International Conference on

Science, Technology, Engineering and Mathematics

ICSTEM-22

Virtual Conference

28th May, 2022

Rudra Bhanu Satpathy

Chief Executive Officer

Institute For Engineering Research and Publication.

On behalf of *Institute For Engineering Research and Publications (IFERP)* and in association with *Jansons Institute of Technology, Coimbatore, India*. I am delighted to welcome all the delegates and participants around the globe to *Jansons Institute of Technology, Coimbatore, India* for the *"International Conference on Science, Technology, Engineering and Mathematics - (ICSTEM -22)"* Which will take place from *28th May 2022*

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

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

Sincerely,

Rudra Bhanu Satpathy

Preface

The *International Conference on Science, Technology, Engineering and Mathematics (ICSTEM-22)* is being organized by *Crown University Intl Chartered* in Association with *IFERP-Institute for Engineering Research and Publications* on the 28th May, 2022.

The *"International Conference on Science, Technology, Engineering and Mathematics"* was a notable event which brings Academia, Researchers, Engineers, Industry experts and Students together.

The purpose of this conference is to discuss applications and development in area of **"Science, Technology, Engineering and Mathematics"** which were given International values by *Institute for Engineering Research and Publication (IFERP).*

The International Conference attracted over 300 submissions. Through rigorous peer reviews 126 high quality papers were recommended by the Committee. The Conference aptly focuses on the tools and techniques for the developments on current technology.

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

ICSTEM-22

Rtn.MPHF.Shri. T.S.Natarajan

CHAIRMAN

Jansons Institute of Technology, Coimbatore

The function of education is to teach one to think intensively and to think critically. Intelligence plus character - that is the goal of true education."

- Martin Luther King, Jr

Mere transferring of information is not what is expected from an educational institution. Every student comes with myriad qualities and infinite potential. To channel those strengths into positive avenues is what is expected from educators. Along with this, there is the uniquely invisible trait present in students – this astounding attribute called Character. It is the bounden duty of places of learning to provide enough challenges so that the character of students is finely landscaped, in addition to delivering the required knowledge characteristics that make up an engineering graduate. This is the Holistic Learning envisaged at JIT.

Shri. T.N.Kalaimani

VICE-CHAIRMAN, Jansons Institute of Technology, Coimbatore

"Develop a passion for learning. If you do, you will never cease to grow."

- Anthony J. D'Angelo

When we love what we do, we seem to lose track of the passage of time. Such must be the aim of the teaching and student community. Let not subtle distractions keep one from moving full-throttle towards one's goal – in this case, pursuing an engineering degree that is to your liking. Give it your complete attention, and be willing to spend your time and energy on this pursuit. If you passionately go after your goal, learning will be a joyous and fulfilling experience here.

Shri. T.N.Thirukumar

VICE-CHAIRMAN

Jansons Institute of Technology, Coimbatore

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ICSTEM -2022

International Conference on Science, Technology, Engineering and Mathematics

Virtual Conference, 28th May, 2022

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ABSTRACTS

ICSTEM -2022

Fake News Detection

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Abstract:

In our modern era where the internet is ubiquitous, everyone relies on various online resources for news. Along with the increase in the use of social media platforms like Facebook, Twitter, etc. news spread rapidly among millions of users within a very short span of time. The spread of fake news has far-reaching consequences like the creation of biased opinions to swaying election outcomes for the benefit of certain candidates. Moreover, spammers use appealing news headlines to generate revenue using advertisements via click-baits. In this paper, we aim to perform binary classification of various news articles available online with the help of concepts pertaining to Artificial Intelligence, Natural Language Processing and Machine Learning. We aim to provide the user with the ability to classify the news as fake or real and also check the authenticity of the website publishing the news. The advent of the World Wide Web and the rapid adoption of social media platforms (such as Facebook and Twitter) paved the way for information dissemination that has never been witnessed in the human history before. With the current usage of social media platforms, consumers are creating and sharing more information than ever before, some of which are misleading with no relevance to reality. Automated classification of a text article as misinformation or disinformation is a challenging task. Even an expert in a particular domain has to explore multiple aspects before giving a verdict on the truthfulness of an article. In this work, we propose to use machine learning ensemble approach for automated classification of news articles. Our study explores different textual properties that can be used to distinguish fake contents from real. By using those properties, we train a combination of different machine learning algorithms using various ensemble methods and evaluate their performance on 4 real world datasets.

Experimental evaluation confirms the superior performance of our proposed ensemble learner approach in comparison to individual learners.

Keywords:

Fake News, social media.

Detection of Objects with the Haar Cascade Machine Learning Algorithm

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Abstract:
Real-time vision computing is becoming increasingly feasible. Many utility and game apps have been ported to mobile devices thanks to advancements in hardware. This study demonstrates a high-level implementation of live object recognition using Open CV object classifiers, an issue that could be solved with more extensive training. The ability to recognize objects is an important aspect of computer science. Object detection is infiltrating more and more areas of the information society, providing a helping hand wherever it is needed. A Haar-cascade classifier will be used in this research to address one of these possibilities. Typically, the image is processed at a lower level to improve image quality, such as removing noise. The image is then further processed, such as detecting patterns. By dragging a window over the image, the system recognizes things in question. Each stage of the classifier assigns a positive or negative label to the precise region described by the window's current location. Positive signifies that the given object was found in the image, while negative suggests that it was not found.The major emphasis will be on a case study of a vehicle detection and counting system and the possibilities it will afford in a semi-enclosed region - both statistical and non-statistical elements. The system's purpose is to make our daily lives easier and more enjoyable.

Comparative Analysis of CNN and RNN-LSTM for Music Genre Classification using MFCC

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Abstract:
This paper inspects the application of Convolutional Neural Network (CNN) and Recurrent Neural Network – Long Short-Term Memory (RNN-LSTM) deep learning techniques in the music genre classification and compare these two models and identify which neural network more accurately classify the input audios into correct music genre class. We have used GTZAN dataset which contains 10 different conventional genres of music and each genre have its respective features which can be used as input data to our models to train and then predict. Our dataset contains audio files which can't understandable to machine, therefore, we have converted the audio files which is in .wav format into feature vectors using Mel-Frequency Cepstral Coefficients (MFCC), each feature vector which were obtained contains 13 coefficients and each one of the coefficients represent features of sound, so, with the help of these sound features, both our neural network algorithms visualize and processed the audios and able to make predictions on those pre-processed data. We were used CNN and RNN-LSTM techniques because, both of these techniques can visualize images and processed sounds respectively and as our features vectors were also in the form of images, so, use of CNN and RNN-LSTM proves to be good for our study regarding music classification problem. The evaluation of accuracy score on test data as well as on validation set for CNN and LSTM are emphasized, since it is very important for any model to precisely predict the desired outcome on unseen data, that's why, the accuracy score on test data is the most accurate measure for evaluating any model. The accuracy score of CNN (on test data is ~ 74%) which is higher than RNN-LSTM (67.40%), but our RNNLSTM also performed well on these datasets compared to previous implemented LSTM models which had accuracy score in the range from 50% to 60%.

