the models is good enough to be used alongside the current state-of-the-art techniques. Furthermore, we show that it is beneficial to leverage the weather station data from multiple neighboring areas over the data of only the area for which weather forecasting is being performance.

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### Farmer-Friendly Agriculture System Using IoT

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The agriculture is one of the most fundamental resource of food production and also plays a vital role in keeping the economy running of every nation by contributing to the Gross Domestic Production. But there are several issues related to traditional methods of agriculture such as excessive wastage of water during irrigation of field, dependency on non- renewable power source, time, money, human resource etc.

Since every activity now a days becoming smart it needs to smartly develop agriculture sector for growth of country. This paper aims at developing the Smart Irrigation System Using IoT Technology with an objective of automating the total irrigation system which provide adequate water required by crop by monitoring the moisture of soil and climate condition in order to prevent the wastage of water resource. It will also have many advantages for farmers. The irrigation at remote location from home will become easy and more comfortable. In addition, it will not only protect the farmer from scorching heat & severe cold but also save their time for to and fro journey to the field.

**Keywords:** IoT, Automation, Soil Moisture Sensor, Rain Sensor, 328P microcontroller, Wi-Fi, HTTP protocol, API.

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### Hand Gesture Controlled Wheelchair

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The aim of this paper is to prepare a Hand Gesture Controlled Wheelchair for the physically disabled people who face difficulty in moving from one place to another in day today life. These days joystick controlled wheel chair is available in the market whose cost range between Rs.80,000 to Rs.150,000. We have prepared this Hand Gesture Controlled Wheelchair in Rs.22,000. An accelerometer is used as a sensor which gives an analog signal on its movement in any of the 6 axis directions that is positive X axis, negative X axis, positive Y axis, negative Z axis, negative Z axis. In this project we have considered X and Y axis for the direction. Further the input from sensor is given to encoder which sends the data wirelessly through the transmitter, then the data is received at the receiver end and the sensor data is decoded and finally given to microcontroller. Based on data received the from accelerometer the microcontroller sends the signal accordingly to relays to move the wheelchair in forward, backward, left, right directions. The accelerometer used here is MEMS (micro-electromechanical system.

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### Fast Arthemedic CSLA Using Verilog

#### Dr.D.Lakshmaiah<sup>1</sup>, Dr.I.Satyanarayana<sup>2</sup>, S.Naresh<sup>3</sup>, V.Dhanush Sai<sup>4</sup>, V.Vinay<sup>5</sup>, P,Shiva<sup>6</sup>, K.Santosh<sup>7</sup>

VLSI system design are made of low area, delay and low power designs. Comparing all traditional adders, the Carry Select Adder (CSLA) is one of the quickest adders for arithmetic operations. There is room to reduce the area and power given the way CSLA is built. The Implementation of modified 16bit and 32bit Carry Select Adder (CSLA) designed with the standard CSLA architecture. Based on the modifications, 8-bit, 16-bit, 32-bit and 64-bit architectures of CSLA are designed and compared. In this project, conventional CSLA is compared with Modified Carry select adder (MCSLA), Regular Square Root CSLA (SQRT CSLA), Modi ed SQRT CSLA and Proposed SQRT CSLA in terms of delay and area consumption. The result analysis shows that the proposed structure is better than the conventional CSLA.

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### **Exploring Blockchain Technology and Digital Currencies**

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A blockchain can be referred to as a collection of records or open record that gets shared amongst participating parties. Every transaction that gets incorporated is first verified by all the participants of that transaction. Once the data gets recorded by the blockchain, can never be rewritten or changed. Thus the blockchain can be termed as a record book of all the transactions held. Cryptocurrencies, the decentralized bitcoin or say ethereum which can be termed as peer to peer computerized cash also uses the blockchain technology. This paper includes history of bitcoin, a few literary reviews, working of the blockchain and its application.

Keywords: Blockchain, Bitcoin, IoT, BlockCypher

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### Future Horizons of Blockchain Technology and its Hurdles

#### D.Sruthi<sup>1</sup>, K.Prashanthi<sup>2</sup>, V.Swapna<sup>3</sup>

Blockchain is considered by many to be a disruptive core technology. Although many researchers have realized the importance of blockchain, the research of blockchain is still in its infancy. Additionally, we conduct a clustering analysis and identify the following five research aspects of BT(Blockchain Technology) that would largely impact future deployment of following sector- FinTech Economy, Agriculture Sector, health and Insurance Sector, Real Estate and Identity Crisis. This paper also discusses future challenges of Blockchain in various sectors

Keywords- Blockchain, Classification, Applications Future challenges

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### Harnessing Machine Learning to Understand Atomic-Scale Attributes Grounded on Scientific Laws

K.Prashanthi<sup>1</sup>, V.Swapna<sup>2</sup>, D.Sruthi<sup>3</sup>

We briefly summarize the kernel regression approach, as used recently in materials modelling, to fitting functions, particularly potential energy surfaces, and highlight how the linear algebra framework can be used to both predict and train from linear functionals of the potential energy, such as the total energy and atomic forces. We then give a detailed account of the Smooth Overlap of Atomic Positions (SOAP) representation and kernel, showing how it arises from an abstract representation of smooth atomic densities, and how it is related to several popular density-based representations of atomic structure. We also discuss recent generalisations that allow fine control of correlations between different atomic species, prediction and fitting of tensorial properties, and also how to construct structural kernels-applicable to comparing entire molecules or periodic systems- that go beyond an additive combination of local environments.

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### A Study on the Role of Homomorphic Encryption in Contemporary Technologies

### S.Anitha<sup>1</sup>, N.Shilpa<sup>2</sup>, K.Veera Kishore<sup>3</sup>

A particular time-consuming evaluation algorithm is supported by homomorphic encryption, a type of encryption. This approach enables specific operations to be performed on the ciphertext without the need for a secret key. This review article looks at the most recent technologies that can safeguard data via homomorphic encryption such as Vehicular Ad Hoc Networks, Internet of Things for Mobile and Internet of Things for Cloud Computing and Internet of Medical Things. A safe computing solution for vehicle data has been devised employing partial homomorphic encryption, or Fully Homomorphic Encryption (FHE), for the majority of protocols. Only homomorphic addition or homomorphic multiplication is supported by partial homomorphic encryption, and implementing these operations requires additional rounds of interaction. This is a concern because the unusually long execution time of homomorphic multiplication makes it difficult to maintain real-time communication on VANETs. Use of Partial or Full homomorphic encryption for real-time communication in VANETs might be a good option since it ensures both addition and multiplication to take place an infinite number of times. It is crucial to stress that while permitting third-party cloud computations, data privacy are preserved. However HE comes at a higher expense in terms of processing because of its inherent complexity. Data traffic increases as ciphertext size increases, increasing the cost of transmission in terms of energy utilization and fees per transmitted byte. Activities in IoMT must be performed directly on network nodes that healthcare services manage and that are situated closer to the device layer in order to reduce latency. Similar research is needed to reduce the distance between the healthcare services and the device layer in order to reduce latency. The current study does not address the issue of a secure communication link between the device and base station for the Internet of Medical Things.

**Keywords:** Homomorphic Encryption, Technology, Vehicular Ad Hoc Networks, Internet of Things, Cloud Computing.

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### Using Data Science for Vehicle Crash Detection and Warning Systems

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Vehicle collision detection is an essential aspect of modern transportation systems that aims to reduce the frequency and severity of accidents on the roads. The primary goal of collision detection is to identify potential collisions between vehicles and other objects, including pedestrians, bicycles, and stationary obstacles. The detection process involves collecting and analyzing data from various sources, such as cameras to determine the speed, and trajectory of vehicles in real-time. Machine learning algorithms are often used to analyze this data and identify potential collision scenarios, alerting drivers or autonomous systems to take appropriate actions to avoid accidents. Effective collision detection systems can help reduce the number of fatalities and injuries on the roads, improving overall road safety and promoting sustainable transportation.

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Keywords: Accident Detection, YOLO, Dashboard Cameras, Bounding Box method, Machine Learning models, CNN, Neural Network

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### A Dive Into Various Quantum Computing Methodologies

V.Swapna<sup>1</sup>, D.Sruthi<sup>2</sup>, K.Prashanthi<sup>3</sup>

One of the main drivers for growing the field of quantum computation has been the prospect of creating a quantum computer capable of carrying out Shor's algorithm for huge numbers. Nonetheless, it is critical to recognise that quantum computers will probably only significantly speed up a small subset of issues if one wants to acquire a more comprehensive perspective on them. Building a system that can accommodate a lot of qubits while preserving stability and coherence is one of the biggest problems in quantum computing. Due to their extreme sensitivity to noise and mistakes, quantum systems are particularly susceptible to computing errors. Building a usable quantum computer requires error mitigation and correction, but the techniques for doing this are still in the early phases of research. In quantum computing, all processes and schemes must be reversible in accordance with the law of unitary development. The circuit model is taken into account in the NISQ framework, but there is also the one-way or measurement-based quantum computation approach, which is not reversible but is demonstrated to be comparable to the circuit model. Noisy suggests that the computing capacity of such quantum computers is constrained because of sufficiently high error and decoherence rates. While they are likely too huge to be replicated by traditional computers using brute force. Intermediate-Scale suggests that they are still too small to be mistake corrected, which also adds to the preceding argument about how noisy they are. P stands for the usage of perfect qubits with perfect quantum gates and no decoherence. The capability to control and protect our qubits in a quantum computer to the degree necessary to run such algorithms is commonly described as fault-tolerant quantum computation. This review paper examines the numerous quantum computing strategies, such as Noisy Intermediate Scale Computing (NISO), Perfect Intermediate Scale Computing (PISO), and Fault Tolerant Intermediate Scale Computing (FTISQ), as well as potential future lines of inquiry.

**Keywords:** Noisy Intermediate Scale Computing, Perfect Intermediate Scale Computing, Fault Tolerant Intermediate Scale Computing, Noisy, Shor's algorithm, quantum computation, qubits, error mitigation.

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### Smart Integration of Blockchain Technology into Healthcare Systems

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The blockchain technology plays a significant role in the present era of information technology. In the last few years, this technology has been used effectively in several domains. It has already made significant differences in human life, as well as is intended to have noticeable impact in many other domains in the forthcoming years. The rapid growth in blockchain technology has created numerous new possibilities for use, especially for healthcare applications. The digital healthcare services require highly effective security methodologies that can integrate data security with the available management strategies. To test and understand this goal of security management in Saudi Arabian perspective, the authors performed a numerical analysis and simulation through a multi criteria decision making approach in this study. The authors adopted the fuzzy Analytical Hierarchy Process (AHP) for evaluating the effectiveness and then applied the fuzzy Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) technique to simulate the validation of results. For eliciting highly corroborative and conclusive results, the study referred to a real time project of diabetes patients' management application of Kingdom of Saudi Arabia (KSA). The results discussed in this paper are scientifically proven and validated through various analysis approaches. Hence the present study can be a credible basis for other similar endeavours being undertaken in the domain of blockchain research.

Keywords: Blockchain technology; data management; fuzzy logic; AHP; TOPSIS

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### **Deepening Stereotype Recognition for Detecting Anomalies**

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At present, many anomaly detection researches focus on two problems: one is that the anomaly on pixels cannot be accurately located; the other is that the training data cannot include the anomalies. We introduce the "Stereotype Deepening" algorithm to solve the challenging problems, which uses transitive learning in the process of training the tree-like teacher-student network structure to deepen the "Stereotype". Therefore, in the abnormal area, the descriptors given by the student will deviate from the descriptors given by the teacher. Additionally, peer bias is also taken into account as an abnormal score item. Experiments have been conducted on different types of datasets to prove the effectiveness of this algorithm for anomaly detection and anomaly localization. By comparison, the method proposed in this paper has significant advantages in textures data type.

Keywords: Stereotype deepening; Transitive learning; Knowledge distillation; Anomaly detection; Anomaly localization

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### Enhancing Privacy and Trust in VANETs with Blockchain Authentication

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Vehicular Ad Hoc Networks (VANETs) are characterized by high mobility of nodes and volatility, which make privacy, trust management, and security challenging issues in VANETs' design. In such networks, data can be exposed to a variety of attacks, the most dangerous is false information dissemination, which threatens the safety and efficiency of transportation systems. False emergency messages can be injected by inside attackers to announce fake incidents such as traffic accidents, resulting in a false information attack. As the data in VANET is based on events, any trust mechanism must first identify the true events. To address these security challenges, a blockchain-based authentication scheme and trust management model are proposed for VANETs. Using the authentication scheme, vehicles are enabled to send messages anonymously to the roadside units (RSUs) and the identity privacy of vehicles is protected. Besides, the proposed trust management model is designed to detect and deal with false information by evaluating the trustworthiness of vehicles and data. Using the trust model, when vehicles report an incident to the nearest RSU, the RSU is able to verify whether or not the incident took place. This mechanism ensures that RSUs send only verified event notifications. Finally, RSUs participate in updating the trust values of vehicles and store these values in the blockchain. The efficiency of the proposed authentication scheme is validated through analysis while the trust model is validated through simulations. The results obtained show that the proposed authentication scheme and the trust model provide better performance than other stateof-the-art models where malicious vehicles can be identified efficiently and RSUs are enabled to broadcast only legitimate events.

Keywords: authentication, blockchain, privacy-preserving, trust management, VANET

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### Investigating Correlations in Power Grid Weather Disasters Using an Advanced Apriori Algorithm

Dr.B.Ratnakanth<sup>1</sup>, P.Sriramulu<sup>2</sup>, Amaresh<sup>3</sup>

In recent years, due to the frequent occurrence of extreme meteorological disasters, the safe operation and production activities of power grid have been greatly threatened. If we can find out the relationship between different types of climate and power grid equipment failure, it can provide help for power grid disaster prevention and reduction. Therefore, this paper chooses to use the Apriori algorithm based on mapping and pre-pruning to analyze the relationship between meteorological disasters and power grid equipment faults. Compared with the classical Apriori algorithm, this algorithm reduces the number of scanning transaction databases and the amount of calculation, so as to improve the efficiency. The improved Apriori algorithm is used to find out the correlation between meteorological disasters. Finally, the effectiveness of the proposed method is verified by experiments.

Keywords: Apriori Algorithm, Power Grid, Meteorological Disasters, Mapping, Pre-pruning

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### Neural Network-Based Video Tracking Techniques

#### P.Sriramulu<sup>1</sup>, Amaresh<sup>2</sup>, Dr.B.Ratnakanth<sup>3</sup>

Target tracking is an important research direction in computer vision. In order to realize target tracking, this paper proposes a target tracking algorithm based on deep neural network. The basic framework of the algorithm consists of a Siamese network. The main innovation is that the attention mechanism module is added to the Siamese network model. The attention mechanism module can make the extracted features more refined, so that the tracking effect is more accurate. The model proposed in this paper achieves excellent tracking results on both OTB2015 and UAV123 test datasets.

Keywords: Target tracking, Deep neural network, Siamese network, Attention mechanism

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### Secure Data Transmission Leveraging SM Cryptographic Techniques

Amaresh<sup>1</sup>, Dr.B.Ratnakanth<sup>2</sup>, P.Sriramulu<sup>3</sup>

In recent years, major companies have continuously strengthened the construction of data centers, and the security of data link transmission has become an urgent problem to be solved. Considering that SM cryptographic algorithms have begun to show its superiority compared with the international general cryptographic algorithm, this paper combines the advantages of symmetric encryption, asymmetric encryption and digital signature technology in SM cryptographic algorithms, and proposes a data link security transmission method based on the national secret SM2 algorithm, SM3 algorithm and SM4 algorithm. Experiments show that this method has a good effect against passive attacks and active attacks, and can significantly improve the security of data transmission between stations in two-level data.