Keywords:
Music, CNN, RNN-LSTM, MFCC, neural networks, genre, Convolutional Neural Network, Recurrent Neural Network – Long- Short Term Memory, Cell, Memory

Combinational Features with Centrality Measurements on GCN+LR classification of Adversarial Attacks in Homogenous Graphs

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Abstract:

In the present emergence of artificial intelligence, deep learning is at the core of the process. For applications ranging from self-driving vehicles to surveillance and security, computer vision has emerged as the workhorse in the area of artificial intelligence. While deep neural networks have demonstrated phenomenal success (often exceeding the capabilities of humans) in solving complex problems, recent studies have revealed that they are vulnerable to adversarial attacks in the form of subtle perturbations to inputs that cause a model to predict incorrect outputs, according to the researchers. Such disturbances are typically too subtle to be seen in photographs, but they fully trick the deep learning models, which are trained to detect them. Adversarial assaults are a severe danger to the success of deep learning in practice, and should be taken seriously. This fact has lately resulted in a significant increase in the amount of money being donated in this manner. The primary goal of this work is to improvise a design feature of attack and its defence mechanism with centralities on each neighbours and its performance measure. The overall reduction of accuracy for the before attack and after attack with a marginal error of 5% percent is observed for each type of the Neighbours set with matrix size or even list of elements repeatedly.

Utilization of stabilized pond ash as an effective landfill barrier

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Abstract:

Pond Ash after adequate stabilization can be used as a barrier liner material for waste containment landfill liners. Liners can be constructed from stabilized Pond Ash if properly stabilized and compacted to meet the actual requirement of landfill liner having permeability 10-7 cm/sec or less. In this study Pond ash is stabilized by using lime and gypsum with the expectation that the mentioned admixtures would enhance the engineering properties of Pond ash and make it suitable to be utilized as a construction material in landfill bottom liner. Lime contents of 10% and 14% are used along with 0.5% and 1% gypsum to stabilize pond ash. After curing the samples S1,S2,S3,S4.S5,S6 and S7 at room temperature of around 30°C for 7,30,60,90 and 180 days, the samples were tested for unconfined compressive tests as well as permeability tests. Unconfined compressive strength (UCS) of stabilized pond ash increased considerably after 180 days of curing time and value of 4.9MPa and 5.4MPa were achieved with 10% and 14% lime respectively. The UCS value of same sample and curing period further increased to 6.2MPa and 6.9MPa due to the binding effect of 1% gypsum in the mix. Good correlations have been achieved from UCS and permeability test results.It is being observed from the correlation that for both 10 and 14% lime contents, the permeability decreased exponentially with curing period with very high coefficients of correlation, such as 0.97 and 0.94, respectively. Trend of increase of strength and decrease in permeability continued after addition of gypsum and increased curing time indicating the stabilised matrix to be a sustainable landfill liner material.

Keywords:

Hydraulic conductivity; Unconfined Compressive strength; Pond ash; Lime; Gypsum

Deep Learning-Based Gender Estimation from Face Images Using PCA and LBP

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Abstract:

We propose the IMDB-WIKI database, the biggest public set of data of face photographs with gender and age labels, and present a deep learning approach for age estimate from face images without the usage of facial landmarks. While genuine age calculation research has been going on for years, the study on perceived age prediction, or the gender as seen by others with a facial photograph, is a newer endeavor. For photo categorization, all objectives are addressed utilizing Principal Component Analysis (PCA) and Local Binary Pattern (LBP) employing DenseNet121 architecture convolution neural network (CNNs) pre-trained on ImageNet. A deep classification with softmax rational expectation refinement is used to simulate the age estimation problem. Our solution relies on deep learning models from big data, facial expression alignment, and predicted value formulas for age regression. We compare our methods to industry standards and generate cutting-edge results for both actual and apparent age estimations.

Keywords:

PCA, LBP, Deep learning, Gender image classification, DenseNet121, Factor Analysis.

Manufacturing of Brick by Waste Plastic

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Abstract:
Nowadays due to development and urbanization, plastic becomes a part of our daily life. The only flaw is, it is non-biodegradable and it takes around thousands of years to breakdown or to decompose a bit. This paper elaborates the work done by the author to use plastic as a construction material to replace the clay brick as well as to find a way to effectively utilize the waste plastic. Plastic waste has recyclable characteristics that may be used to recycle it and create a new product that has lesser environmental effect. One way to recycle plastic trash is to make plastic bricks by combining plastics with sand at a particular temperature and using them to replace regular clay bricks. We have used six types of plastics to make plastic brick and performed various tests on these plastic bricks like scratch test, water absorption test, soundness test, efflorescence test, etc. The result is that these plastic bricks are light weighted which absorbs very less amount of water or near to minimal water absorption which enhances its property and the strength is also much better than clay bricks, nearly double of a clay brick. These plastic bricks can hold two times the weight of concrete of same size if compressed thoroughly.

Handwritten Text Recognition using CRNN and CTC Loss

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Abstract:

The project main purpose is to convert the handwritten text image into digital text. We have used deep learning models to analyze the image and extract relevant features from it and used the IAM dataset to train our model. Our analysis shows that the model is able to recognize the handwritten text and can predict the text.

Keywords:

Handwritten Text Recognition (HTR), Convolutional Neural Network (CNN), Recurrent Neural Network (RNN), Connectionist Temporal Classification (CTC)
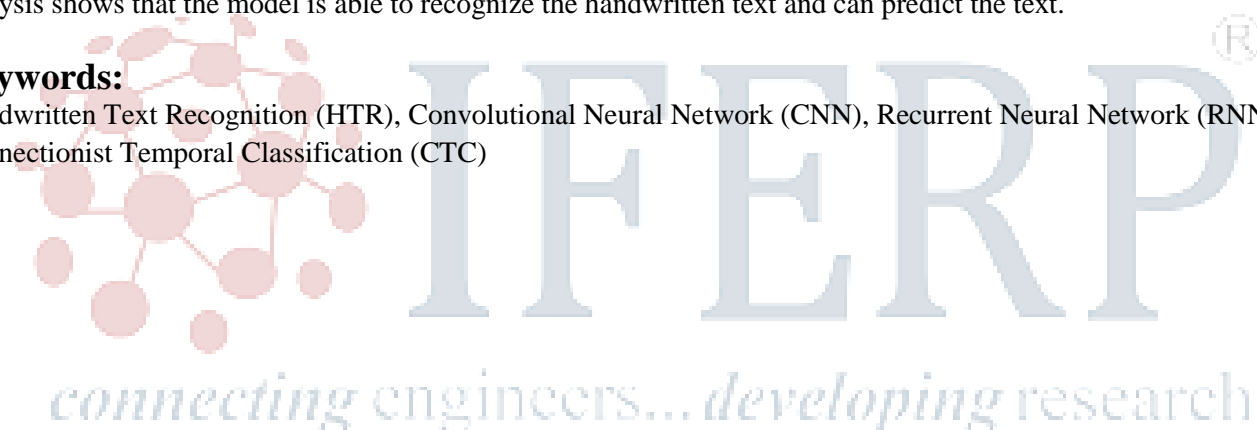
Image Analysis for Malaria Parasite or Uninfected Detection Using Ensemble Techniques

Mamidi Naga Venkat Sri Karthik
Yaswanth Kumar Bethu
Redroutu Venkata Dinesh
Paruchuri Sai Siva Pavan

Abstract:

This study main purpose is to identify malaria parasite in blood smear images.We have used deep learning models such as EfficientnetB0 with Snapshot ensemble techniques to analyze the image and extract relevant features from them.We have National Institute Of Health dataset to train the model.Our analysis has achieved an accuracy of 97.36% in detecting malaria parasite in blood smear images and has make less false predictions.

Keywords:

Parasite , NonParasite , EfficientnetBo , Snapshot ,Cosine Annealing , Average

Evaluating the Efficiency of Activated Carbons from Organic Solid Waste for the Removal of Textile Dye Employing Artificial Neural Network Modeling

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Abstract:

The present work focuses on preparation of activated carbons from organic solid waste and to employ them for the removal of a textile dye. Organic wastes were selected and segregated into two categories such as putrescible vegetable waste (PVW) and other solid organic wastes (SOW). They are converted to activated carbons by treatment with phosphoric acid. Activated carbons were characterized and they had a surface area of about 603.7m2/g for PVW and 227.2 m2/g for SOW with porous and amorphous structure was selected for the study. They were utilized for the removal of the basic dye methyl violet (MV). For both the carbons with MV, Langmuir isotherm fitted well and followed Pseudo second order kinetics. Spontaneity and endothermic nature of the reaction was proved by Van't Hoff plot. Studies reveal that PVW is more efficient than SOW. Artificial neural network (ANN) modeling predicted the mean square error values as 1.15×10^{-5} and 1.19×10^{-4} for PVW and SOW respectively. The study revealed that the basic dye can be easily and efficiently removed by PVW prepared from putrescible organic waste.

Keywords:

Putrescible organic waste, Solid organic waste, Freundlich, Langmuir, ANN modeling

Knee Osteoarthritis Indicators Estimation and Progression Analysis

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Honnarathi S

Abstract:

A machine-learning-based KOA progression prediction model is developed using the data from the National Institute of Health Osteoarthritis Biomarkers Consortium. Researchers seek to study the contributions of each local and systemic risk factor in multi-etiology of knee osteoarthritis (KOA) to disease start and deterioration using a novel mix of machine learning methodologies. The individuals are classified into either KOA onset or deterioration study groups based on the Kellgren-Lawrence (KL) grade for plain radiographs at baseline. Changes in joint space width (JSW) and WOMAC pain score are used to determine disease progression. The anthropological details, history of the knee injury and surgery, metabolic syndrome, and living habits were used in a multi-layer perceptron (MLP) to predict disease progression in each study group, in addition to radiographic and clinical data. Using the DeepLIFT gradient, the relative contributions of each risk factor were weighted. Furthermore, statistical interactions between risk factors were evaluated. In terms of predicting KOA onset and deterioration, our model had AUCs of 0.843 (95 percent CI 0.824, 0.862) and 0.765 (95 percent CI 0.756, 0.774), respectively. With the exception of medial joint space narrowing, history of injury has the greatest DeepLIFT gradient for KOA onset prediction; however, diabetes and the habit of smoking had the second and third highest gradients, respectively, for KOA deterioration estimation, surpassing the influence of the injury. For the beginning and deterioration of KOA, we built a machine learning approach that successfully dissects the risk factors' contributions and mutual interactions.

Keywords:

efficiency, simulation, vector of means, variance-covariance matrix

Smart Sustainable Agriculture Solution Using Iot and Ai towards Effective Cultivation

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Abstract:
Traditional agriculture is transforming into smart agriculture due to the prominence of the Internet of Things (IOT). Low-cost and low-power are the key factors to make any IOT network useful and acceptable to the farmers. We have proposed a low-power, low-cost IOT network for smart agriculture. For monitoring the soil moisture content, we have used an in-house developed sensor. In the proposed network, the IITH mote is used as a sink and sensor node which provides low-power communication. We have evaluated our network with state-of-the-art networks, proposed for agriculture monitoring. Power and cost are the two metrics used for evaluation of these networks. Results show that the proposed network consumes less power and has on average 83% prolonged lifetime at a lower cost compared to previously proposed network in the agriculture field.

Smart Solar Energy Management System Based on Weather Data Using IoT

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Abstract:
Solar power plants need to be monitored for optimum power output. This helps retrieve efficient power output from power plants while monitoring for faulty solar panels, connections, and dust accumulated on panels lowering output and other such issues affecting solar performance. So here we propose an automated IoT based solar power monitoring system that allows for automated solar power monitoring from anywhere over the internet. We use arduino based system to monitor a 10Watt solar panel parameters. Our system constantly monitors the solar panel and transmits the power output to IoT system over the internet. Here we use IoT Gecko to transmit solar power parameters over the internet to IoT Gecko server. It now displays these parameters to the user using an effective GUI and also alerts user when the output falls below specific limits. This makes remotely monitoring of solar plants very easy and ensure best power output.

IoT Based Manhole Detection and Monitoring System

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Abstract:

A good drainage management is a symbol of good city. Now-a-days man-holes are the main problem in the cities. All the man-holes are not in secure position. Most of the drainage are in damaged condition. Because of the damaged drainage, there are chances of occurrence of accidents in the road. These damaged man-holes will be a threat to personal safety. Our project work is to design an effective accident avoid system by preventing open drainage in major cities. The sensors like tilt sensor and weight sensor used to detect the crack and the damage in the drainage cover and then the information will be sent to the authority of the corporation department and the councillor of the area where the drainage is present. The control and the maintenance are made through Internet of Things. The implementation of this project will be very useful to the society.