Keywords: Information Security, SM Cryptographic Algorithms, secure transmission

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### The Role of Artificial Intelligence and Machine Learning in the Food Sector: An Exploration

B.S.Swapna Shanthi<sup>1</sup>, S.Akhila<sup>2</sup>, D.Uma<sup>3</sup>

The excessive widespread in the use of Artificial Intelligence (AI) is quietly lessening interactive communication between humans, and rapidly turning the world automotive. These advancements are inclined towards rapid mass production and accurate yet systematic supply chain and deliveries to please every end customer, because their satisfaction provides numerous reasons why a particular industry should run and lead the global market. Robot and data processing mechanisms are some of the best known leading high-end technologies that use Artificial Intelligence (AI) and Machine Learning (ML) for manufacturing, processing, and delivering qualitative and quantitative products with minimal cost, labor, and time consumption. Today, even start-ups or small businesses such as cafes, fast food centers, restaurants, etc. are making use of these technologies to start out of the crowd and grow their business rapidly.

Keywords: Artificial intelligence, Machine learning, Food quality, Food industry, Food cost

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### Using VGG Network Line Graph Semantics for Power Grid Fault Diagnostics

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The first premise of building a smart grid is to achieve the stability of the power system. As the scale of the power grid continues to expand, more complex power grid structures and power grid faults have put forward higher requirements for power grid fault diagnosis. Therefore, it is very important to develop a method that can diagnose faults quickly and accurately. With the widespread application of synchronous phase measurement units (PMUs) in power grids, it is possible to accurately diagnose faulty types by analyzing high-precision data. In order to solve the problems of feature loss and slow convergence in the training process of machine learning, this paper proposes a power grid fault diagnosis method, which converts the PMU data into a line graph as input, and realizes the power grid fault diagnosis method through the excellent neural network model VGG. First, select the appropriate electrical dimension in the PMU data and visualize it, then use VGG to learn image features, output fault diagnosis results, and finally test through the measured PMU data in a certain area. The experimental results show that, compared with the traditional fault diagnosis strategy, the method proposed in this paper can extract data features more effectively, and has the advantages of fast calculation speed, strong generalization ability, and good performance in complex situations.

Keywords: phasor measurement unit, VGG, power grid fault diagnosis, Graph feature extraction

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### Evaluating Airline Customer Worth with the Entropy Weight Method and WKmeans Clustering

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As the industry becomes more competitive, airlines are placing more emphasis on customer experience and personalized services for different customers in their marketing strategies. This requires us to make accurate customer segmentation so that we can target our limited resources to different types of customer groups to maximize the benefits. Since customer groups are not marked in advance, this problem is a typical unsupervised problem. In this paper, based on the traditional LRFMC customer analysis model, we propose a clustering analysis method combining entropy weight method and WK means algorithm to achieve customer classification, and finally give corresponding marketing strategies for different types of customers.

Keywords: LRFMC model, entropy weight method, WK means algorithm, data mining

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# Network Packet Management: Addressing Loss and Congestion through Utility Function Optimization

A.Vijay Kumar<sup>1</sup>, D.Nagaraju<sup>2</sup>, Dr.D.Rajeshwari<sup>3</sup>

To solve the congestion control algorithm of a dynamic network difficult to determine the appropriate size of the congestion window problem. To improve the traditional congestion control algorithm of the UDP blackbox model, the packet loss behavior that is not congested or caused by congestion is distinguished. Optimizing the traditional PCC black-box model based on utility function, and improved PCC-DRL optimization algorithm based on the PCC method were proposed. Compared with the existing mainstream congestion control algorithm, the comparison results show that the application of THE PCC-DRL optimization algorithm improves the dynamic network bandwidth utilization rate 9.67%, reduces the packet loss rate 0.24%, reduces the delay 5.69ms, and improves the queue concurrency 6.73%. These results indicate that THE PCC-DRL algorithm has a good effect on distinguishing the packet loss behaviors caused by non-congestion or congestion in dynamic networks, and has good adaptability and robustness to dynamic conditions and congestion forms.

Keywords: Utility functions, Deep reinforcement learning, PCC, Congestion control

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# An Introductory Overview of Quantum Computing

#### D.Nagaraju<sup>1</sup>, Dr.D.Rajeshwari<sup>2</sup>, A.Vijay Kumar<sup>3</sup>

Since last years, computers reduce the human efforts and give improvement in its performance day by day. Quantum computers are those computers who perform computing which is based on the phenomenon called Quantum Mechanics. It is a fusion of classical computing which we were using now days, physics and mathematics. And the computing they performed by integrating these fields is termed as Quantum Computing. Quantum computers perform their computing on the basis of the microscopic particles like ions, photons, electrons, protons, neutrons etc which ultimately give exponentially high computation power and other advantages too like less consumption of electricity which we will discuss in the same paper in brief over the classical computers, which we were using till day. In this paper we will briefly explain the quantum computers, its history, its properties in which its computing is based upon, its advantages& disadvantages, its limitation, its real world application, the difference between classical computers and Quantum computers and the challenges it faced and at last we conclude it with its future scope.

Keywords: Quantum computing, real time application, properties, future scope, Teleportation

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# Enhancing the Precision of Identifying Faulty Lung Nodules with AI and Deep Learning

Dr.D.Rajeshwari<sup>1</sup>, A.Vijay Kumar<sup>2</sup>, D.Nagaraju<sup>3</sup>

Introduction: Early detection of lung cancer is one way to improve outcomes. Improving the detection of nodules on chest CT scans is important. Previous artificial intelligence (AI) modules show rapid advantages, which improves the performance of detecting lung nodules in some datasets. However, they have a high false-positive (FP) rate. Its effectiveness in clinical practice has not yet been fully proven. We aimed to use AI assistance in CT scans to decrease FP.

Materials and methods: CT images of 60 patients were obtained. Five senior doctors who were blinded to these cases participated in this study for the detection of lung nodules. Two doctors performed manual detection and labeling of lung nodules without AI assistance. Another three doctors used AI assistance to detect and label lung nodules before manual interpretation. The AI program is based on a deep learning framework.

Results: In total, 266 nodules were identified. For doctors without AI assistance, the FP was 0.617-0.650/scan and the sensitivity was 59.2-67.0%. For doctors with AI assistance, the FP was 0.067 to 0.2/scan and the sensitivity was 59.2-77.3% This AI-assisted program significantly reduced FP. The error-prone characteristics of lung nodules were central locations, ground-glass appearances, and small sizes. The AI-assisted program improved the detection of error-prone nodules.

Conclusions: Detection of lung nodules is important for lung cancer treatment. When facing a large number of CT scans, error-prone nodules are a great challenge for doctors. The AI-assisted program improved the performance of detecting lung nodules, especially for error-prone nodules.

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Key words: artificial intelligence; lung nodules; CT images

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### **Unmasking Fake News through Binary Classification Techniques**

#### J.Priyanka<sup>1</sup>, G.Swapna<sup>2</sup>, P.Swathi<sup>3</sup>

The idea behind this project is to detect the accuracy of the fake news using Binary Classification such as Multinomial Naïve Bayes, Passive Aggressive classifier. Here the two datasets are provided i.e., test dataset and train dataset. Test data is later matched with groups of train dataset and accuracy is found using Binary classification. This helps in determining whether given news is fake or real. It delivers maximum accuracy and helps to identify fabricated news. The data is pruned by removing stop words and common English words by using vectorizer.

**Keywords:** Fake news, Binary Classification, Multinomial Naïve Bayes algorithm, Passive Aggressive Classifier algorithm, outliers, TFIDF Vectorizer

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### An Overview of Broadcasting Protocols for Relay Selection in VANETs

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The Vehicular Adhoc Network (VANET) proves its efficiency in reliability and transmission of life safety messages to its neighbours during emergency situations. There are many protocols are available in broadcasting of alert messages. These protocols are categorized based on the techniques used for the communication namely beacon, handshake or instant broadcasting. Then these protocols are again subdivided into different criteria in making selection of next relay node in alerting appropriate neighbours. The relay node takes the responsibility to disseminate the safety message to the upper level within the transmission range. In this paper, we provide researchers with a clear suggestion of the benefits and drawbacks relate with each scheme.

Keywords: Protocols, Multi - hop, Relay, Regime, Rebroadcast

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### Development of IoT Modules with Latency Considerations in Mixed Fog-Cloud Computing Environments

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The modern paradigm of the Internet of Things (IoT) has led to a significant increase in demand for latency-sensitive applications in Fog-based cloud computing. However, such applications cannot meet strict quality of service (QoS) requirements. The large-scale deployment of IoT requires more effective use of network infrastructure to ensure QoS when processing big data. Generally, cloud-centric IoT application deployment involves different modules running on terminal devices and cloud servers. Fog devices with different computing capabilities must process the data generated by the end device, so deploying latency-sensitive applications in a heterogeneous fog computing environment is a difficult task. In addition, when there is an inconsistent connection delay between the fog and the terminal device, the deployment of such applications becomes more complicated.

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In this article, we propose an algorithm that can effectively place application modules on network nodes while considering connection delay, processing power, and sensing data volume. Compared with traditional cloud computing deployment, we conducted simulations in iFogSim to confirm the effectiveness of the algorithm. The simulation results verify the effectiveness of the proposed algorithm in terms of end-to-end delay and network consumption. Therein, latency and execution time is insensitive to the number of sensors.

**Keywords:** IoT; fog-cloud computing architecture; module placement; latency sensitive; application; resource aware placement

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# An Analysis of the Influence and Significance of Cloud Computing in Supply Chain Management

T.Ravi Charan<sup>1</sup>, J.Pujitha<sup>2</sup>, K.Mounika<sup>3</sup>

The purpose of this review is to examine the collaborative benefits and social outcomes that associations derive from strong collaborative relationships. Competition between businesses such as multi-connected supply chains has increased the dependence between business connections and has become a key process for partnerships. the cloud could operate with coordinated efforts across the branch network, although there are conflicting prospects for cloud profitability. This concentrate also assesses the impact that distributed IT innovations have on collaborative utility and social outcomes in small and large partnerships.

Keywords: Logistics, Supply Chain, Cloud Computing, Collaborative Relationships.

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# Knowledge Graph-Based Alert System for Data Link Faults

Dr.D.M.M.Vianny<sup>1</sup>, T.Ramya Priya<sup>2</sup>, P.Sowjanya<sup>3</sup>

In view of the large scale of the data system of State Grid Corporation of China, multiple links and long cycles of data flow between business systems, lack of fault warning mechanism of links, unable to take measures to adjust links in advance, affecting the transmission efficiency of data links, etc., this paper constructs a fault domain ontology of data links, and combines the Jena reasoning mechanism to define inference rules that are in line with the field of data links. The link fault knowledge graph is constructed, and an improved similarity calculation method is designed to realize the fault warning of the data link, and improve the operation and maintenance efficiency of the data link.

Keywords: Data Link, Knowledge Graph, Knowledge Reasoning, Fault Warning

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### A Unified Deep Learning Approach for Identifying Fruit Diseases

#### T.Ramya Priya<sup>1</sup>, P.Sowjanya<sup>2</sup>, Dr.D.M.M.Vianny<sup>3</sup>

Agriculture has been an important research area in the field of image processing for the last five years. Diseases affect the quality and quantity of fruits, thereby disrupting the economy of a country. Many computerized techniques have been introduced for detecting and recognizing fruit diseases. However, some issues remain to be addressed, such as irrelevant features and the dimensionality of feature vectors, which increase the computational time of the system. Herein, we propose an integrated deep learning framework for classifying fruit diseases. We consider seven types of fruits, i.e., apple, cherry, blueberry, grapes, peach, citrus, and strawberry. The proposed method comprises several important steps. Initially, data increase is applied, and then two different types of features are extracted. In the first feature type, texture and color features, i.e., classical features, are extracted. In the second type, deep learning characteristics are extracted using a pretrained model. The pretrained model is reused through transfer learning. Subsequently, both types of features are merged using the maximum mean value of the serial approach. Next, the resulting fused vector is optimized using a harmonic threshold-based genetic algorithm. Finally, the selected features are classified using multiple classifiers. An evaluation is performed on the Plant Village dataset, and an accuracy of 99% is achieved. A comparison with recent techniques indicate the superiority of the proposed method.

Keywords: Fruit diseases; data augmentation; deep learning; classical fea- tures; features fusion; features selection

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### **Evaluating Trust-Based Security Measures for VANET Routing**

#### P.Sowjanya<sup>1</sup>, Dr.D.M.M.Vianny<sup>2</sup>, T.Ramya Priya<sup>3</sup>

As Vehicular Adhoc Networks (Vanets) is an ephemeral network in which establishing trust between vehicles is a tedious process. Incorporating mutual trust between nodes is required for secure routing. But malicious nodes in the network cause disturbances during data transmission. Several approaches are existing on trust establishment for secure routing in Vanet. In this survey paper, we have suggested a comparative analysis on existing trust models based on properties. This will help the researchers to have a clear look on this area of research.

Keywords: Trust, Reputation, Attack, Malicious, Bogus, Efficiency

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### Fortifying Online Banking Transactions Against Forensic Salami Slicing with Homomorphic Encryption

#### G.Swapna<sup>1</sup>, P.Swathi<sup>2</sup>, J.Priyanka<sup>3</sup>

Internet banking has become one among the fastest and easiest ways of banking. The threat of cyber security attacks set a great challenge for the internet banking industries, where the security of our data has become a huge issue. This paper aims to describe a type of information attack or theft called salami slicing attack. In a nutshell, salami slicing attack occurs when a small piece of information is acquired from various sources in such a way that the victims whose information ware acquired from didn't notice. So many researches were carried out till date to solve the issue of salami attack nevertheless all of them seem to be very unrealistic. Salami attack is correspondingly called penny splinter, not observed stealing (NoS). The remedy for this kind of attack is achieved by proposing homomorphic encryption. When the info is transferred to the general public area, there are many encryption algorithms to secure the operations and therefore the storage of the info. But to process data located on remote server and to preserve privacy, homomorphic encryption is beneficial that permits the operations on the cipher text, which may provide an equivalent results after calculations because the working directly on the data. In this paper, the most focus is on public key cryptographic algorithms supported homomorphic encryption scheme for preserving security.

**Keywords:** Salami Slicing Attack, Penny Splinter, Not Observed Stealing (Nos), Homomorphic Encryption, Cryptography, Encryption, Decryption

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# The Rise of Quantum Computing: Pioneering the Future of Computation

#### P.Swathi<sup>1</sup>, J.Priyanka<sup>2</sup>, G.Swapna<sup>3</sup>

Quantum computing is an emerging new field of science which uses quantum phenomena to perform operations on data. The goal of quantum computing is to find algorithms that are considerably faster than classical algorithms solving the same problem. In this paper we will talk about need of quantum computation and the advantages they offer us in compare with the classical computers. We will discuss what the elements of Quantum computing are. Along with this we will talk about the challenges to Quantum computing.

Keywords: Quantum computing, phenomena, classical computers

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### Knowledge Based Recommendation System Using Sentiment Analysis and Deep Learning

#### K. Veera Kishore<sup>1</sup>, G.Swapna<sup>2</sup>, Baddi Karthik Reddy<sup>3</sup>, Chennoju Sai Kiran<sup>4</sup>, Soma Vamshi Krishna<sup>5</sup>, Chittipolu Akhil<sup>6</sup>, Bandela Nithin<sup>7</sup>

Online social networks (OSN) provide relevant information on users' opinion about different themes. Thus, applications, such as monitoring and recommendation systems (RS) can collect and analyze this data. This paper presents a Knowledge-Based Recommendation System (KBRS), which includes an emotional health monitoring system to detect users with potential psychological disturbances, specifically, depressions and stress. Depending on the monitoring results, the KBRS, based on ontologies and sentiment analysis, is activated to send happy, calm, relaxing, or motivational messages to users with psychological disturbances. Also, the solution includes a mechanism to send warning messages to authorized a person, in case a depression disturbance is detected b the monitoring system. Additionally, subjective test results demonstrated that the proposed solution consumes low memory, processing, and energy from current mobile electronic devices.

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# Web-based Music Genre Classification for Timeline Song Visualization and Analysis

#### Dr.Maria Manuel Vinnay¹, J.Pujitha², Abdur Faisal³, Devarashetti Ganesh⁴, Gaddameedhi Manjunath⁵, Haravath Babu⁰, Idupulapati Manoj<sup>7</sup>

This paper presents a web application that retrieves songs from YouTube and classifies them into music genres. The tool explained in this study is based on models trained using the musical collection data from Audioset. For this purpose, we have used classifier from distinct Machine Learning paradigms: Probabilistic Graphical Models (Naive Bayes), Feed-forward and Recurrent Neural Networks and Support Vector Machines (SVMs). All these models were trained in a multi-label classification scenario. Because genres may vary along a song's timeline, we perform classification in chunks of ten seconds. This capability is enabled by Audioset, which offers 10- second samples. The visualization output presents this temporal information in real time, synced with the music video being played, presenting classification results in stacked area charts, where scores for the top-10 labels obtained per chunk are shown. We briefly explain the theoretical and scientific basis of the problem and the proposed classifier. Subsequently, we show how the application works in practice, using three distinct songs as cases of study, which are then analyzed and compared with online categorizations to discuss models performance and music genre classification challenges.

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### Detection of Possible Illicit Messages Using Natural Language Processing and Computervision on Twitter and Linked Websites

#### Dr.D.Maria Manuel Vianny<sup>1</sup>, T.Ramya Priya<sup>2</sup>, Achina Manikanta<sup>3</sup>, Banala Rajashekhar<sup>4</sup>, Chinnabathni Nishanth<sup>5</sup>

Human trafficking is a global problem that strips away the dignity of millions of victims. Currently, social networks are used to spread this crime through the online environment by using covert messages that serve to promote these illegal services. In this context, since law enforcement resources are limited, it is vital to automatically detect messages that may be related to this crime and could also serve as clues. In this paper, we identify Twitter messages that could promote these illegal services and exploit minors by using natural language processing. The images and the URLs found in suspicious messages were processed and classified by gender and age group, so it is possible to detect photographs of people under 14 years of age. The method that we used is as follows. First, tweets with hashtags related to minors are mined in real-time. These tweets are preprocessed to eliminate noise and misspelled words, and then the tweets are classified as suspicious or not. Moreover, geometric features of the face and torso are selected using Haar models. By applying Support Vector Machine (SVM) and Convolutional Neural Network (CNN), we are able to recognize gender and age group, taking into account torso information and its proportional relationship with the head, or even when the face details are blurred. As a result, using the SVM model with only torso features has a higher performance than CNN.

Keywords: Support Vector Machine (SVM), Convolutional Neural

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# Personalized Travel Planning System

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Nowadays tourism transportation has become a hot topic of research, and the rapid development of Internet technology has overloaded information, which has made it impossible to provide services with different preferences for different users. Therefore, personalized tourism transportation has become the current mainstream trend. According to the different preferences of travellers for money and travel time, based on the analysis of mainstream tourism services, and combined with multi-source traffic data, this paper proposes a mathematical model for personalized travel planning. This paper proposes a two- stage spatiotemporal network solution algorithm. In the first stage, based on the set of travel attractions given by the traveller, the shortest path algorithm is used to plan an approximate optimal path that meets the traveller's preferences and to implement connection of multiple travel modes. The second stage is combined with the spatiotemporal network to achieve daily travel planning between multiple attractions.

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### Machine Learning Based Approaches for Detecting Covid-19 Using Clinical Text Data

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Technology advancements have a rapid effect on every field of life, be it medical field or any other field. Artificial intelligence has shown the promising results in health care through its decision making by analysing the data. COVID-19 has affected more than 100 countries in a matter of no time. People all over the world are vulnerable to its consequences in future. It is imperative to develop a control system that will detect the coronavirus. One of the solutions to control the current havoc can be the diagnosis of disease with the help of various AI tools. In this paper, we classified textual clinical reports into four classes busing classical and ensemble machine learning algorithms. Feature engineering was performed using techniques like Term frequency/inverse document frequency (TF/IDF), Bag of words (BOW) and report length. These features were supplied to traditional and ensemble machine learning classifiers. Logistic regression and Multinomial Naïve Bayes showed better results than other ML algorithms by having 96.2% testing accuracy. In future recurrent neural network can be used for better accuracy.

Keywords: Artificial intelligence, COVID-19, Imperative, Machine learning, Ensemble, Feature engineering,

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### Prediction of Engineering Branch Selection for Interstudents

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Bachelor of Technology (B.Tech) is a professional undergraduate engineering degree program awarded to candidates after they complete four years of study in the field. Engineering is one of the most popular courses in India and there are many institutes that offer the course to aspiring students. For admissions, the most common B.Tech entrance examinations are JEE Main and JEE Advanced. Along with these national level entrance examinations, there are many state and private level entrance examinations that the students can attempt for admissions. The basic eligibility criteria for B.Tech is class 12 with Physics, Chemistry and Mathematics. However, there are additional criteria in every entrance exam and institute.

Student by himself is not mature enough to take right decision in his early life. Since there is no other reliable source generally available that can guide the student towards the most suitable direction, so this recommender system has been evolved to provide him guidance in selecting a right engineering branch. This system recommend them suitable branch based on their score. In this system, K-nearest neighbors is used to recommend branch and collaborative filtering is used to recommend colleges.

Key words: K nearest neighbors, Collaborative filtering.

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# Farming Made Easy Using Machine Learning

#### Dr.I.Satyanarayana<sup>1</sup>, Dr.R.Yadagiri Rao<sup>2</sup>, G.Himabindu Reddy<sup>3</sup>, D. Arjun Yadav<sup>4</sup>, D. Vinay Goud<sup>5</sup>, D.Shiva<sup>6</sup>

Agriculture is the primary mainstay of the economy in our country. In recent years because of uncertain trends in climate and other fluctuations in the price trends, the price of the crop has varied to a larger level. Farmers remain oblivious of these uncertainties, which spoils the crops and causes massive loss. They are unaware of the crop type which would benefit them most. Due to their limited knowledge of different crop diseases and their specific remedies, crops get damaged. This system is handy, easy-to-use. It provides accurate results in predicting the price of the crop. This framework utilizes Machine Learning's Decision Tree Regression Algorithm to predict crop price. The attributes considered for prediction are rainfall, wholesale price index, month, and year. Consequently, the system gives an advance forecast to the farmers' which grows the speed of profit to them and consequently the country's economy. This system also incorporates other modules like weather forecast, crop recommendation, fertilizer recommendation, and shop, chat portal, and guide are also implemented.

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# Real-time Human Emotion Recognition Based on Facial Expression Detection Using Softmax Classifier and Predicting the Error Level Using Open CV Library

D.Uma<sup>1</sup>, Dr.R.Yadagiri Rao<sup>2</sup>, Devi Kumavath<sup>3</sup>, D.Gnaneshwar Reddy<sup>4</sup>, D.Adharsh<sup>5</sup>, G. Manideep<sup>6</sup>

Now-a-days with the continued development of artificial intelligence facial emotion recognition has become more popular. The emotion recognition plays a major role in interaction technology. In interaction technology the verbal components only play a one third of communication and the nonverbal components plays a two third of communication. A facial emotion recognition (FER) method is used for detecting facial expressions. Facial expression plays a major role in expressing what a person feels and it expresses inner feeling and his or her mental situation or human perspective. This paper aims to identify basic human emotions with the combination of gender classification and age estimation. The facial emotions such as happy, sad, angry, fear, surprised, neutral emotions are considered as basic emotions. Here proposes a real time facial emotion recognition system based on You Look Only Once (YOLO) version 2 architecture and a squeezenet architecture. The yolo architecture is a real time object detection system. Here it used for identify and detect faces in real time. These images are captured by using anchor boxes for accuracy. The second architecture is squeezenet and is used for gender classification

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### Detecting the Movement of Objects With Web Cam

#### A.Shiva Shankar<sup>1</sup>, P.Swathi<sup>2</sup>, Alampalli Sai Kumar<sup>3</sup>, Dongala Srikanth<sup>4</sup>, Eppalla Shiva<sup>5</sup>, Gade Alekhhya<sup>6</sup>

Various methods are used in motion detection of a particular interest. Each algorithm is found efficient in one way. But there exists some limitation in each of them. This paper proposes a method for detecting the motion in a particular region being observed. The motion tracking surveillance has gained a lot of interests over past few years. This system is brought into effect providing relief to the normal video surveillance system which offers time-consuming reviewing process. Through the study and evaluation of products, we propose a motion tracking system consisting of its method for motion detection. In our proposed system those disadvantages are omitted and combining the usage of best method we are creating a new motion detection algorithm for our proposed motion tracking system.

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### Human Action Recognition from Depth Maps and Postures Using Deep Learning

S.Akhila<sup>1</sup>, T.Ramya Priya<sup>2</sup>, B.Bhanu Prakash<sup>3</sup>, CH.Sai Krishna<sup>4</sup>, G.Santhosh<sup>5</sup>, B.Tharun<sup>6</sup>

Human Activity Recognition is one of the active research areas in computer vision for various contexts like security surveillance, healthcare and human computer interaction. Over the past years, several methods published for human action recognition using RGB (red, green, and blue), depth, and skeleton datasets. Most of the methods introduced for action classification using skeleton datasets are constrained in some perspectives including features representation, complexity, and performance. However, there is still a challenging problem of providing an effective and efficient method for human action discrimination using a skeleton dataset. The first input is depth images and second input is a proposed moving joints descriptor (MJD) which represents the motion of body joints over time, in order to maximize feature extraction for accurate action classification, CNN channels are trained with different inputs and for Score fusion we are planning to use neural networks. Our proposed method was implementation on public datasets like MSR Action 3D.

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### Construction Site Accident Analysis Using Textmining and Natural Language Processing Techniques

#### A.Vijay Kumar<sup>1</sup>, G.Swapna<sup>2</sup>, Ganji Nikitha<sup>3</sup>, Chinthala Sheshanthika<sup>4</sup>, Gaddala Sreeja<sup>5</sup>, Guntaka Akanshha<sup>6</sup>

Workplace safety is a major concern in many countries. Among various industries, construction sector is identified as the most hazardous work place. Construction accidents not only cause human sufferings but also result in huge financial loss. To prevent reoccurrence of similar accidents in the future and make scientific risk control plans, analysis of accidents is essential. In construction industry, fatality and catastrophe investigation summary reports are available for the past accidents. In this study, text mining and natural language process (NLP) techniques are applied to analyse the construction accident reports. To be more specific, five baseline models, support vector machine (SVM), linear regression (LR), K-nearest neighbour (KNN), decision tree (DT), Naive Bayes (NB) and an ensemble model are proposed to classify the causes of the accidents. Besides, Sequential Quadratic Programming (SQP) algorithm is utilized to optimize weight of each classifier involved in the ensemble model. Experiment results show that the optimized ensemble model outperforms rest models considered in this study in terms of average weighted F1 score. The result also shows that the proposed approach is more robust to cases of low support. Moreover, an unsupervised chunking approach is proposed to extract common objects which cause the accidents based on grammar rules identified in the reports. As harmful objects are one of the major factors leading to construction accidents, identifying such objects is extremely helpful to mitigate potential risks. Certain limitations of the proposed methods are discussed and suggestions and future improvements are provided.

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# Research on Recognition of Crop Disease and Insert Pests Based on Deep Learning in Harsh Environment

#### P.Sriramulu<sup>1</sup>, Dr.R.Yadagiri Rao<sup>2</sup>, G.Jayakrishna<sup>3</sup>, D.Rudyanayak<sup>4</sup>, G.Anil⁵, G.Manjula<sup>6</sup>, Kongala Vamshi<sup>7</sup>

Plant Diseases are a major threat to farmers, consumers, environment and the global economy. In India alone, 35% of filed crops are lost to pathogens and pests causing lossses to farmers. Indiscriminate use of pesticides is also a serious health concern as many are toxic and biomagnified. These adverse effects can be avoided by early disease detection, crop surveillance and targeted treatments. Most diseases are diagnosed by agricultural experts by examining external symptoms. However, farmers have limited access to experts. Our project is the first integrated and collaborative platform for automated disease diagnosis, tracking and forecasting. Farmers can instantly and accurately identify diseases and get solutions with a mobile app by photographing affected plant parts. Real-time diagnosis is enabled using the latest Artificial Intelligence(AI) algorithms for Cloud-based image processing. The AI model continuously learns form user uploaded images and expert suggestions to enhance its accuracy. Farmers can also interact with local experts through the platform. For preventive measures, disease density maps with spread forecasting are rendered from a cloud based repository of geo-tagged images and micro-climatic factors. A web interface allows experts to perform disease analytics with geographical

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visualizations. In our experiments, the AI model (CNN) was trained with large disease datasets, created with plant images self-collected from many farms over 7 months. Test images were diagnosed using the automated CNN model and the results were validated by plant pathologists. Over 95% disease identification accuracy was achieved. Our solution is a novel, scalable and accesible tool for disease management of diverse agricultural crop plants and can be deployed as a cloud based service for farmers and experts for ecologically sustainable crop production.

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# A Case Study One-male Spam Detection Using Machine Learning

Dr.D.Rajeshwari<sup>1</sup>, P.Sowjanya<sup>2</sup>, Gattu Pavan Kumar<sup>3</sup>, Gottemukkula Divya Reddy<sup>4</sup>, Balagouni Naveen<sup>5</sup>, Dongala Vineeth Reddy<sup>6</sup>

Email spam has become a major problem nowadays, with Rapid growth of internet users, Email spams is also increasing. People are using them for illegal and unethical conducts, phishing and fraud. S ending malicious link through spam emails which can harm our system and can also seek in into your system. Creating a fake profile and email account is much easy for the spammers, they pretend like a genuine person in their spam emails, these spammers target those peoples who are not aware about these frauds. S o, it is needed to Identify those spam mails which are fraud, this project will identify those spam by using techniques of machine learning, this paper will discuss the machine learning algorithms and apply all these algorithm on our data sets and best algorithm is selected for the email spam detection having best precision and accuracy.

Key words : Computer Privacy, Computer Security, Deep Learning, Neural Networks, Spam Filtering.

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# A Case Study for Plant Disease Identification and Pesticides Recommendation Using Convolutional Neural Network

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Plant diseases are a major threat to farmers, consumers, environment and the global economy. In India alone, 35% of field crops are lost to pathogens and pests causing losses to farmers. Indiscriminate use of pesticides is also a serious health concern as many are toxic and biomagnified. These adverse effects can be avoided by early disease detection, crop surveillance and targeted treatments. Most diseases are diagnosed by agricultural experts by examining external symptoms. However, farmers have limited access to experts. Our project is the first integrated and collaborative platform for automated disease diagnosis, tracking and forecasting. Farmers can instantly and accurately identify diseases and get solutions with a mobile app by photographing affected plant

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parts. Real-time diagnosis is enabled using the latest Artificial Intelligence (AI) algorithms for Cloud-based image processing. The AI model continuously learns from user uploaded images and expert suggestions to enhance its accuracy. Farmers can also interact with local experts through the platform. For preventive measures, disease density maps with spread forecasting are rendered from a Cloud based repository of geo-tagged images and micro-climactic factors. A web interface allows experts to perform disease analytics with geographical visualizations. In our experiments, the AI model (CNN) was trained with large disease datasets, created with plant images self-collected from many farms over 7 months. Test images were diagnosed using the automated CNN model and the results were validated by plant pathologists. Over 95% disease identification accuracy was achieved. Our solution is a novel, scalable and accessible tool for disease management of diverse agricultural crop plants and can be deployed as a Cloud based service for farmers and experts for ecologically sustainable crop production.