Early Predictor of Retinal Diseases by Image Processing

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Abstract:

"CLEAR VISION GIVES YOU A CLEAR LIFE", this wording means a lot. Each and every person wish to have a good vision to survive, enjoy and for committing a peaceful life and most of the people do get the same. A promising good vision is presented by a good retina and its retinal health. As a coin have two sides there is also some diseases which affect the retinal layer in our eyes. A healthy retina is essential for clear vision. Retinal diseases are common as they can affect any part of the eye. As retinal diseases affect the vital eye tissue, it causes serious problems, affects vision, some even leading to blindness. Ones if people affect with the retinal disease they come to know after a severe affect in vision. The sad part is that we don't even get any pain or wound when we get retinal disease, we can't predict the symptoms easily. After getting the decrease in vision rate common people will approach the eye hospitals and consult an ophthalmologist. They usually went through a screening test handling with CAD machines, which means Computer Aided Diagnosis technique connected with the computer and to the internet connection. which is a complete Artificial Intelligent machine. which will be costlier and common people don't get a better guideline to approach at the beginning stage. To overcome this issue, we have planned to develop an early predictor of pre-clinical signs of retinal disease symptoms by involving IMAGE PROCESSING technique. Now we are planning to create a prototype of an "Early predictor of retinal diseases by image processing" and to implement it as working model of vending concept and to keep in public places and allow common people to utilise it with less cost and with minimum handling. We have analysed so many algorithms to implement our idea, finally we are satisfied with HAAR CASCADE ALGORITMH which is a MACHINE LEARNING TECHNIQUE, because One of the primary benefits of Haar cascades is that they are just so fast — it's hard to beat their speed. Haar algorithm does not undergone dual segmentation process for further classification where as other image processing algorithm will lies under with segmentation and without segmentation processing and it will consume more time. Some other ML algorithms will demand fundus image for image processing later in it will convert the colour image to grayscale image using scanner, but HAAR Algorithm does not demand it for all this reasons we have chosen HAAR ALGORITHM and it is also satisfying our needs to the extend. We are using OPENCV which is open-source computer vision for implementing the programming which will be developed in python language. We have chosen OPENCV it is platform independent and it already have predefined library files for image processing which will reduce our working space. We are using RASPBERRY PI as a SOC, it will swap the work of a main frame computer because it is low cost, huge processing power in a compact board and have many interfaces. We are using PI CAMERA for image capture resolution with 1080p at 30 frames. PI CAMERA has a better graphic processing capability than others.

IoT Application on Secure Smart Shopping System

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Abstract:

The IoT based smart trolley is designed using Arduino . The system eliminates the unnecessary time at a queue.In shopping mall shopping is a daily activity in metro cities. User will have to various products and keep them into the trolley &will have to go to the counter for bill payment of all the products. By using barcode reader the cashier will make the bill at the billing counter. To make a system that can be used to solve the difficulties of costmomer and save the valuable time of users is the main aim of this project. In the shopping mall all the goods will have beset with RFID tags. When a user will keep the products in the trolley, the code and the weight & the name of product will be detected and the total amount of those products will be saved in system memory, the name of product and total amount is shown on server and it will be sent to cashier counter by wirelesses ESP modules. It would reduce the rush at shopping mall & save the unnecessary time at billing counter. Automatic billing is done through the RFID tag.

Smart Meter and Automatic Electricity Monitoring System

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Abstract:

The Internet of Things (IoT) has generated excitement for a few years now, with start-ups and established businesses placing bets on the industry's growth. Along with the business solutions, IoT has been very vital in connecting things to the internet, there by achieving a communication among the connected devices. The Internet of things (IoT) is getting more attraction in recent years. One of the usage scenarios of IoT is Smart Energy Meter. This study has specifically focused to develop an IOT Based Prepaid Smart Metering System which would be able to address some of the challenges currently available in the regular digital automated metering system in Eurasia. Smart Metering with its unique performance with the Internet of Things (IoT) tend to be an efficient system for electricity management, secure against the intervention by third parties, and reliable for tracking and real-time remote monitoring. In the currently working system, electricity meter reading for electricity usage and billing is done by human workers from home to home and building to buildings. The main aim of the project is to make a system which will help in reducing the usage of electricity and which helps in bringing transparency between the Electricity Board and the customers. This meter needs to be recharged similar to a mobile phone, payment for recharge can be done via online and can monitor the amount deduction and energy consumption. The energy measurement and billing system is automated.

Overview of Bakelite and Ceramic Waste Powder as a Partial Replacement of Fine Aggregate in Concrete

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Abstract:
Waste and find the solution of resulting it the most serious problem of the world today. Waste utilization has become an attractive alternative to disposal now days. Recycling of waste items to produce construction material like concrete appears as one of the best solutions for the disposal of waste materials. Concrete is the most widely used construction material all over the globe next to water. The present challenge for civil engineers is to produce large volume, good performance, durable and sustainable concrete at lowest possible cost. This paper involves a partial replacement of Bakelite and ceramic waste powder as a fine aggregate in concrete. The main objective of this study is to reduce the wastage of ceramic material and to improve the eco-friendly environment. The investigation was done and the mechanical properties of concrete were discussed in the present study. The experiment was done with M25 grade concrete for a curing of 7 days, 14 days and 28 days from which its compressive strength, split tensile strength were taken and compared with the conventional concrete.

An Approach for Identifying Grape Leaf Disease and Detection of Black Rot Disease in Grape Plants

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Abstract:
The objective of the paper is to ensure high quality and productivity, grape is widely grown crop in India. Leaf diseases, which are the early symptoms, are caused by fungi, bacteria, and viruses. Black Rot is a fungus that affects both wine quality and productivity. Brown colored circular spots can be seen on plant's leaf, which are spread widely. A proper diagnosis of the disease is necessary, for active treatments such fungicide spraying and trimming. The Plant Village Dataset is used, the HSV and Lab color models are used for segmentation. The healthy and diseased parts of the leaves are separated using color-based approaches, and the features of each leaf are stored. The color of the diseased part of the leaf differs from that of the healthy part. Two different methods: global thresholding and semi-supervised approach is used, the diseased region is further segmented from the segmented leaf part. The features extracted from the segmented diseased part are classified as healthy, rot, esca, and leaf blight using techniques such as Support Vector Machine (SVM), adaboost, and Random Forest tree. We were able to achieve a 93 % testing accuracy for grape disease identification. Using the SVM Classifier an accuracy of 94.1% for black rot disease is achieved.