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### A Case Study on Cost Sensitive Card Fraud Detection Based on Dynamic Random Forest and K-Nearest Neighbour

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Payment card fraud leads to heavy annual financial losses around the world, thus giving rise to the need for improvements to the fraud detection systems used by banks and financial institutions. In the academe, as well, payment card fraud detection has become an important research topic in recent years. With these considerations in mind, we developed a method that involves two stages of detecting fraudulent payment card transactions. The extraction of suitable transactional features is one of the key issues in constructing an effective fraud detection model. In this method, additional transaction features are derived from primary transactional data. A better understanding of cardholders' spending behaviours is created by these features. After which the first stage of detection is initiated. A cardholder's spending behaviours vary over time so that new behaviour of a cardholder is closer to his/her recent behaviours. Accordingly, a new similarity measure is established on the basis of transaction time in this stage. This measure assigns greater weight to recent transactions. In the second stage, the dynamic random forest algorithm is employed for the first time in initial detection, and the minimum risk model is applied in cost- sensitive detection. We tested the proposed method on a real transactional dataset obtained from a private bank.

Keywords: Dynamic Random forest, Fraudulent payment.

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# **Coding Assessment Portal**

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The coding assessment portal is an online platform designed to streamline and facilitate the process of assessing coding skills and technical abilities of individuals. It provides a comprehensive and user-friendly interface for conducting coding assessments, evaluating submissions, and providing feedback. The portal offers a range of features to support the coding assessment process. It allows administrators to create and customize coding challenges, specifying the programming languages, time limits, and difficulty levels. Participants can access these challenges and submit their solutions directly through the portal.

The system supports automatic evaluation of code submissions using a robust and efficient code analysis engine. It checks for correctness, adherence to coding standards, and performance optimization. The engine provides detailed feedback, highlighting errors and suggesting improvements to help participants enhance their coding skills. The coding assessment portal also facilitates collaboration and communication between participants and assessors. It provides a messaging system where participants can ask questions, seek clarification, or request additional information regarding the challenges. Assessors can provide timely responses and engage in discussions to further evaluate participants' understanding and problem-solving abilities.

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# Detection of Lung Cancer from CT Image Using SVM Classification and Compare the Survival Rate of Patients Using 3D CNN on Lung Nodules Data Set

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As per the technical evolution and latest trend taken into consideration, we have decided to make research over biomedical term i.e lungs cancer detection. Recently, image processing techniques are widely used in several medical areas for image improvement in earlier detection and treatment stages. There are various types of cancers i.e lungs cancer, Breast cancer, blood cancer, throat cancer, brain cancer, tongs cancer, mouth cancer etc. Lung cancer is a disease of abnormal cells multiplying and growing into a tumor. Cancer cells can be carried away from the lungs in blood, or lymph fluid that surrounds lung tissue. In this project we access cancer image into Python collected from different hospitals where present work is going on and this available image was color-image we have access that image into Python and followed conversion. Image quality and accuracy is the core factors of this research, image quality assessment as well as improvement are depending on the enhancement stage where low pre-processing techniques is used based on Gabor filter within Gaussian rules. The segmentation and enhancement procedure is used to obtain the feature extraction of normal and abnormal image. Relying on general features, a normality comparison is made. In this research, the main detected features for accurate images comparison are pixels percentage and mask-labelling.

Keywords: 3D CNN, SVM Classifier, CT Scan, Normal, Abnormal, Survival rate.

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### A Case Study on Deep Learning in Fraud Detection: Phishing Email Detection Using CNN

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Phishing emails pose a significant and ever-growing threat in today's world, causing immense financial losses and undermining user trust. Despite continuous updates to detection methods, the current results remain unsatisfactory. The exponential rise of phishing emails in recent years necessitates more effective detection technologies. To address this challenge, our research begins with a comprehensive analysis of the email structure. Building upon this analysis, we propose a novel phishing email detection model. This model leverages an enhanced version of the Recurrent Convolutional Neural Networks (RCNN) architecture, incorporating multilevel vectors and an attention mechanism. By simultaneously modelling the email header, body, character level, and word level, our model achieves a holistic understanding of the email content. To assess the effectiveness of our model, we utilize an unbalanced dataset that accurately reflects the real-world distribution of phishing and legitimate emails. The experimental results reveal a significant improvement in phishing email detection. Notably, our model ensures a high probability of identifying phishing emails while minimizing false positives by filtering out legitimate emails as sparingly as possible. These promising outcomes surpass the performance of existing detection methods and serve as robust validation of our model's efficacy in detecting phishing emails. By combining the power of advanced deep learning techniques, attention mechanisms, and comprehensive email modelling, our proposed approach presents a superior solution to mitigate the phishing threat. Our research opens avenues for further advancements in phishing detection. Future work could focus on refining the model's accuracy and robustness by exploring additional features, such as semantic analysis of email content.

**Keywords-** phishing email detection, deep learning, Convolutional Neural Networks (CNNs), Recurrent Convolutional Neural Networks (RCNN), email header, email body.

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# A Case Study for Stock Market Prediction Realized Volitility Prediction in Stock Market

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Stock market is an important and active part of nowadays financial markets. Stocktime series volatility analysis is regarded as one of the most challenging time series forecasting due to the hard-to-predict volatility observed in worldwide stock markets. In this paper we argue that the stock market state is dynamic and invisible but it will be influenced by some visible stock market information. Existing research on financial time series analysis and stock market volatility prediction can be classified into two categories: in depth study of one market factor on the stock market volatility prediction or prediction by combining historical price fluctuations with either trading volume or news. In this paper we present a service- oriented multi-kernel based learning framework (MKL) for stock volatility analysis. Our MKL service framework promotes a two-tier learning architecture. In the top tier, we develop a suite of data preparation and data transformation techniques to provide a sourcespecific modeling, which transforms and normalizes a source specific input dataset into the MKL ready data representation. Then we apply data alignment techniques to prepare the datasets from multiple information sources based on the classification model we choose for cross-source correlation analysis. In the next tier, we develop model integration methods to perform three analytic tasks: (i)building one sub-kernel per source, (ii) learning and tuning the weights for sub-kernels through weight adjustment methods and (iii) performing multi-kernel based cross- correlation analysis of market volatility. To validate the effectiveness of our service oriented MKL approach, we performed experiments on HKEx 2001 stock market datasets with three important market information sources: historical prices, trading volumes and stock related news articles. Our experiments show that 1) multikernel learning method has a higher degree of accuracy and a lower degree of false prediction, compared to existing single kernel methods; and 2) integrating both news and trading volume data with historical stock price information can significantly improve the effectiveness of stock market volatility prediction, compared to many existing prediction methods.

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### **Neural Collaborative Filtering Using Group Recommendations**

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At present, the most popular recommendation algorithms belong to the class of latent factor models(LFM).Compared with traditional user-based and item-based collaborative filtering methods, the latent factor model effectively improves recommendation accuracy. In recent years, deep neural networks have succeeded in many research fields, such as computer vision, speech recognition, and natural language processing. However, there are few studies combining recommendation systems and deep neural networks, especially for group recommendation. Some academic studies have adopted deep learning methods, but they mainly use it to process auxiliary information, such as acoustic features of sounds, and semantic analysis of texts, the inner product is still used to deal with latent features of users and items. In this , we first obtain the nonlinear interaction of latent

feature vectors between users and projects through multi-layer perceptron(MLP), and use the combination of LFM and MLP to achieve collaborative filtering recommendation between users and items. Secondly, based on the individual's recommendation score, a fusion strategy based on Nash equilibrium is designed to ensure the average satisfaction of the group users. Our experiments are conducted on the Track 1 of KDD CUP 2012 public data set, taking the square root mean square error(RMSE) as the evaluation index.

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# Bat Deep Learning Methods on Network Intrustion Detection Using NSL-KDD Dataset

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Intrusion detection can identify unknown attacks from network traffics and has been an effective means of network security. Nowadays, existing methods for network anomaly detection are usually based on traditional machine learning models, such as KNN, SVM, etc. Although these methods can obtain some outstanding features, they get a relatively low accuracy and rely heavily on manual design of traffic features, which has been obsolete in the age of big data. To solve the problems of low accuracy and feature engineering in intrusion detection, a traffic anomaly detection model BAT is proposed. The BAT model combines BLSTM (Bidirectional Long Shortterm memory) and attention mechanism. Attention mechanism is used to screen the network flow vector composed of packet vectors generated by the BLSTM model, which can obtain the key features for network traffic classification. In addition, we adopt multiple convolutional layers to capture the local features of traffic data. As multiple convolutional layers are used to process data samples, we refer BAT model as BAT-MC. The softmax classifier is used for network traffic classification. The proposed end-to-end model does not use any feature engineering skills and can automatically learn the key features of the hierarchy. It can well describe the network traffic behavior and improve the ability of anomaly detection effectively. We test our model on a public benchmark dataset, and the experimental results demonstrate our model has better performance than other comparison methods.

Key words: Deep learning,NSL-KDD dataset,BAT,neural network,BLSTM,attention mechanism

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### Crowd Counting Method Based on Convolutional Neural Network With Global Density Feature

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Crowd counting is an important research topic in the field of computer vision. The multi-column convolution neural network (MCNN) has been used in this field and achieved competitive performance. However, when the crowd distribution is uneven, the accuracy of crowd counting based on the MCNN still needs to be improved. In order to adapt to uneven crowd distributions, crowd global density feature is taken into account in this paper. The global density features are extracted and added to the MCNN through the cascaded learning method. Because some detailed features during the down-sampling process will be lost in the MCNN and it will affect the accuracy of the density map, an improved MCNN structure is proposed. In this paper, the max pooling is replaced by max-ave pooling to keep more detailed features and the deconvolutional layers are added to restore the lost details in the down-sampling process. The experimental results in the UCF\_CC\_50 dataset and the ShanghaiTech dataset show that the proposed method has higher accuracy and stability.

Keywords: OpenCV, Haar Cascade, Shanghai Tech dataset, deconvolutional layers, global density

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# Cost Based Efficiently Allocating Resources for Edge Computing Web Application

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The emerging edge computing paradigm promises to deliver superior user experience and enable a wide range of Internet of Things (IoT) applications. In this paper, we propose a new market-based framework for efficiently allocating resources of heterogeneous capacity-limited edge nodes (EN) to multiple competing services at the network edge. By properly pricing the geographically distributed ENs, the proposed framework generates a market equilibrium (ME) solution that not only maximizes the edge computing resource utilization but also allocates optimal resource bundles to the services given their budget constraints. When the utility of a service is defined as the maximum revenue that the service can achieve from its resource allotment, the equilibrium can be computed centrally by solving the Eisenberg-Gale (EG) convex program. We further show that the equilibrium allocation is Pareto-optimal and satisfies desired fairness properties including sharing incentive, proportionality, and envy-freeness. Also, two distributed algorithms, which efficiently converge to an ME, are introduced. When each service aims to maximize its net profit (i.e., revenue minus cost) instead of the revenue, we derive a novel convex optimization problem and rigorously prove that its solution is exactly an ME. Extensive numerical results are presented to validate the effectiveness of the proposed techniques.

Keywords: Market equilibrium, envy-freeness, edge computing, sharing-incentive.

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# A Case Study for Credit Card Fraud Detection Credit Card Fraud Detection Using Machine Learning

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In recent years credit card became one of the essential parts of the people. Sudden increase in E- commerce, customer started using credit card for online purchasing therefore risk of fraud also increases. Instead of carrying a huge amount in hand it is easier to keep credit cards. But nowadays that too becomes unsafe. Now a days we are facing a big problem on credit card fraud which is increasing in a good percentage. The main purpose is the survey on the various methods applied to detect credit card frauds. From the abnormalities, in the transaction, the fraudulent one is identified. We address this issue in order to implement some machine learning algorithm like random forest, logistic regression in order to detect this kind of fraud. In this paper we increase the efficiency in finding the fraud. However, we discussed and evaluated employee criteria. Currently, the issues of credit card fraud detect all kind of fraud in a credit card transaction. We handled the problem by finding a pattern of each customer in between fraud and legal transaction. Isolation Forest Algorithm and Local Outlier Factor are used to predict the pattern of transaction for each customer and a decision is made according to them. In order to prevent data from mismatching, all attribute are marked equally.

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### **Fake Currency Detection Application**

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Fake currency is the money produced without the approval of the government, Creation of it is considered as a great Offence. The elevation of colour printing technology has increased the rate of fake currency note printing on a very large scale. Years before, the printing could be done in a print house, but now anyone can print a currency note with maximum accuracy using a simple laser printer. This results in the issue of fake notes instead of the genuine ones has been increased very largely. It is the biggest problem faced by many countries including India. Though Banks and other large organizations have installed Automatic machines to detect fake currency notes, it is really difficult for an average person to distinguish between the two. This has led to the increase of corruption in our country hindering the country's growth. Some of the methods to detect fake currency are watermarking, optically variable ink, security thread, latent image, techniques like counterfeit detection pens. We hereby propose an application system for detecting fake currency where image processing is used to detect fake notes. We are going to detect the variation in bar code among the real and fake one and also, we will find out dissimilarities between the image under consideration and the prototype. CNN classifiers will be used to detect fake currency. The proposed app for fake currency detection will be simple, accurate and easy to use.

**Keywords:** CNN classifier, Counterfeit detection pen, Fake currency, Watermarking, Optically variable link, Variation in barcode, local key points

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### Price Negotiating Chat Bot With Text & Voice on E-Commerce Website

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In recent years online shopping has gained a huge boom. With this increase, most of the features of online shopping are developed but some features like negotiating with shopkeepers are not available which is sometimes possible in offline purchasing. We have implemented a chatbot for negotiating on the products. The chatbot interacts with customers and assists them to get a satisfactory price on product(s). With such a system, which impacts on major areas of online shopping there are possibilities in which either the seller of the product or customer's budget gets compromised. To avoid such situations, we have developed an algorithm which works along with prediction of old available data to provide a price. Price prediction has less accuracy at times because either irrelevant features/attributes of data are used or some algorithms are not suitable for a particular dataset. Due to this, Ecommerce business does not directly rely on price prediction systems since even a wrong prediction of a single product can result in business losses. Some models also fail when data scales or some feature is unavailable after time on which model prediction was dependent. Then those changes are to be managed to maintain the accuracy and reliability of the model. In our chatbot system we have tried to resolve some of such issues.

**Keywords:** Price negotiation, E-commerce negotiation, Chatbot, Machine Learning, Neural Network, Natural Language Processing.

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### Web Based Graphical Password Authentication System

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Graphical passwords provide a promising alternative to traditional alphanumeric passwords. They are attractive since people usually remember pictures better than words. In this extended abstract, we propose a simple graphical password authentication system. We describe its operation with some examples, and highlight important aspects of the system.

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### Vehicle Pattern Recognition Using Machine and Deeplearning to Predict Car Model

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In recent times, there has been a drastic change in people's lifestyles and with an increase in incomes and lower cost of automobiles there is a huge increment in the number of cars on the roads which has led to traffic and commotion. The manual efforts to keep people from breaking traffic rules such as the speed limit are not enough. There is not enough police and man force available to track the traffic and vehicles on roads and check them for speed control. Hence, we require technologically advanced speed calculators installed that effectively detect cars on the road and calculate their speeds. To implement the above idea two basic requirements, need to be met which are the effective detection of the cars on roads and their velocity measurement. For this purpose, we can use OpenCV software which uses the Haar cascade to train our machine to detect the object, in this case the car. we have developed a Haar cascade to detect cars on the roads, whose velocities are then measured using a python script. The real-time application of this project proves to be much useful as it is easy to implement, fast to process and efficient with low cost development. Also, the tool might be useful to apply in simulation tools to measure velocities of cars. This can be further developed to identify all kinds of vehicles as well as to check anyone who breaks a traffic light. The improvements in the project can be done by creating a bigger haar cascade since bigger the haar cascade developed, more the number of vehicles that can be detected on the roads.

Keywords: OpenCV, Haar Cascade

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# A Case Study on Image Forgery Detection Based on Fusion of Lightweight Deep Learning Models

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Fake Image forgery detection is one of the key challenges in various real time applications, social media and online information platforms. The conventional methods of detection based on the traces of image manipulations are limited to the scope of predefined assumptions like hand-crafted features, size and contrast. In this paper, we propose a fusion based decision approach for image forgery detection. The fusion of decision is based on the lightweight deep learning models namely SqueezeNet, MobileNetV2 and ShuffleNet. The fusion decision system is implemented in two phases. First, the pretrained weights of the lightweight deep learning models are used to evaluate the forgery of the images. Secondly, the fine tuned weights are used to compare the results of the forgery of the images with the pre-trained models. The experimental results suggest that the fusion based decision approach achieves better accuracy as compared to the state-of-the-art approaches.

Keywords: Convolutional neural network, Deep learning, Image forgery detection, Image forensics.

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### **Emotion Detection Using Twitter Datasets and Spacy Algorithm**

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People show emotions for everyday communication. Emotions are identified by facial expressions, behavior, writing, speaking, gestures and physical actions. Emotion plays a vital role in the interaction between two people. The detection of emotions through text is a challenge for researchers. Emotion detection from the text can be useful for real-world application. Automatic emotion detection in the original text aims to recognize emotions in any digital medium by using natural language processing techniques and different approaches. Enabling machines with the ability to recognize emotions in a particular kind of text such as twitter's tweet has important applications in sentiment analysis and affective computing. We have worked on the newly published gold dataset (AIT-2018) and propose a model consisting of lexicalbased using WordNet-Affect and EmoSenticNet with supervised classifiers for detecting emotions in a tweet text.

Keywords: lexical based, Emo Sentic Net, Word Net-Affect, supervised classifiers, Emotion detection, twitter's tweet, communication

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# Sign Language Recognition Using Convolutional Neural Network

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Sign language recognition is an important task for facilitating communication between hearing-impaired and non-hearing-impaired individuals. In recent years, deep learning techniques such as convolutional neural networks (CNNs) have shown promising results in this field. In this paper, we propose a CNN-based approach for sign language recognition. Our approach involves preprocessing the sign language images, segmenting them into individual signs, and feeding them to a CNN for classification. We train the CNN on a large dataset of sign language images and evaluate its performance on a separate test set. Our results demonstrate that the proposed approach achieves high accuracy in recognizing sign language gestures, outperforming several state-of-the-art methods. The proposed method has the potential to be integrated into real-world applications for improving communication with the hearing-impaired systems. Sign Language Recognition (SLR) targets on interpreting the sign language into text or speech, so as to facilitate the communication between deaf-mute people and ordinary people. This task has broad social impact, but is still very challenging due to the complexity and large variations in hand actions. Existing methods for SLR use hand-crafted features to describe sign language motion and build classification models based on those features. However, it is difficult to design reliable features to adapt to the large variations of hand gestures.

Keywords: CNN classifier, Sign language Recognition, Image Processing, Edge Detection, Hand Gesture Recognition.

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### An Overview of Deep Learning in Medical Imaging Focusing on MRI.docx

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Machine learning has witnessed a tremendous amount of attention over the last few years. The current boom started around 2009 when so-called deep artificial neural networks began outperforming other established models on a number of important benchmarks. Deep neural networks are now the state-of-the-art machine learning models across a variety of areas, from image analysis to natural language processing, and widely deployed in academia and industry. These developments have a huge potential for medical imaging technology, medical data analysis, medical diagnostics and healthcare in general, slowly being realized. We provide a short overview of recent advances and some associated challenges in machine learning applied to medical image processing and image analysis. As this has become a very broad and fast expanding field we will not survey the entire landscape of applications, but put particular focus on deep learning in MRI.

Our aim is threefold:

- (i) give a brief introduction to deep learning with pointers to core references.
- (ii) indicate how deep learning has been applied to the entire MRI processing chain, from acquisition to image retrieval, from segmentation to disease prediction.
- (iii) provide a starting point for people interested in experimenting and perhaps contributing to the field of deep learning for medical imaging by pointing out good educational resources, state-of-the-art open-source code, and interesting sources of data and problems related medical imaging.

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# Modelling and Predicting Cyber Hacking Breaches

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Analyzing cyber incident data sets is an important method for deepening our understanding of the evolution of the threat situation. This is a relatively new research topic, and many studies remain to be done. In this paper, we report a statistical analysis of a breach incident data set corresponding to 12 years (2005-2017) of cyber hacking activities that include malware attacks. We show that, in contrast to the findings reported in the literature, both hacking breach incident inter-arrival times and breach sizes should be modeled by stochastic processes, rather Than by distributions because they exhibit auto correlations. Then, we propose particular stochastic process models to, respectively, fit the inter-arrival times and the breach sizes. We also show that these models can predict the inter-arrival times and the breach sizes. In order to get deeper insights into the evolution of hacking breach incidents, we conduct both qualitative and quantitative trend analyses on the data set. We draw a set of cyber security insights, including that the threat of cyber hacks is indeed getting worse in terms of their frequency, but not in terms of the magnitude of their damage.

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### Identifing of Fake Profiles Across Online Social Networks Using Neural Networks

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In today's world, the social media platforms are being used on daily basis and has become an important part of our lives. The number of peoples on social media platforms are incrementing at a greater level for malicious use. On one hand, these social networks provide the advantage of direct connectivity between people, information sharing, ways to create a large audience, etc. on the other hand people also misuse them in many ways. Social networking sites are suffering from people who own bulk of fake accounts to take advantage of vulnerabilities for their immoral benefits such as intriguing targeted accounts to click on malicious links or to attempt any other cybercrimes. These actions motivate researchers to develop a system that can detect fake accounts on these OSNs. Several attempts have been made by the researchers to detect the accounts on social networking sites as fake or real, relying on account's features (user-based, graph-based, content-based, time-based) and various classification algorithms. In order to accomplish the task of detecting, identifying and eliminate the fake accounts we establish a forged human account.

**Keywords:** Online Social Network, Feature extraction, Spammer, Fake account detection, Data classification.

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Authentication dependent on passwords is utilized generally in applications for security and protection. Still, human actions, as an example, choosing bad passwords and contributing passwords in square measures are viewed as "the most fragile connection" in the Authentication chain. Maybe than discretionary alphanumeric strings, clients will pick passwords either short or significant for simple memorization. With web applications and versatile applications accumulation, individuals can get to these applications whenever and anyplace with various gadgets. This advancement brings extraordinary accommodation yet, in addition, builds the likelihood of presenting passwords to bear riding attacks. Attackers can notice straightforwardly or utilize outside recording gadgets to gather client's qualifications. To avoid this sort of issue, we need another method of confirmation. Here, we can choose a graphical authentication method. The image passwords. You can sign in by tapping the right points or creating the right gestures over an image that you just select in advance.

Keywords: Authentication, image password, text passwords security

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# Designing Cyber Insurance Policies: The Role of Pre-Screening and Security Interdependence

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Cyber insurance is a viable method for cyber risk transfer. However, it has been shown that depending on the features of the underlying environment, it may or may not improve the state of network security. In this paper, we consider a single profit-maximizing insurer (principal) with voluntarily participating insureds/clients (agents). We are particularly interested in two distinct features of cybersecurity and their impact on the contract design problem. The first is the interdependent nature of cybersecurity, whereby one entity's state of security depends not only on its own investment and effort, but also the efforts of others' in the same eco-system (i.e. externalities). The second is the fact that recent advances in Internet measurement combined with machine learning techniques now allow us to perform accurate quantitative assessments of security posture at a firm level. This can be used as a tool to perform an initial security audit, or prescreening, of a prospective client to better enable premium discrimination and the design of customized policies. We show that security interdependency leads to a "profit opportunity" for the insurer, created by the inefficient effort levels exerted by interdependent agents who do not account for the risk externalities when insurance is not available; this is in addition to risk transfer that an insurer typically profits from. Security pre-screening then allows the insurer to take advantage of this additional profit opportunity by designing the appropriate contracts which incentivize agents to increase their effort levels, allowing the insurer to "sell commitment" to interdependent agents, in addition to insuring their risks. We identify conditions under which this type of contracts leads to not only increased profit for the principal, but also an improved state of network security.

Keywords: cybersecurity, prescreening, insurance, moral hazard.

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# Detection of Cyber Attack in Network Using Machine Learning Technology

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Cyber-crime is proliferating everywhere exploiting every kind of vulnerability to the computing environment. Ethical Hackers pay more attention towards assessing vulnerabilities and recommending mitigation methodologies. Most techniques used in today's IDS are not able to deal with the dynamic and complex nature of cyber-attacks on computer networks. Machine learning for cyber security has become an issue of great importance recently due to the effectiveness of machine learning in cyber security issues. Machine learning techniques have been applied for major challenges in cyber security issues like intrusion detection, malware classification and detection and spam detection. Although machine learning cannot automate a complete cyber security system, it helps to identify cyber security threats more efficiently than other software-oriented methodologies, and thus reduces the burden on security analysts. Hence, efficient adaptive methods like various techniques of machine learning can result in higher detection rates, lower false alarm rates and reasonable computation and communication costs.

Keywords: Cyber-crime, Machine learning, Cyber-security, Intrusion detection system.

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### A User Centric Machine Learning Frame Work for Cyber Security Operations Center

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Cyber security incidents will cause significant financial and reputation impacts on enterprise. In order to detect malicious activities, the SIEM (Security Information and Event Management) system is built in companies or government. The system correlates event logs from endpoint, firewalls, IDS/IPS (Intrusion Detection/Prevention System), DLP (Data LossProtection), DNS (Domain Name System), DHCP (Dynamic Host Configuration Protocol), Windows/Unix security events, VPN logs etc. The security events can be grouped into different categories. The logs have terabytes of data each day. From the security event logs, SOC (Security Operation Center) team develops so-called use cases with a pre-determined severity based on the analysts experiences. They are typically rule based correlating one or more indicators from different logs. These rules can be network/ host based or time/frequency based. If any pre-defined use case is triggered, SIEM system will generate an alert in real time. SOC analysts will then investigate the alerts to be suspicious from the analysis, SOC analysts will create OTRS (Open Source Ticket Request System) tickets. After initial investigation, certain OTRS tickets will be escalated to tier 2 investigation system as severe security incidents for further investigation and remediation by Incident Response Team. However, SIEM typically generates a lot of the alerts, but with a very high false positive rate..

**Keywords:** Machine Learning, Cybersecurity, Intrusion Detection, Software Information And Event Management, Risky User Detection.

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# Semi Supervised Machine Learning Apporach for DDoS Detection

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Distributed Denial of Service (DDoS) attacks are a major threat to internet security and can cause significant disruptions to online services. Traditional methods of detecting and mitigating DDoS attacks typically rely on network-level defenses, which can be overwhelmed in the face of large-scale attacks. Semi-supervised machine learning approaches offer a promising alternative for detecting DDoS attacks. This project proposes a semi-supervised machine learning approach for DDoS detection, which leverages the abundance of unlabeled data available in most network environments to improve the performance of the model. The approach involves training a machine learning model on a small labeled dataset of known attack patterns, and then using the model to

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classify new instances as either normal or malicious. The project focuses on developing a system that can accurately and efficiently identify and mitigate DDoS attacks in real-time. The specific goals of the project include developing a semi-supervised machine learning algorithm that can effectively identify DDoS attacks in real-time, optimizing the performance of the machine learning algorithm through various techniques, integrating the machine learning algorithm into a DDoS detection system, and evaluating the effectiveness of the semi-supervised machine learning approach.

The project will be evaluated based on various metrics such as accuracy, precision, recall, and F1-score, and the results will be compared with traditional methods of DDoS detection.

Index Terms-Malware detection, HTTP flow analysis, text semantics, machine learning.

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### A Case Study on Game That Uses Two Hand Paddles to Hit the Ball Back and Forth(PONG)

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This paper describes a command interface for games based on hand gestures defined by postures, movement and location. The large variety of gestures thus possible increases usability by allowing a better match between gesture and action. The system uses computer vision requiring no sensors or markers on the user or background. The analysis of requirements for games, the architecture and implementation are discussed, as well as the results of several tests to evaluate how well each requirement is met. Play the famous Pong Game using hand gestures. You don't have to touch anything with your hands! We use vision recognition and machine learning to detect the activity on your webcam. Digital video games can be enjoyed more naturally and conveniently using hand gestures and machine learning in- corporate. The game can be controlled using specific hand gestures. This project aims to create a unique application that connects to the game. Input and interaction devices are an important part of every game for human interaction but in recent times it has been developed with various technologies to control computer- based systems. Interaction between humans comes from different modes like gestures, speech, text etc. All gesture interaction is best for interacting with games.

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### **Driver Drowsiness Detection Using Machine Learning**

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This document is a review report on the research conducted and the project made in the field of computer engineering to develop a system for driver drowsiness detection to prevent accidents from happening because of driver fatigue and sleeping.

The report proposed the results and solutions on the limited implementation of the various techniques that are introduced in the project. Whereas the implementation of the project gives the real world idea of how the system works and what changes can be done in order to improve the utility of the overall system.

Keywords: Driver drowsiness, eye detection, yawn detection, blink pattern

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### How Data-driven Entrepreneur Analysis Imperfect Information for Business Opportunity Evaluation

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High market uncertainty makes it difficult for an entrepreneur to assess the status of the market for a business opportunity. Data gathering and analysis techniques and technology are becoming a significant source of uncertainty management for many entrepreneurial endeavours. This is sometimes referred to as "data-driven entrepreneurship." We examine a data- driven dynamic method to overcoming market uncertainty in business opportunity appraisals. We focus on the entrepreneur's investment portfolio, in which each investment generates projected returns as well as knowledge on a certain market element for a single company opportunity. We create a model that evaluates imperfect market data (e.g., financial, social, and regulatory) while taking into account the entrepreneur's risk tolerance and operational resource, routine, reputation, and regulatory constraints. Our numerical findings indicate that, rather of seeking the best projected returns, an entrepreneur may pick perfect information, risk hedging, or market- controlling investments based on his or her cash level and risk tolerance. As a result of the availability of data analysis, the entrepreneur may overcome uncertainties and get superior insights for business opportunity judgments.

Keywords: Business opportunity evaluation, decision making under uncertainty, data-driven entrepreneurship

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# A Case Study on Spam Detection for Twitter Comments Using Machine Learning

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Now a days, social media platforms have become an important part of our existence. The social media networks like Facebook, Instagram, Twitter, SnapChat and YouTube are used for communication among people and source of promoting businesses. Twitter is an excessive communication and sharing platform, where people can share their emotions and promote their businesses by using 140character messages. More than 42millions Twitter accounts are created every month. Twitter's receptiveness to spamming has prompted the prominence of activities on Twitter. Twitter spam is a very a sophisticated issue however it's difficult to unravel. So far, previous research has suggested a number of detection and defense methods that secure the Twitter users from spammers. So, we are going to work on spam detection techniques of Twitter. This study consists of 3 sections: 1- Background about spam detection on Twitter. 2- A literature review comparative analysis of machine learning, deep learning and hybrid algorithms. 3- Discussion on limitation of previous studies and future directions.

Keywords- Social networks, Twitter Spam detection, Feature extraction, security, Data.

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### A Case Study on Authentication of Product Using Blockchain: Authentication of Product & Counterfeits Elimination Using Blockchain

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Blockchain technologies have gained interest over the last years. While the most explored use case is financial transactions, it has the capability to agitate other markets. Blockchain remove the need for trusted intermediaries, can facilitate faster transactions and add more transparency. This paper explores the possibility to deflate counterfeit using blockchain technology. This paper provides an overview of different solutions in the anti-counterfeit area, different blockchain technologies and what characteristics make blockchain especially interesting for the use case. We have developed three different concepts and the expansion of an existing system concept, is pursued further. It is shown, that reducing counterfeits cannot be achieved by using technological means only. Increasing awareness, fighting counterfeiters on a legal level, a good alert system, and having tamper-proof packaging are all important aspects. These factors combined with blockchain technology can lead to an efficient and comprehensive approach to reduce counterfeiting.