Keywords:
Disease Detection, Pattern Recognition, SVM, HSV, Color Based Detection, Grape Plant, Image Processing, Plant Village Dataset, Supervised Learning, Machine Learning

Health Monitoring System

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Abstract:
In this research paper, patient health is monitored using IoT is being discussed, which will help us for temperature check, humidity and pulse rate from patient's body and if any risk the alert is send through a mobile phone. Such a system has been proposed to its importance in performing a regular check on the patient's health in the situation of casualties, which are very prevalent in this pandemic situation of COVID. When the patient cannot be monitored closely, then the proposed system helps in the monitoring of health parameters. Here, a fingertip heartbeat sensor to calculate the pulse rate along with DS18b20 sensor to calculate the temperature and humidity of the patient's body is used. We are also using ECG sensor with some modification. Also, ESP 32 microcontroller is employed, a Wi-Fi module is already in it and an I2C module is used to convert serial data to parallel data for LCD screen. We are using buzzer for sound alert and giving email alert also. And the every data is saved on the cloud for the future uses.

Image Encryption using Combined Chaos and Memory Cellular Automata

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Abstract:

This research paper shows a fast and efficient cryptosystem for enciphering digital images. It works on dynamical systems-chaotic maps and cellular automata. The key streams are derived from SHA-256 hash function in the proposed encryption scheme. The plain text input is produced as the message digest using hash value in hash functions which can be considered as a unique signature of the input. The keys generated are plain text dependent. The generated key streams are used as the secret keys of an improved one dimensional (1D) chaotic map, i.e., the Logistic-Sine map. The well-known diffusion-confusion architecture and the fourth order 1D memory cellular automata (MCA) for image encryption is combined in the work. Firstly, a pixelwise XOR operation is applied to the original image, followed by a pixel-wise random permutation. The resulting image is decomposed into 4 blocks and by applying fourth orders reversible MCA, it is configured as the initial MCA and the transition rules are determined using the chaotic map. Performance analyses show that the proposed encryption scheme presents a high immunity against all kind of attacks while maintaining a low complexity, which outcome a notably better performance/complexity tradeoff compared to some recently proposed image schemes.

IoT Based Health Monitoring System Using Node MCU

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Abstract:
During the ongoing disease pandemic, Internet of Things (IoT) based health monitoring systems are immensely beneficial for patients with various disease. This project presents an IoT based real-time health monitoring system using the measured values of body temperature, pulse rate and oxygen saturation of the Patients required for critical care. The measured temperature, pulse rate and oxygen saturation level can be easily synchronized with mobile application for instant access. The proposed loT based method uses an Arduino Uno based system and it was tested and Verified for five human test subjects. The results obtained from the system were promising and 80% accurate when compared to other commercially available devices. The data acquired from the system are stored very lot based tools may potentially be valuable during the pandemic for saving people's lives

Smart Nutri-Assistant Using Machine Learning Techniques

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Abstract:

Now a days voice-controlled systems have recently gained popularity with the release of commercial products, including Amazon Alexa and Google Assistant. Voice-controlled system have many potential use cases in healthcare including education, health tracking and monitoring, and assistance with locating health providers. But there is a need for conversational AI that can predict the user's need and guide them. Here we propose a system that works on voice controlled user interface powered by artificial intelligence. Thus, this work aims to develop an application on mobile devices that is able to allow users to get instant guidance on their health issues through an intelligent health care system. This system also integrated with machine learning models to recommend the perfect exercise plan and also has food classification model to recommend what to eat for which body type and also recommend recipes. The system also has e-health care facilities where the user will get cure and get health specialist advise on real-time.

An Intelligent Graphic Eye with Text-To-Speech Converter for Blind People

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Abstract:

In the motive of supporting the visually impaired people, a method is proposed to develop a self-assisted text to speech module in order to make them read and understand the text in an easier way. It is not only applicable for the visually impaired but also to any normal human beings who are willing to read the text as a speech as quickly as possible. It is a specially designed graph to break the limitations of blind people who cannot read or write a text. It is a helpful tool for them to understand things easily. The text size is an important factor whose dimension should be properly elected to make the method more general and insensitive to various font shapes and sizes. The proposed method involves four steps detection of an object, localization of the text, extraction of the text and text to speech conversion. It helps to read the screen and display the app which the user wants to find. The Text-to-Speech conversion is a method that scans and reads english alphabets , numbers that are in the image using OCR technique and changing it to voices. This paper describes the design, implementation and experimental results of the device. It works more efficiently with Optical Character Recognition. Convolutional recurrent neural network is proposed for training the words separately. The experiment and training are performed on Synth 90k word dataset. Finally using OCR, a proposed model has been developed with the support of Braille keyboard.

Automatic and Hygiene Sanitation in Public Settings for Physically Disabled Persons

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Abstract:
In today's world, with the ever-increasing growth in the population of India, the hygiene of our country is endangered. Our Prime Minister Sir Narendra Modi has introduced "Swachh Bharat Abhiyan" Scheme to improve cleanliness in the country. Our project will be a help to improve hygiene condition in India. It will create awareness among people in terms of "Toilet Management". The objective of this project is to introduce a "Clean and hygienic toilets in Public especially for Physically Challenged".The proposed system "Smart Toilet" is based on IoT, smell sensor, IR sensor, RFID sensor, Vibration sensor. The smart toilet will take care of opening and closing of the toilet seat, the IR sensor tracks the dirt present on the toilet seat and flushes automatically. Vibration Sensor can be attached to the floor, raise an alarm to the sweepers nearby, who can help the people slipped accidently inside the toilet. The cleanliness of the toilet will be improved by monitoring the sweeper's activity to maintain the hygiene of the toilet, it also will deal with water conservation. People who use toilets in public will face lots of health related and detrimental issues due to the unhygienic and insanitary toilets. Due to this, even a healthy people may have a lot of chances that easily affect by the diseases because of the improper maintenance of the public toilets. To avoid these kinds of problem and to enhance better hygiene, we should introduce modern and automation public toilets. This will reduce the wastage of water and improve the sanitation of the toilets. To maintain a automatic clean and hygienic public toilets by using Internet of Things.Keeping the toilets uncontaminated–physically disabled persons will face lot of issues. Focused on identifying and cleaning the dirt in the toilets using our project, we can make physically challenged persons more comfortable while using public toilets, which will change people perception towards public toilets and will improve the sanitation of the toilets.

Precision Agriculture Using Hanging Robot

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Abstract:
The precision agriculture monitoring system is an emerging concept, because sensors are capable of providing information about agricultural fields and then Artificial Intelligence take decision automatically based on the sensor values. Monitoring environmental conditions is the major factor to improve yield of the efficient crops.In this project, a new approach is presented by using hanging robot with virtual assistance in the agriculture field by monitoring moisture, temperature etc. If any disease detected then this system will automatically sprays the fertilizer and pesticides on the plant for improving the growth of the crops.
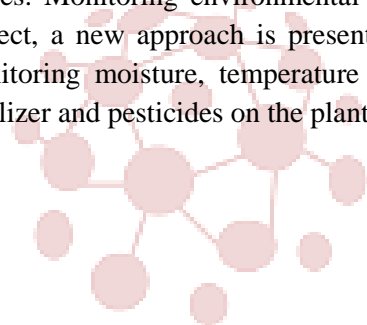
A Smart Alert System for Maintaining Social Distance for the Disabled with Health Monitoring

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Abstract:
In the current scenario, there is need of a Personal guide for blind people. This project presents smart electronic aid for blind people. For most of us, who are normal and healthy can reach the destination easily but for some unfortunates like the blind people, finding location becomes an extremely tedious process. They will be in need of continuous help and companionship till they reach their desired destination. This system is intended to provide object detection and real-time assistance for blind people via GPS, Ultrasonic sensor and GSM. Whenever an obstacle is found in the path of blind person, it alerts him through a buzzer and in case of an emergency the exact location of person   is tracked by GPS and sent to caretaker through GSM module. There is a continuous on-going interaction between the microcontroller and these modules. So when the switch is pressed, the GPS module tracks the latitude and longitude of the location where the blind person is standing and sends it to the microcontroller which converts it to a form of Google map link and sends it to the predefined mobile number of the caretaker with the help of the GSM module. The ultrasonic sensor continually senses the obstacles in the surrounding of the blind person. If any obstacles found, creates a buzzer sound with vibration of the blind stick so that it can alert the blind person about his surroundings. The proposed system is cost effective, fast, easy to use and an innovative affordable solution to blind people in the world.

Keywords:
Smart Sytem, Blind people

Automatic Plant Watering System

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Abstract:

In the present era, food scarcity and water scarcity occurs due to the increase in population. In daily operations related to farming or gardening watering is the most important practice and the most labour intensive task. No matter whichever weather it is, either too hot and dry or too cloudy and wet, you want to be able to control the amount of water that reaches your plants. Modern watering systems could be effectively used to water plants when they need it. But this manual process of watering requires two important aspects to be considered: when and how much to water. In order to replace manual activities and making gardener's work easier, we have create automatic plant watering system. This project deals with an automatic plant irrigation system which automatically senses the moisture content of the soil and decide whether irrigation is needed or not and how much water is needed for soil. Presently people manually start the pump to water plants or farms and also physically check the soil status. Most recently various irrigation systems are being used widely such as drip irrigation, sprinkler irrigation, etc. but these systems are needed to be started manually to supply water. Thus, even if plants or farms are watered automatically people need to monitor and manage the time for which it should work in order to avoid excess watering. This makes human to become a mandatory entity in the watering system. We hope that through this prototype we all can enjoy having plants, without being worried about absent or forgetfulness.

Keywords:

Automatic System, Irrigation

Design and Simulation of SEPIC Converter

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Abstract:

This paper presents the design, simulation and analysis of one of the least understood Switch mode power converter i.e., Single-ended primary-inductor converter (SEPIC). This dc-dc converter can be used as a buck-boost converter by varying the duty cycle of the switching element. SEPIC has distinct advantage of providing positive polarity output voltage and ripple free input and output current with less stress on components. This is in comparison to traditional buck-boost converter which has negative polarity output voltage besides having highly discontinuous currents and more stress on the components. This makes it ideal for industrial and domestic applications like smart home appliances based on PV energy. Extensive simulation has been carried out in continuous conduction mode (CCM) using SIMULINK-MATLAB under different input conditions. PI controller has been incorporated to fine-tune the response, minimize the steady state error while maintaining the constant output voltage. The hardware realization of SEPIC converter validates the simulation results.

Keywords:

Power converter, Pulse width modulation, Smart home, PI controller, CCM, SEPIC.
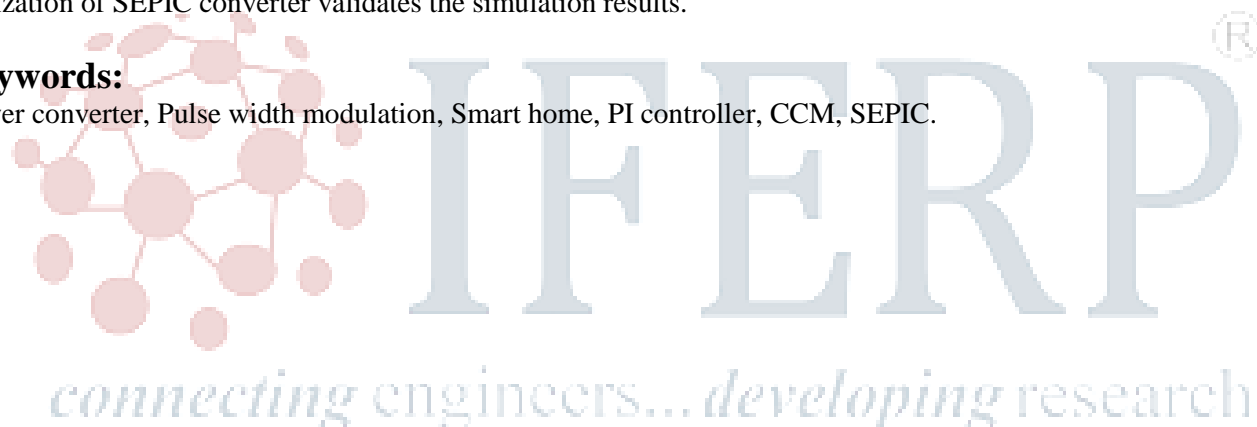
Approaches To Make Cloud Computing Green

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Abstract:
The growing use of cloud computing has resulted in higher energy usage, which has increased the environment's carbon footprint. Thousands of servers and other materials will be required when more data centers are added to the organizational domains to enable their complete operation. Green computing benefits the environment by lowering energy consumption using green strategies, resulting in lower carbon dioxide emissions as a result of fewer fossil fuels being burned in power plants and transportation. Simply put, conserving energy and natural resources saves money. Hence, energy-efficient and sustainable strategies are required to minimize the impact cloud computing has on the environment and to reduce the operational cost. In this paper, we have presented a descriptive study of green cloud computing and have explained the strategies of green cloud computing, the architecture of the green cloud, and the features that are needed to make cloud computing green.