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# Price-Based Resource Allocation for Edge Computing: A Market Equilibrium Approach

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The emerging edge computing paradigm promises to deliver superior user experience and enable a wide range of Internet of Things (IoT) applications. In this paper, we propose a new market-based framework for efficiently allocating resources of heterogeneous capacity-limited edge nodes (EN) to multiple competing services at the network edge. By properly pricing the geographically distributed ENs, the proposed framework generates a market equilibrium (ME) solution that not only maximizes the edge computing resource utilization but also allocates optimal resource bundles to the services given their budget constraints. When the utility of a service is defined as the maximum revenue that the service can achieve from its resource allotment, the equilibrium can be computed centrally by solving the Eisenberg-Gale (EG) convex program. We further show that the equilibrium allocation is Pareto-optimal and satisfies desired fairness properties including sharing incentive, proportionality, and envy-freeness. Also, two distributed algorithms, which efficiently converge to an ME, are introduced. When each service aims to maximize its net profit (i.e., revenue minus cost) instead of the revenue, we derive a novel convex optimization problem and rigorously prove that its solution is exactly an ME. Extensive numerical results are presented to validate the effectiveness of the proposed techniques.

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### **Blockchain Based Certificate Validation**

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In this project to secure academic certificate and for accurate management and to avoid forge certificate we are converting all certificates into digital signatures and this digital signatures will be stored in Block chain server as this Block chain server support tamper proof data storage and nobody can hack or alter its data and if by an chance if its data alter then verification get failed at next block storage and user may get intimation about data alter.

In Block chain technology same transaction data stored at multiple server with hash code verification and if data alter at one server then it will detected from other server as for same data hash code will get different. For example in Block chain technology data will be stored at multiple servers and if malicious users alter data at one server then its hash code will get changed in one server and other servers left unchanged and this changed hash code will be detected at verification time and future malicious user changes can be prevented. In Block chain each data will be stored by verifying old hash codes and if old hash codes remain unchanged then data will be consider as original and unchanged and then new transaction data will be appended to Block chain as new block. For each new data storage all blocks hash code will be verified.

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### The Presence of Bisphenol A (BPA) in Ethiopian Baby Bottles: Implications for Health Concerns

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Bisphenol A (BPA) is an industrial compound it is one of the highest volume chemicals produced worldwide, this compound is used to produce synthetic polymers, epoxy resins, which are used for beverage containers, metal cans, BPA also used to manufacture polycarbonates with applications in bottles of water and milk, studies have showed that BPA has been detected in majority of people. Which is an endocrine disrupter, and several reports have proposed on exposure to BPA will leads to adverse health effects, such as infertility, obesity, cancer. This study is proposed to evaluate the exposure levels to BPA in Ethiopian babies with by taking 2 to 24 months of age, and the bottles were made by China and Taiwan, and those are collected from Ethiopian market, Analyses were then made by taking consideration of the different food stuffs (water and milk) and different conditions.

Keywords: Bisphenol A, Ethiopian babies, Milk bottles

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# Transforming Well Water with High Iron and Manganese Content into Potable Water Using Alum from Recycled Aluminium Foil Waste

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Water is a primary need that is very important for human life. In the results of observations in the Banjarsari village, researchers found that all residents still use dug well water for various activities, and it contains high levels of iron and manganese so that some people have added alum in their wells to get clear water. The aim of this research is to find out how much effective alum made from uncoated aluminum foil waste is to improve the characteristics of dug well water compared to use commercial alum so that it can provide information for the public to get clean water that meets standard quality. Research shows that the use of alum with the same dose of 800 ppm turns out to be more effective than alum made of uncoated aluminum foil. Well water processed using alum made from uncoated aluminum foil decreased the pH value by 11.6%; Pt-Co color value decrease 66.66%; decrease in NTU 89.3%; decrease in TSS 61.81%; a decrease in Fe 60.88% and a decrease in Mn 40.23% while using commercial alum there was a decrease in the pH value of 13.04%; Pt-Co color value is 74.24%, NTU decrease is 92.76%; decrease in TSS 66.86%; Fe decreases 62% and Mn decrease 46.46%. From the research results, the parameters of pH, color, NTU and TSS have met the standards of the Minister of Health, while the metal parameters of Fe and Mn have not met the standards.

Keywords: effectiveness, alum, aluminum foil, well water, iron, manganese

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### Green Polymer Production: Generating Xanthan Gum from Xanthomonas Campestris Microbes

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Microbial polysaccharides are biothikners mostly added in wide variety of products as a viscosifying, Stabilizing, emulsifying, gelling agent. In conventional cultivation method, air is used as source of oxygen for the fermentation process. During xanthan gum fermentation, formed gum increases viscosity of fermentation broth. Novel cultivation methods have been successfully developed in laboratory with hydrogen peroxide as oxygen source to eliminate gas-liquid mass transfer resistance in the xanthan gum fermentation broth. The experiments were carried out using wild type cell and HOCL treated cells. The experiments shows productivity increases from 0.126 g of xanthan gum per g. of cell for wild culture with  $H_2O_2$  based cultivation (110%). Viscosity of xanthan gum increased about folds from 65 cP (wild culture with aeration) to 122.5 cP (HOCL treated with  $H_2O_2$  based cultivation). Thus experimental results shows that the improvement in xanthan gum quality and yield can be obtained using HOCL treatment and oxygen supply strategy.

Keywords: Xanthan gum, Microbial polysaccharides, cultivation, viscosity

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# Exploring Polymer Flooding as a Technique for Improved Oil Extraction: A Model

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Polymer flooding is chemical method employed by engineers to enhance the recovery of oil from oil reservoirs. The technique works mainly by increasing the viscosity of injected water to improve overall sweep efficiency. For this work, recovery by polymer injection was simulated using Schlumberger Eclipse. Natural depletion of the reservoir was run to 100bars. 5 vertical wells were used and a recovery of 30% was achieved with a production plateau of about 8years. This is preferred to the use of 4 or 6 producing wells which yielded a field efficiency of 25% and 30% respectively. The 5 and 6 producing wells cases were very similar as they both had 30% recovery, similar production plateau and water cut. The 5 wells case is the preferred choice as it is more cost effective to drain the reservoir with fewer wells. Polymer injection was simulated by commencing water injection as a secondary recovery mechanism after reservoir depletion to a bottom-hole flowing pressure of above 260 bar followed by a polymer flood. This gave a significant increase in oil recovery from 30% to about 53% with the production plateau sustained for 4.8 years. A total of 11 wells were used, 7 producers and 4 injector wells.

Index Terms- Water flooding, Polymer Flooding, Enhanced Oil Recovery, Field Oil Recovery Efficiency.

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# Innovative Methods for Developing Suspended Aquaculture Systems

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The main objective of the present work is to check the applicability of a new technique for suspended fish farms and investigate the technique's behavior under static loadings. The proposed system consists of a set of fish bags hanging from a net of pre- stressed convex cable beams hanging from guyed tower at ends. The static analysis involved in the study was carried out using a FORTRAN-coded-program based on the minimizing the Total potential energy (TPE) using the conjugate gradient (CG) technique taking into considerations the geometric nonlinearity of the structure. Many parameters were studied to investigate the structural response of the system, for instance, the net span, the cable beams stiffness, net curvature and the supporting boundary stiffness. Results show that the system may be an efficient and well-suited alternative for large-span fish farms over typical solutions.

Keywords: total potential energy, suspended cable roofs

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### Comparative Seismic Analysis: Traditional Brick vs. Interlocking Blocks

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Nowadays, due to rapid growth, expensive materials, and time-consuming processes, various construction methods are being considered and developed. One breakthrough in the construction industry is the interlocking of bricks. It is one of the best technologies for producing low-cost building materials. The purpose of this technical paper is to investigate how effectively a wall built using interlocking blocks withstands lateral loads, such as seismic loads. The analysis is compared with the conventional bricks. The structure is modelled in STAAD PRO software.

Keywords: Infill, Interlocking blocks

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## Assessing the Performance of Concrete Reinforced with High-Strength Basalt Fibers

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The use of discontinuous fibres that are spaced in an ad hoc manner helps to reduce the width of fractures and inhibit the propagation of micro and macro cracks. As a result, the permeability of the concrete will decrease. It has been demonstrated that the addition of fibres to concrete improves its mechanical properties, including its resistance to fracture, impact, and dynamic load. In recent years, the use of composite materials, especially fiber-reinforced plastics, has experienced tremendous increase (FRP). As a direct result of the spread of FRP technology, the creation of new types of fibres, such as basalt fibre, has become increasingly important. The ease with which basalt fibre may be manufactured, as well as its resistance to severe temperatures and capacity to endure the effects of freezing and thawing, have led to its increasing popularity. This field of investigation focuses on the mechanical and elastic properties of concrete coupled with chopped basalt fibre. To cast basalt fibre examples, chopped basalt fibres of different lengths (12 mm, 18 mm, and 24 mm) and dosages (4 kg/m<sup>3</sup>, 8 kg/m<sup>3</sup>, and 12 kg/m<sup>3</sup> of concrete volume) were utilised. The results indicated that basalt fibre with a length of 18 mm and a dosage of 8 kg per cubic metre offered the highest compressive strength in compared to ordinary concrete. The ideal flexural and split tensile strengths were provided by basalt fibres with a length of 24 mm and a dosage of 12 kg per cubic metre. In terms of elastic properties, basalt fibre with a length of 18 mm, and plain concrete.

Keywords: basalt, fibre, reinforced concrete

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# Utilizing Abandoned Concrete and Waste Asphalt for Road Construction through Recycling

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The present recycling situation of waste concrete and waste asphalt mixture was analyzed in the paper. It was obtained that a large number of them was not recycled in China. Recycling methods of waste concrete and waste asphalt mixture were studied and performance of recycled material was analyzed. Several pieces of advice were given to better recyle waste concrete and waste asphalt mixture.

Keywords- solid waste, recycling treatment, road construction

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# Analyzing Corrosion in Reinforced Concrete Structures through Experiments

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Corrosion of Structural reinforcement is becoming an issue for constructions that are exposed to environmental conditions. The bond strength between concrete and the reinforcement can be affected by corrosion due to loss of the reinforcement area. This can lead to safety issues in terms of sudden collapse without warning signals. Therefore, it is important to study the effects of corrosion on concrete and the period of bond strength loss in order to take into account safety precautions. The effect of corrosion on bond strength has been studied in several experiments. In this paper, an electrical current with voltage of 24V was used in order to accelerate the corrosion of an embedded rebar within three hours in concrete cubes of 15\*15\*15. Pull out tests were applied on the specimens after 14 days of casting of the concrete, with compressive strength C30. The specimens have different levels of corrosion (0%, 5% and 10%) and different applied loads pulling the rebar. The applied force on the samples was at 100%, 90% and 80% of the failure load and bond slip relations were compared under different levels of corrosion. This provides a period during the test to monitor the level of cycling before specimen failure. The results showed that a corroded rebar with 5% of corrosion level has higher bond strength and less slip than the other specimens that have different levels of corrosion, which slightly differs from the theories espoused in previous researches. It was remarkable how a slight difference in cycling between corroded and uncorroded rebars indicates that specimens with similar levels of corrosion and the same properties of concrete can affect bond strength under slight impacts. It was also noticed that uncorroded samples cannot be affected by cracks even though the rebar was pulled out by applied force.

Keywords: Bond Strength, Corrosion, Pull Out test, Bond Slip, Reinforced Concrete

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# Investigating the Strength Properties of Bricks Comprised of Plastic and Sand

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Brick is an essential one for construction works. Generally, bricks are made by clay, sand and cement. In our project we are making bricks by using waste recycled plastic due to shortage of cement and clay. Waste plastics are widely available in all areas. We are using recycled PET bottles, carry bags, HDPE, LDPE and thermocol to make plastic bricks. Primarily recycled plastic PET bottles, carry bags, HDPE, LDPE and thermocol oc. By sieve analysis, sand was sieved to 600 microns. The sieved sand is added to the liquid plastic and was stirred continuously. A handmade wooden mould is taken and the mixture was poured in that and compacted. It is allowed to dry for a period of 24 hours. The curing period was 7 days and 28 days. By this process plastic bricks are obtained and it is compared with conventional bricks. To check its properties several tests were conducted. They were Compression test, Water absorption Test, Efflorescence test, Hardness test and Soundness test.

Keywords: Waste Plastic, Conventional bricks, Compression Test, water absorption Test, Efflorescence Test

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## ANFIS Control in Interleaved DC-DC Converters for Electric Vehicle Charging: An Analysis

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Robust and intelligent control algorithm design is very essential in the development of power electronics converter to maintain constant output voltage regardless of the variations in input voltage and load. In this article, simulation and analysis of interleaved DC-DC converter for electric vehicle charging applications using adaptive neuro-fuzzy inference system (ANFIS) are presented. The ANFIS based control algorithm for the DC-DC converter is designed to stabilize output voltage and enhance the performance of the system during transient operations. To verify the design, two-phase interleaved synchronous DC-DC buck converter is simulated in MATLAB-Simulink based environment and simulation results on resistive load are presented.

Keywords- ANFIS, buck converter, interleaved DC-DC converter, electric vehicles charging.

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#### Predictive Reliability and Assessment of Sun-Tracking Solar Systems

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Now-a-days numerous of Electrical consumption devices are developed for the sophistication of Human Life. Hence, Non- Renewable Sources are reducing and not possible to meet future Electrical Demand alone with it. That's why making use of Renewable Resources especially Solar and Wind are potential in the universe. So, for sustainable generation of Electricity to meet the demand of future endeavours, Renewable Energy plays a significant role. In this paper, [6] it is motivated to track the Solar Energy with the help of Sun Tracking Solar System (STSS). It is a device [5] that operates to track and rotate by adjusting the angle of the solar panel to orient itself, towards the normal of solar rays all the time during the day. STSS mainly consists of Sensors, Electronic Devices like Resistors, Inductors, Capacitors, Microprocessor and Motor. If STSS fails, tracking Solar Energy is Difficult and subsequently generation of Electricity reduces since Solar Panel will not move along the Sun Rays. Hence, it is more essential to understand Reliability Prediction [1] of STSS. Generally, failures of STSS may be due to sophisticated components like Electronic Devices rather than robust equipment like Motor. In this paper, it is proposed to Perform Reliability Prediction of Sun Tracking Solar System in terms of Mean Time Between Failures (MTBF) by using the Bellcore standard [7] and its validation through High Accelerated Life Testing (HALT) results.

**Keywords:** Sun Tracking Solar System (STSS), Reliability Prediction, Failure Rate, Bellcore standard, Item Toolkit Software, Mean Time Between Failure (MTBF), High Accelerated Life Test (HALT).

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#### Comparing PI and PID Controllers in a 48-Pulse Converter System

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This paper presents modelling and simulation of multi pulse AC to DC converter topologies. In this paper multi pulse converter are developed for improving power quality to reduce harmonics in ac main and ripple factor in DC output. The simulation of 48 pulse converter is performed on MATLAB simulink by using universal thyrister. The main focus of this study to minimise (THD) near to zero by use of PI and PID controller. The Thd of dc output are calculated by FFT analysis in matlab and comparative analysis of performance of each controller as PI and PID controller is done in this research paper.