Keywords:
Green Cloud Computing, DVFS, Data Centers, Carbon Footprint

Better Combination of Service Broker Policy and Load Balancing Algorithm for Greener Cloud Computing

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Abstract:
Green Cloud Computing has become a necessity nowadays. We all know that cloud computing has become a necessity in the lives of all of us but what we don't know is that it is affecting our environment adversely. The higher usage of cloud computing increases the demand for power consumption while increasing the production of carbon dioxide significantly. The Data Centers are the main entities required in cloud computing and the service broker policies and load balancing algorithms are necessary for their efficient working. In this paper, we will compare the two main service broker policies with respect to three different load balancing algorithms by using a simulation tool which is known as CloudAnalyst and will analyze their outputs to see which combination of service broker policy and load balancing algorithm can be used to make data centers more efficient.

Keywords:
Load Balancing, Service Broker Policy, Green Cloud Computing, PUE, Carbon Footprint, Cloud Analyst
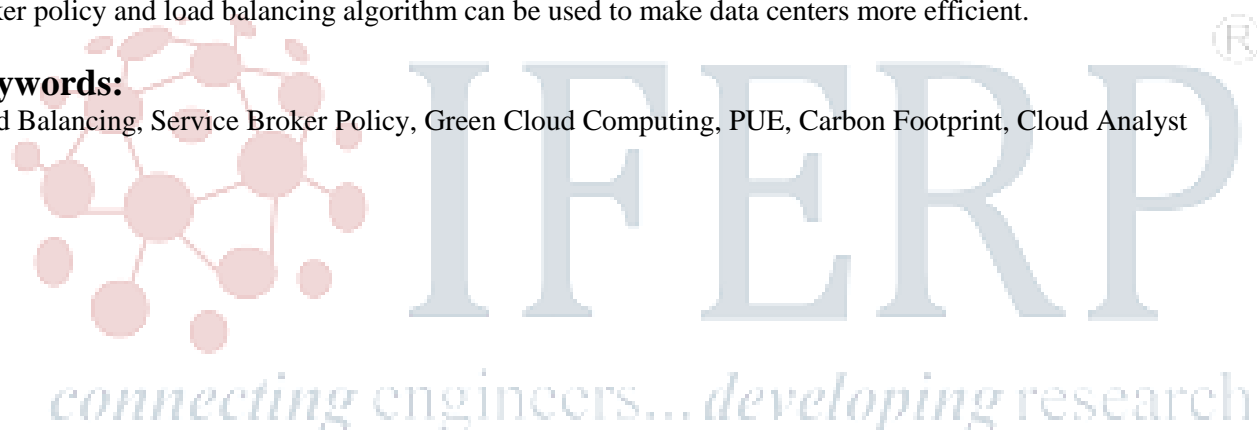
Time Series Forecasting of HIV/AIDS in the Philippines Using Deep Learning: Does COVID-19 Epidemic Matter?

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Abstract:

The Philippines is facing the fastest-growing HIV epidemic in the western Pacific, with a 676% increase in HIV incidence between 2010 and 2021. In January 2022 alone, 95,212 people are currently living with HIV, and 5,405 reported AIDS-related deaths since the emergence of the epidemic in 1984. While the full impact of COVID-19 on HIV services and progress remains to be seen, it is estimated that such interruptions could result in many more additional HIV casualties. Thus, some modeling and forecasting methods are necessary for the country to predict the spread pattern and improve the government's prevention, treatment, testing, and care program. In this study, the researcher uses Artificial Neural Network in time series forecasting using the datasets extracted from the HIV/AIDS and ART Registry of the Philippines for the period January 2020 to February 2022, when the COVID-19 pandemic takes place in the country. After training, validation, and testing of data, the study shows that the forecasted cumulative cases in the country by 2030 will reach 145,273 showing an upward linear trend, with the highest peak in March 2022 of 1,772 cases. Also, the comparison between observed and predicted values of HIV epidemics shows very close prediction, as supported by the lower values of its RMSE, MAE, and MAPE and higher coefficient of determination. Further, findings showed that as per the United Nations' SDG-3 of Project 2030, the Philippines is still far from ending the HIV epidemic due to an increase in the new infection rate in the country. Despite the detrimental effects of COVID-19 spread on HIV/AIDS efforts nationwide, the Philippine government, under its new leader, must continue to adopt the 90-90-90 United Nations targets by improving further its ART program and making all essential health services available and accessible.

Object Detection and Alert System for Complex Weather Road Environment

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Abstract:

Advanced automotive active safety systems, in general, and autonomous vehicles, in particular, rely heavily on visual data to classify and localize objects, such as pedestrians, traffic signs and lights, and nearby cars, to help the corresponding vehicles manoeuvre safely in their environments. However, several challenges exist to achieve autonomous driving in challenging scenarios such as in harsh weather. Inclement weather conditions such as rain, fog, or snow can severely hamper visibility and lead to accidents on the road. Particularly snowy road conditions are challenging due to the slippery road surfaces and hidden lane markings because of rain or snow cover. Such conditions are challenging for autonomous vehicles because of the inability to track distinct visual features in such weather conditions. Most existing image segmentation methods that perform well in clear weather conditions fail in rain or snowy environments. In this project, we propose a new deep learning method that can handle multiple bad weather degradations: rain, fog, snow and adherent raindrops using a single Faster Region Convolutional Neural Network (FRCNN) architecture. Despite being designed to handle different types of bad weather, extensive experiments demonstrate that our method performs competitively to the individual and dedicated state-of-the-art object detection methods.

Fermentative Production of β -Galactosidase Using Mutative Strains of Microorganisms

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Abstract:
β-galactosidase, commonly known as lactase, is widely used in the food industry to manufacture lactose-hydrolyzed dairy products. β-galactosidase is also used in the food industry to improve the sweetness, solubility, flavor, and digestibility of dairy products. The objective of this study was the production of the extracellular β-galactosidase from a filamentous fungus, *Aspergillus niger*. *Aspergillus niger* is extracted from the dairy waste and mutated to produce β-galactosidase. Optimization studies were performed using various parameters to improve β-galactosidase production in different fermentation conditions. β-galactosidase breaks down milk lactose into glucose and galactose. β-galactosidase is required to digest lactose in the small intestine. The deficiency of this enzyme causes lactose-intolerant. In India, 65% of people are lactose-intolerant and 70% around the world. Hence, this enzyme is beneficial for lactose-intolerant people. Furthermore, β-galactosidase is also important in the conversion of cheese whey, waste from the dairy industry into various essential products. So, the β-galactosidase has technical as well as environmental benefits that can be used for industrial applications.

Keywords:
β-galactosidase, lactose, sweetness, *Aspergillus niger*, food industry, lactase, mutation, deficiency, environment.