Keywords: Pulse Converter, PID Controller, PI Controller

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#### Finite Element Analysis of Seismic Vibrations Impacting Industrial Control Panels

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Industrial drives are electrical devices which are used to control the speed of motor by controlling frequency of the power input to the motor used in industries and in heavy duty applications like mining, weaving, cranes, hoists, marine, etc. In these application locations, vibration tends to be very heavy and also the dust particles and other environmental factors may affect the efficiency of the drive and even may lead to its failure. In addition to the above - mentioned vibrations these drives are also used in industries which are situated in seismic zones and the drive panels may fail during the time of earthquake. In this paper, considering the worst - case scenarios, the seismic analysis of drive enclosures (Drive panels) is performed as per seismic standards in ICC (International Code Council) considering zone IX earthquake zone. In this study, the critical parts are identified, stress and response acting on them are observed and the required design changes are considered to bring down the stress level to safe stress and make the panel robust in seismic zone.

**Keywords:** Seismic vibration, Modal analysis, Seismic standards, Industrial drive panels, Industrial control panels, Random vibration, Earthquake vibration

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#### A Portable, Hardware-in-the-Loop Laboratory for Pioneering Control Experiments

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The increase in the online educational offer of engineering programs at bachelor and graduate levels and the decentralization and increase in education coverage in many countries pose enormous challenges for getting students to carry out activities that link theory with practice in laboratory sessions. Virtual laboratories that allow the use of specialized software in remote computers or remote laboratories, which allow the user to interact with high-cost hardware or that require special facilities, have solved part of this problem. However, there is a trend towards using portable devices or low and medium-cost kits, which can be easily assembled and replicated by both students and universities for carry out practices in introductory courses of control theory. This work presents a portable laboratory with hardware in the loop that go further and allows to carry out classic, modern, and intelligent control experiments in real time and can be replicated by educational institutions at a low cost. The proposed portable laboratory has been used and tested since 2012 by more than 300 students in bachelor and graduate courses at the Tecnológico Nacional de México campus Instituto Tecnológico de Minatitlán in the subjects of Advanced Control, Intelligent Control, and Virtual Instrumentation.

Keywords: Advanced Control, Hardware in the loop, Portable laboratory

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#### Exploring Contemporary Postmodern Depictions in British Fiction through the Lens of Ian McEwan's 'Black Dogs

#### G.Venkat Reddy<sup>1</sup>, S.Swapna<sup>2</sup>, E.Prarthana<sup>3</sup>, D.Ananda Rao<sup>4</sup>

Britain has suffered the aftermath of the two world wars than any other nation in the world. As her colonies were affected economically at large, the people of Britain underwent a complete social unrest. Pushed into a sense of dismay and dullness, the postwar period in England was pitiable and pathetic, which reflected in the ways of the life of the people. Ian McEwan, a prolific writer of contemporary literary world, an active witness and sufferer of the war period, reflects on the consequences of the same in the lives of people through his novels, especially his earlier ones. Ian McEwan, along with his contemporaries continues in post modernistic trend and practice, 'the autonomy of art' through his novel, with appreciable technical excellence. Many of his novels The Innocent, Black Dogs, Atonement, and The Child in Time touch upon the war period and the people living in that period, consequently.

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#### A Stylistic Analysis of Linguistic Structures in Lakshmi Kannan's Poetry

D.Ananda Rao<sup>1</sup>, G.Venkat Reddy<sup>2</sup>, S.Swapna<sup>3</sup>, E.Prarthana<sup>4</sup>

Indian English Poetry after independence demanded a new use of language and called for the use of everyday speech. Hence there is a demand, as it were, for the creation of an Indian English idiom, to give an identity to Indian English Poetry independent of a different from the world literatures written in English including British and American Literatures. The modern Indian English poets realize a need to acclimatize English language to an indigenous tradition. They have attempted and succeeded to an extent in evolving and remoulding English to the native needs of expression termed as 'Indianization'. Lakshmi Kannan who joins the movement creates a different music to give poetry a greater informality, to bring it closer to the spoken language. She handles the language with utmost care and competence by giving importance to the contemporary idiom

**Keywords:** acclimatization, topicalization, hypersemantics, thematization, foregrounding, schematic figures, semantic absurdity, collocational clash, miniaturization, transfusion

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## Integrating Dalit Literature into School Curricula

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Dalits are extremely important, and Dalit literature is an attempt to illuminate us about the discrimination, brutality, and ostracization faced by the Dalit community in India. Members of the Dalit community have been pushed to the margins, and the majority has ignored their lived experiences. The introduction of Dalit studies in schools, which include poems, novels, memoirs, and short stories, will gradually improve their situation by depicting the nuances and evolution of the Dalit identity. Dalit literature is one of the most important literary phenomena in post- independence India, attempting to restore dignity to a long-wronged community. On both an individual and communal level, studying Dalit literature will be synonymous with Dalit consciousness. As a result, schools throughout India should incorporate Dalit Literature into their school-specific curricula.

Keywords: dalit literature, school education, study, curricula.

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#### The Influence of Mahatma Gandhi in Ending the Indian Indenture System

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Indentured labour system started in British colonies after the abolition of slavery in Europe in the early 19th century. The British plantation owners felt an immediate need of manpower after the emancipation of the black slaves in different colonies. They were in need of cheap and docile workers, who would work in conditions similar to slavery. These plantation owners contacted the imperial government in different parts of the world and brought labours from there particularly from India, China, Africa and South East Asia to work in different plantations like sugarcane, coca and rubber. Approximately two lakh Indians migrated to south Africa as indentured labourers over a period of five decades (1860-1911). These labourers were recruited through an agent who used to deceive the illiterate people through trickery and fanciful tales of luxury. They were promised the land of their dreams in distant country where they hoped to get less tiring work and earn more. It was only after confronting with the reality that these poor creatures find themselves in undesirable circumstances. They were subjected to very cruel and harsh treatment which sometimes led to their death. Though they tried to raise their voice but it was at the individual level and not in an organised manner. It was on April 1893 when Gandhi went to south Africa that a strong and organised agitation started against the cruel and inhuman practices committed against the poor labourers. The present paper will try to depict the miseries of these 'Coolie' workers and the reasons of their migration to overseas territories. It will also try to unveil the role Gandhi played in abolishing this unjust setup. The focus of the study would be on two books of Mahatma Gandhi i.e. My Experiments with Truth(1927) and satyagraha in South Africa(1928).

Keywords: Representation, Indentureship, immigration, Slavery, Post-colonial.

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#### Investigating Curvature Inheritance in H-⊕ Recurrent Finsler Space

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Singh S.P (2004), Gatoto, J.K & Singh, S.P (2008) discussed the curvature Inheritance in Finsler space under certain usual conditions and investigated necessary condition for curvature inheritance. The object of present paper is to discuss the existence of curvature inheritance in H- $\oplus$  Recurrent Finsler space. Some significant results have been established.

Keywords: Curvature Inheritance, Recurrent Finsler Space

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## Strategic Resource Distribution in the IT Sector Using Goal Programming

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Information Technology is a vast industry which comprises information technology services, consulting, and outsourcing by providing solutions to various problems. India's IT Services industry was born in Mumbai in 1967 with the creation of Tata Consultancy Services [1] who in 1977 partnered with Burroughs which began India's export of IT services [2]. The first software export zone, SEEPZ - the precursor to the modern-day IT park was established in Mumbai in 1973. More than 80 percent of the country's software exports were from SEEPZ in the 1980s. In 1991 the Department of Electronics broke this impasse, creating a corporation called Software Technology Parks of India (STPI) that, being owned by the government, could provide VSAT communications without breaching its monopoly. STPI set up software technology parks in Bangalore, Hyderabad, Chennai, Pune and Delhi NCR. Bangalore is a global technology hub and is India's biggest technical hub [3]. As of fiscal 2016-17, Bangalore accounted for 38% of total IT exports from India worth \$45 billion, employing 10 lakh people directly and 30 lakhs indirectly [4]. The development and affluence of India's IT industry is dictated by few critical factors. Hence, numerous models are being constantly introduced to enhance growth of IT industries by establishing cordial relations among various departments within the IT industry through goal programming by allocating optimum resources.

Keywords: Information Technology, Tata Consultancy Services, Goal Programming

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#### Investigating Mathematical Characteristics Linked to the Tower of Hanoi and Its Resolution

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The Tower of Hanoi is arguably one of the most fascinating mathematical puzzles of all time. Apparently based on the legend of a mystical Hindu temple where 64 golden discs were placed in increasing size from top to bottom, the modern version introduced by Edouard Lucas has fascinated many math-enthusiasts worldwide. Only one rule must be followed while moving all discs from the first to the last column in order to complete the puzzle - a larger disc must never be placed over a smaller one. The puzzle has encouraged countless explorations of the logic and the mathematics behind the puzzle, with more and more striking patterns becoming apparent over time. This paper will explore a basic solution of the puzzle, followed by a mathematical and combinatorial derivation of formulae relating to the minimum and maximum number of moves that can be used to solve any version of the puzzle (with a specified number of discs and columns). Some variations and applications of the puzzle and its related concepts will also be explored.

Keywords: Tower of Hanoi, Lucas Tower, Tower of Brahma, Mathematical Puzzle, Mathematics

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#### Impact of Mach and Prandtl Numbers on Plane Couette Flow Dynamics

T.Thirupathi Reddy<sup>1</sup>, B.Ramadevi<sup>2</sup>, V.Sujatha<sup>3</sup>, V.Srinivas<sup>4</sup>, Ch.Saritha<sup>5</sup>

If the flow is compressible, heat due to friction as well as temperature change due to compression must be taken into account. In addition, it is necessary to consider the effects of the variation of viscosity with temperature. This dependence of temperature with viscosity and density makes the calculation of problems in viscous compressible flow much more difficult than that for the case of in-compressible flow. It's necessary to consider equation of continuity momentum energy and reduced Navier-stokes equation to the the phenomenon of plane couette-flow for different values of Mach number and Prandtl numbers. The significance of four important Controlling parameters in viscous compressible fluids need to be discussed and illustrated.

Keywords: Navier-stokes equation, Mach number, prandtl number, temperature, velocity, viscosity, thermal conductivity, ratio of specific heats

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## Predictive Analysis of Sri Lanka's Third COVID-19 Wave

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The coronavirus disease (COVID-19) is a respiratory viral disease first reported in Wuhan city in China on December 2019 and turned pandemic worldwide. The World Health Organization declared the COVID-19 outbreak as a pandemic on 11th February 2020. The first case of COVID-19 was reported in Sri Lanka on 27th January 2020, a Chinese female visiting the country. The first local patient was reported on 11th March 2020 thus bringing about unprecedented changes in the daily life in the country. However, Sri Lanka successfully managed to control the spread of the first and second waves of the virus and kept the number of patients and deaths at a minimum. Now, Sri Lanka struggles to respond effectively to COVID-19 third wave. A simple model for predicting COVID-19epidemic is presented in this study. The prediction model is presented based on the classic Susceptible-Infectious-Recovered (SIR) model, which has been widely used to describe the epidemic time evolution of infectious diseases. The main purpose of this research is to estimate the parameters of SIR model and to predict the peak of the third wave of the COVID-19 pandemic in Sri Lanka using the data from 15<sup>th</sup> April 2021 to 25<sup>th</sup> June 2021. Data was obtained from daily situation reports of the Epidemiology Unit, Sri Lanka. The values of the rate of transmission and rate of removal are at 0.0966 and 0.07143, respectively. The peak of pandemic will be reached after approximately 142 days from its emergence in Sri Lanka. The percentage of infected persons at the peak of the third wave was estimated at 3.95% of the total population. The basic reproduction number was estimated at 1.3529. These results may be helpful to Sri Lankan authorities to adapt their strategies and may be taken into consideration in the future phase of discontentment. Further, it seems that this simple model is still reliable enough to describe the dynamics of the COVID-19 epidemic, not only qualitatively but also quantitatively with a high degree of correlation between actual data and prediction results

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Keywords: COVID-19, Pandemic, Parameters, Sri Lanka

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#### Impact of Heat Temperature and the Fusion of Lignin and Chitosan on the Mechanical Traits of Biodegradable Plastics from Soybean Husk Waste

#### M.Shivaputra<sup>1</sup>, W.Maruti<sup>2</sup>, M V B Kalyan<sup>3</sup>, P.Vijay Kumar<sup>4</sup>, M.Somesh<sup>5</sup>, M.Yadhagiri<sup>6</sup>

Plastic waste from petroleum raw materials is difficult to decompose by microbes, causing a pile of plastic waste that continues to increase every year. According to Indonesia's domestic waste statistics, which consists of plastic waste, it is ranked second, amounting to 5.4 million tons per year or 14% of total waste production, and this number is expected to continue to increase every year. In order to anticipate global trends in the use of plastics, especially in the packaging industry, research needs to be carried out in finding new biodegradable plastic material alternatives, one of which comes from soybean husks. Research is carried out through the addition of chitosan and lignin in various compositions or variations in mass and temperature. Plastic characteristic tests are performed by measuring the mechanical properties (tensile strength) of biodegradable plastics and elongation. Research shows that soybean husk can potentially be used as a bioplastic because it has the ability to degrade up to 90% for 14 days, tensile strength of 15.9 mPA and water resistance of 31.6%. So, it can be concluded that at a heating temperature of 45°C for 24 hours with the addition of a combination of chitosan and lignin obtained the mechanical properties of biodegradable plastic material for plastic.

Keywords: Biodegradable, Bioplastic, Chitosan, Lignin, Resistance, Strength, Water

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## Modeling and Simulating PEM Fuel Cells for Dynamic Electrical Systems in LM-100J Commercial Freighter Aircrafts

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Dynamics of proton exchange membrane fuel cells (PEMFC) with hydrogen storage system for generating part of airplanes electrical energy is presented. Viability of using fuel cell (FC) for this airplane is estimated by means of simulations. Temperature change and dual layer capacity effect are considered in all simulations. Using a three-level 3-phase inverter, FC's output voltage is connected to the indispensable bus of the airplane. Moreover, it is possible to connect FC's output voltage to airplane DC bus on the other hand. PID controller is presented to control flow of hydrogen and oxygen to FC and improve momentary and steady state responses of the output voltage to load turbulences. FC's output voltage is regulated via an ultra-capacitor. Simulations are carried out in PYTHON and results show that the load tracking and output voltage regulation are acceptable. The proposed system utilizes an electrolyze to generate hydrogen and a tank for storage. Therefore, there is no need for batteries. Moreover, the generated oxygen could be used in other applications in airplane.

Keywords: python, PID Controller, PEMFC, Simulation graphs, system components of Hercules planes

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#### Emission and Performance Traits of a Di Diesel Engine with Biodiesel Blends (Derived from Used Cooking Oil)

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The conventional fossil fuels for internal combustion engines will be available for few years only, due to tremendous increase in the vehicular population. Moreover, these fuels cause serious environmental problems by emitting harmful gases into the atmosphere at higher rates. Commonly pollutants released by engines are CO, Unburnt hydrocarbon, NOx, smoke and particulate matter. At present, alternative fuels like methyl ester of vegetable oil, alcohols etc. are in the line to replace the fossil fuels for IC engines. In the present study and experimental investigation were carried out with waste cooking oil as an alternative fuel in a compression ignition (CI) engine. The problem associated with vegetable oil are high viscosity, lowered volatility and high reactivity, but at the same time their higher cetane no, lower sulphur content, inherent oxygen concentration are the desirable properties to use as fuel in compression ignition engines. The process of transesterification of vegetables oil with methyl alcohol provides a significant reduction in viscosity, thereby enhancing the physical properties of vegetable oil. The present paper show a study carried to investigate the combustion, performance and emission characteristics of waste cooked oil methyl ester with diesel fuel on a single cylinder, four stroke, direct injection and water cooled diesel engine. The results of blends of biodiesel and diesel for different measurements such as BSFC, BSEC, BTE, Mechanical efficiency, EGT, A/F ratios, volumetric efficiency, CO, CO,, HC, and NOx & smoke opacity are compared with that of pure diesel. Biodiesel can be blended with diesel in any volume percentage. The Properties of waste cooked biodiesel are determined and found that its properties are nearer to diesel fuel.

Keywords: Biodiesel, (UCOME) cooking oil Waste, Thermal efficiency, Emission, CI engine

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## A Contrast of Real vs. Theoretical Heat Transfer Coefficients at a Steady Wall Surface Temperature

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Comparing between the values of coefficient of heat transfer as actual and theoretical by using double tube heat exchanger experimentally.

**Keywords:** Actual coefficient of heat transfer, Theoretical coefficient of heat transfer, heat load, LMTD, Pr-Nu-Re

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#### Two-Wheeler Muffler Design and Evaluation Using Ansys Workbench

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Mention Vehicles have become primary source for transportation, now days each house has minimum to minus more than two vehicles. At the same time, it becomes important to provide safety for the riders. Hence to provide safety, each component must be checked before and after assembly, how much external loads it may sustain and also, what problem may occur at certain condition. Keeping same objective in the mind I'm going to simulate the static and vibrational analysis of two-wheeler exhaust muffler using ANSYS workbench and if required I'm will validate the same using FFT analyzer. It is important to analyze the silencer for its vibration because parts may get looser when vibrations are induced. In this project I'm going to design a muffler using CATIA v5 software, also to compare the model with different materials for the efficient one. Also, we can conduct the optimization technique for material reduction.

Keywords: Exhaust Muffler, FEM, Vibrational, FFT Analyzer & optimization

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## Thermal and Static Assessment of a Piston Featuring Various Thermal Barrier Coatings

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The design of engine pistons is one of the most complicated in automobile engines it is subjected to extremely high temperatures and high pressures resulting in high thermal stresses and thermal strains. Several investigators had carried out different research works wherein some of them addressed this issue by proposing new geometrical shapes of the piston and some others stressed the use of new materials like various alloys to ensure that their pistons meet the design requirements following operating performance improved during the engine operation in the present work both experimental &numerical investigation has been carried out on piston i.e. static analysis and thermal analysis on a 4-stoke gasoline engine piston using various metals used for construction manufacture of the piston such as aluminum -silica alloy and (AA4032) the piston was modeled using CATIAV5 R20soft ware followed by meshing and analysis with the help of ABAQUS CAE software. The static analysis was carried out by applying different static loads i.e., 2mpa and 4mpa to predict and evaluate deformation and stresses. The thermal analysis was also carried out. The results obtained for the above analysis were stress distribution, displacement distribution, and temperature distribution contours from their results it was observed the best material is AA4032 as it is found to have the lowest deformation at all pressures as improved temperature distribution and also the life of piston used for gasoline engine higher as observed comparatively static and thermal conditions for thermal barrier coated piston and then normal piston when also tested as well as practical applications in the hero 100cc bike engine.

Keywords: Piston, Automobile, Ansys, ABAQUSCAE

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#### Traditional Perspective on a Comprehensive Theory

M. Janaiah<sup>1</sup>, B. Santhi<sup>2</sup>, Dr.B.Nagalakshmi<sup>3</sup>, P. Srinivasa Chary<sup>4</sup>

This article examined the average electrical force exerted by the Earth over an object, considering the Earth a conductive sphere of charge +Q. Spherical coordinate's model was portrayed, and instantaneous electrical interaction (attraction over electrons minus repulsion over protons) was calculated, assuming electrons to be orbiting the corresponding protons. Integration of the instantaneous force over the orbital was performed, and following division by the orbital's area outlined the average electrical force. Using equations derived from the model, it was found that the average electrical force acting over the object was consistent with a gravitational force. Theoretical and practical implications were discussed.

Keywords: unification, gravitation, electromagnetism, integration.

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#### Assessing Electron Beam Influences on the Electrical Traits of MOSFET

Dr.B.Nagalakshmi<sup>1</sup>, M.Janaiah<sup>2</sup>, B.Santhi<sup>3</sup>, P.Srinivasa Chary<sup>4</sup>

The space environment is hostile to most semiconductor electronic devices and components used for space applications and hence it is essential to assess the extent of radiation induced degradation in electrical characteristics of devices planned and used for space applications. Especially, the Van Allen Belts consist of high energy electrons which are in continuous motion. Satellites systems operating in Low Earth Orbits (LEO) are prone to get exposed to high energy electrons. This paper describes the effect of electron beam irradiation on MOSFETs planned for space applications. The devices selected for the study are 2N6768 n-channel MOSFETs (JANTXV) procured from ISAC, Bangalore. The decapped MOSFETS are exposed to a beam of electrons for various doses ranging from 50 Gy to 10 kGy in the electron energy range 7 - 10 MeV using the electron accelerator facility at RRCAT, Indore. Pre and post- irradiation and damage. The investigation reveals that there is a substantial increase in the leakage current and the transconductance also displays considerable reduction upon exposure to electron beam. These changes may be attributed to the trapped electron-holes pair in the gate oxide and Si/SiO<sub>2</sub> interface. The increase in the leakage current can have significant effect on the device performance in a radiation environment.

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Keywords: MOSFET, Radiation, Dose, Leakage current

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#### Physics Educators' Attitudes toward Encouraging Creativity in Teaching and Learning Wave Motion at the Secondary School Level

#### B.Santhi<sup>1</sup>, Dr.B.Nagalakshmi<sup>2</sup>, M.Janaiah<sup>3</sup>, P.Srinivasa Chary<sup>4</sup>

Teachers and learners should be equipped with relevant 21<sup>st</sup> century skills such as Creativity to thrive academically and professionally. This study examined perceptions of Physics teachers towards Creativity. The objectives were to find out Physics teachers' understanding of Creativity, identify factors perceived vital in developing Creativity, and discover Physics teachers' own beliefs about Creativity, how they plan and foster Creativity in their classes. The study population was 26 Physics teachers in 10 secondary schools of Mansa District in Zambia. Random sampling was used to select 20 teachers from the population. Four research instruments were used to collect data and these were the Creativity Perception Questionnaire for Physics Lesson Observation (CRPLO). Results show that access to Information Communication Technology (ICT) facilities and asking thought - provoking questions during Physics lessons were the most important factors in developing the Creativity of learners. The most commonly held beliefs were building the confidence of learners to become divergent thinkers and providing them an opportunity to exercise creative thinking. Although the majority of Physics teachers had no problems planning for Creativity. School - Based Continuing Professional Development (SBCPD) was strongly recommended as a significant tool for implementing and enhancing the Creativity of learners.

Keywords: perception, Creativity, teaching and learning, Physics teachers, wave motion

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## Impact of Text Similarity Algorithms in Automatic Scoring of Subjective Questions

Dr.Ravi Kumar<sup>1</sup>, Dr.M.M.Prasada Reddy<sup>2</sup>, Dr.G.V.Lokeswara Reddy<sup>3</sup>

The theme revolves around the automatic scoring of subjective questions. The key technologies involved in the whole automatic scoring process are discussed in this paper, analyzes the advantages, disadvantages and application scope of different calculation methods for text similarity to understand the development trend of this field. It is helpful for further research on the automatic scoring method of subjective questions based on Word2vec improved model.

Keywords- Text Similarity, Automatic scoring, neural network.

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## Live Human Detecting Robot for Earthquake Rescue Operation Using GPS

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Regular cataclysms do happen and they are relentless. Yet, people are getting logically mindful in the idea of clever salvage activities in such cataclysms with the goal that valuable life and material can be spared however disasters can't be halted. Still there are bunches of fiascos that happen out of nowhere and Earthquake is one such thing. Seismic tremors produce a staggering impact and they see no distinction among human and material. Thus, a great deal of times people is covered among the flotsam and jetsam and it got difficult to distinguish them. An opportune salvage can just spare the individuals who are covered and injured. Discovery by salvage laborers becomes tedious and because of the tremendous zone, that gets influenced it turns out to be progressively troublesome. Thus, this paper proposes a self-ruling mechanical vehicle that moves in the quake inclined zone and aides in distinguishing the alive individuals and salvage activities.

Keywords: DC motor, GPS, PIR sensor, Wireless Camera, GPS, ARM MCU, Buzzer, Arduino

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#### Sentiment Analysis Using Naïve Bayes, Multinomial NB, BernoulliNB and Logistic Regression

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Of late sentiment analysis has become an inevitable tool to know the people's opinion on Government Policies, E marketing, elections, stock markets, staff satisfaction in offices and movies review. In this work, we have conducted sentiment analysis on recently released pan Indian Hindi Movie "Pathan". Raw data Collected from Twitter (10000 tweets) and data set is prepared in order to perform sentiment analysis. In this paper sentiment is estimated using different Machine learning algorithms.i.e. Naïve Bayes, MultinomialNB, BernoulliNB and Logistic regression. The accuracy of all algorithms is above 80%, but Logistic regression has achieved 3% more accuracy compared to other algorithms.

**Keywords:** Sentiment Analysis, Machine Learning, Naïve Bayes, Multinomial NB, Bernoulli NB, and Logistic Regression.

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## Sentiment Analysis of Movie Review Using Logistic Regression Machine Learning Algorithm

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Sentiment analysis is a recent branch of study that has applications in numerous other industries. In the modern world, surveys, comments, and reviews are used to collect enormous amounts of textual data, on the internet. The information gathered is all used to enhance the goods and services offered globally by both public and commercial entities. This study employs supervised machine learning and feature-based opinion mining to analyses the sentiment of movie reviews. The primary goal of this essay is to establish the polarity of reviews by employing nouns, verbs, and adjectives as expressions of opinion. Positive and negative reviews will be separated into two groups.

Keywords: Opinion Mining, Sentiment Analysis, Natural Language Processing, Sentiment Score, Sentiment Lexicon.

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#### Memory Utilization and Energy Saving Model for HPC Applications

Y.Venkata Subbaiah<sup>1</sup>, Dr.M.M.Prasada Reddy<sup>2</sup>, Dr.G.V.Lokeswara Reddy<sup>3</sup>

Cloud computing is an emerging trend in today's era. So with the advancement in technology there has been advancement in the aspects of cloud and its utilization. In this research we are going to discuss about live migration in clouds and how the single memory channel has been a bottleneck to the performance of CPU, communication and memory subsystem. A multi- memory channel model is presented in which all these issues which are affecting the overall performance of our system are handled. Memory channel partitioning approach is also discussed to get the better results and to solve the problem of degrading performance of the system due to single memory channel. Earliest deadline first algorithm has been applied to find the solution to the starving requests so that they don't have to wait in the queue for processing. The model proposed will therefore aim at achieving the high performance and to reduce the overhead of migration on memory subsystem and various other aspects of the system. There has been continuous increase in the cores of CPU which is increasing the performance of virtual machines gives better result with the more number of CPU. The rapid increase in the cloud and its infrastructure has led to increase in the various aspects of the cloud computing. This has resulted in significant increase in the virtualization technology and lays more emphasis on virtual machines, live migration and so on. So these issues will be dealt with high attention to get solutions.

Keywords: Single memory channel, Multi-memory channel, virtual machines, virtual queue, banks

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#### A Report on Sentiment Analysis or Opinion Mining

Y.Venkata Subbaiah<sup>1</sup>, Dr.M.M.Prasada Reddy<sup>2</sup>, Dr.G.V.Lokeswara Reddy<sup>3</sup>

Opinion Mining (OM) or Sentiment Analysis (SA) can be defined as the task of detecting, extracting and classifying opinions on something. It is a type of the processing of the natural language (NLP) to track the public mood to a certain law, policy, or marketing, etc. It involves a way that development for the collection and examination of comments and opinions about legislation, laws, policies, etc., which are posted on the social media. The process of information extraction is very important because it is a very useful technique but also a challenging task. That mean, to extract sentiment from an object in the web-wide, need to automate opinion-mining systems to do it. The existing techniques for sentiment analysis include machine learning (supervised and unsupervised), and lexical-based approaches. Hence, the main aim of this paper presents a survey of sentiment analysis (SA) and opinion mining (OM) approaches, various techniques used that related in this field. As well, it discusses the application areas and challenges for sentiment analysis with insight into the past researcher's works.

Keywords: opinion mining; sentiment analysis; NLP; machine learning; lexical-based.

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#### Security Evaluation Indicator System of Smart Home

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Nowadays, smart home technology is still in continuous development; more and more enterprises and organizations began to enter this industry. However, the security problems and the unknown of emerging technologies make that most people are still in the wait-and-see stage for smart home systems. Under the background that many enterprises have different opinions on the security of smart home systems, this study is committed to forming a set of general evaluation standard index system. The main research work of this paper: the influencing factors of smart home system security are analyzed; according to the characteristics of smart home system equipment, the system security is divided into four aspects: control system, communication technology, intelligent products and cloud services; based on the current national standards, combined with the safety standards of various organizations, safety indicators are selected for each aspect. Finally, the established smart home system security evaluation index system enables users to have a set of relatively general evaluation methods among many different standards to compare and consider the current smart home system with various brands. It is helpful for users to try or further understand the smart home industry to promote the development and progress of the smart home industry.

Keywords: Smart Home, Security Evaluation, Indicator System

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### Image Enhancement Implementation and Analysis Using MATLAB

Dr.K.Nagaiah<sup>1</sup>, Dr.Ashwala Mohan<sup>2</sup>, Gaurav Guru<sup>3</sup>

Image enhancement is both an art and a science, playing a pivotal role in enhancing the quality of highresolution images like those captured by digital cameras. Its primary goal is to unveil hidden details within an image and augment the contrast in images with low contrast. This method offers a plethora of options for elevating the visual appeal of images, making it an indispensable tool in numerous applications that face challenges such as noise reduction, degradation, and blurring. In this paper, We implemented frequency domain low pass filters like ideal low pass filter, Butterworth low pass filter and Gaussian low pass filters using MATLAB. The Butterworth low pass filter given better results than other two.

Keywords: MSE; PSNR; Image Enhancement; Frequency Domain; Low Pass Filters; Image Processing:

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#### Smart Blind Stick Using APR Module

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The development of technology requires the innovation of a device that can be used to help the blind as a road guide. This device is kind of the white cane to help blind people to scan their surroundings for obstacles or orientation marks. This device is equipped with an ultrasonic sensor, a water sensor, and a pulse heart sensor that will be mounted on a white cane to determine changes in the environments. Ultrasonic sensors are used to detect obstacles in front of it by utilizing ultrasonic wave reflection, water detection sensors to find out if there is a puddle or flooded ahead, and pulse heart sensors to monitor the condition of the user. It works, If there are obstacles and inundation conditions then the use of electronic modules such as the MP3 module is a component that plays an important role for the user, the use of the MP3 module is used to provide direction with sound output, while the GPS module to provide location information from the user.

Keywords- Smart Stick, Ultrasonic Sensor, Arduino, Controller, Proteus

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#### **Online Yoga Trainer Using Mediapi Algorithm**

#### Dr.R.Yadagiri Rao<sup>1</sup>, Dr.D.Lakshmaiah<sup>2</sup>, Y.Raju<sup>3</sup>, K.Rakesh<sup>4</sup>, J.Likhitha<sup>5</sup>, K.Jaya Krishna<sup>6</sup>, Kandula Rakesh<sup>7</sup>

Human pose estimation is a deep-rooted problem in computer vision that has exposed many challenges in the past. Analyzing human activities is beneficial in many fields like video- surveillance, biometrics, assisted living, at-home health monitoring etc. With our fast-paced lives these days, people usually prefer exercising at home but feel the need of an instructor to evaluate their exercise form. As these resources are not always available, human pose recognition can be used to build a self-instruction exercise system that allows people to learn and practice exercises correctly by themselves. This project lays the foundation for building such a system by discussing various machine learning and deep learning approaches to accurately classify voga poses on prerecorded videos and also in real-time. The project also discusses various pose estimation and keypoint detection methods in detail and explains different deep learning models used for pose classification.

Keywords: Human posture recognition, Mediapipe, pose detection and pose correction, real-time, Yoga

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