Antimicrobial and Antimycobacterial study of various indigenous medicinal Plants and it's Phytochemical analysis

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Abstract:

Plants have been used since decades for traditional form of medication globally from time to time. In India the prevalence of the traditional form of medicine is documented in various historical books. According to W.H.O, several reports claim that plants have the capability to produce several phytochemicals that can be used to formulate 80% of the drugs. In this study we tried to find out the potential in medicinal plants to work against different microbes and mycobacterium namely Mycobacterium Smegmatis, E. Coli, S. aerus, Pseudomonas, Entro facculis, Klebsiella Pneumonia. The extracts of various medicinal Plants were extracted using standard procedure and preserved. The antimicrobial and antimycobacterial study was done using the extracts. The extracts were finally tested for quantitative presence of various phytochemicals namely tannins, Phenolic content, Flavonoids and steroids. The study can be beneficial for formulation of new drugs in modern medicine system based on Plant metabolites that are safer and effective. It can also cut down the cost of various synthetic chemicals being used. Nature has a huge potential to treat us and the fact is we need to understand and study the potential present in the plant species.

Keywords:

Antimicrobial, Antimycobacterial, Plant Extracts, Phytochemicals, medicinal plants

Production of Bioplastic by Using Lather Industry Waste: A Review

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Abstract:
Bioplastics are the type of plastic that are derived from natural raw materials such as biomass, starch and cellulose etc. This type of plastics will degrade when exposed to environmental conditions such as moisture, naturally occurring microorganism such as bacteria, fungi and algae or in commissioned to increase awareness of the importance of bioplastic and the role they can play in generating economic growth. Bioplastics for packaging markets currently represent a less than 1% of global plastic packaging sales. However, bioplastic packaging is forecast to grow at a significantly higher rate than petroleum based polymers plastic during the five years period. Starch is a naturally occurring soluble carbohydrate that can be obtained from various raw materials such as corn, potato, cassava, rice and sweet potato. Starch is produced by plants mainly as an energy reserve.

Keywords:
Bioplastic, starch, lather industry waste, Biomass, Cellulose.

Engineering of Petha Waste (By Product) Into Laboratory Grade Nutrient Growth Media

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Abstract:

Petha's scientific name is "*Benincasa Hispida*." Agra is known around the world as the Taj Mahal city. For foodies, though, it is also the home of petha, a soft delicacy made from ash gourd or winter melon (*Benincasa hispida*). Petha is created by chopping ash gourd into little cubes and soaking it in lime. After the soaking procedure, the petha is boiled and then coated in flavored sugar syrup. This research aims to try to create a media from petha waste. As the demand for Petha increases, so too does the amount of garbage produced. Because it has become such a delicacy in "Agra," Petha waste has become a significant issue in Agra. If Petha waste shows any results, it can help reduce the pollution caused by the petha waste. As a result, petha waste is one of Agra's primary concerns, yet, if media preparation is adequate, that can use petha waste in a beneficial way for future generations.

Keywords:

Benincasa hispida, Media, Petha Waste, Food.

Computational Analysis of the Potent Granuloma forming protein in Mycobacterium abscessus (NTM) species

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Abstract:

Mycobacterium abscessus (NTM) complex (*Mycobacterium abscessus*, *Mycobacterium bolleti* & *Mycobacterium massiliense*) is the nontuberculous mycobacterium species which is ubiquitously present in nature. Their infection is associated with the traumatic skin wound & inflamed tissue (granuloma). However, despite many wet-lab studies on *Mycobacterium abscessus* infection information regarding virulence factor and the granuloma forming protein is scarred. In the present, we have used a computational approach to identify the proteins that might be potentially involved in the granuloma formation by the *Mycobacterium abscessus* complex. We have used comparative computational analysis of genomic and proteomic with wet-lab proved *Mycobacterium tuberculosis* complex (*Mycobacterium tuberculosis*, *Mycobacterium bovis* & *Mycobacterium avium paratuberculosis*) granuloma proteins. we have identified five orthologous proteins (Uniport id A0A8B3D340, A0A1N5ZUJ3, A0A1U5V2M8, A0A1N5Y8G6, and A0A0U0ZKQ1) that may play local roles in granuloma formation in *Mycobacterium abscessus* and *Mycobacterium massilense*. While *Mycobacterium bolletii* lacks the orthologous proteins and forms the micro granuloma as compared to the *Mycobacterium abscessus* and *Mycobacterium massilense*. Validation of the involvement of the five proposed proteins in the granuloma formation was done by transcriptomic data and by plotting a complex protein-protein interaction map of wet lab proved granuloma proteins of *Mycobacterium tuberculosis* complex. However additional experiment involving knocking out each of these five proteins are obligatory to conform their function. Though our study may aid as a backing stone for future studies on Mycobacterium *abscessus* granuloma proteins.

Keywords:

Proteomic, Genomic, Orthologous Proteins Comparison, and granuloma.

Fog Drive Disaster Backup as a Service for Cloud Server and Fog Computing

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Abstract:

Data storage and service delivery are mainly realized by cloud data centres deployed around the world. However, data centres are facing failure threats caused by disasters such as disk failure, threat. Fault tolerance is a major concern in clouds in order to guarantee the reliability and the availability, also the data backup and recovery is one of the most important issues in cloud computing environments, and the need of efficient techniques for the data recovery are increasing by the days. Cloud backup is becoming the preferred way for users to support disaster recovery. Thus disaster-resilient cloud data centres are expected. An emergency protection scheme integrating data backup and service migration is proposed by utilizing early warning time. This project proposes a primary and backup resource allocation model called **Fog Drive** that provides a probabilistic protection guarantee for virtual machines against multiple failures of physical machines in a cloud provider to minimize the required total capacity. When the server can't provide the data for the users, or the data has been lost because of one of the different kinds of failures the data recovery techniques used to retrieve the data from the Fog Drive. This project set up a flexible data backup operation, using **Disaster Backup Data as a Service (BDaaS) solutions**, mixing them up with Fog Drive local storage device. The results show that an optimal recovery time objective can be achieved by allowing users to retrieve backups from any platform or device with web-browsing capabilities. Also, a high level of integrity on each client can be reached, which lowers the chances of losing data or exposing financial records to an attacker.

Process Parameter Optimization for the Production of Nanobioplastic using Agricultural Waste

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Abstract:

Agricultural waste has become a major issue to be solved especially in regions where Stable burning has created drastic figures, hence it is inevitable to strategically manage these waste. Biodegradable and renewable polymers derived from the cellulosic biomass of these agricultural wastes are quite attractive to replace non-biodegradable conventional types of petrochemical plastics. These eco-friendly polymers are very much efficient in replacing the use of petrochemical based plastics that are even toxic to the environment and ecosystem, additionally playing a crucial role in reducing the straws and agricultural residues created after harvesting of cereals. In recent years researchers have been attracted towards these kind of bio fibres created from cellulosic biomass for the production of bioplastic for a wide range of packaging solutions. These economic polymers are achieved by extracting cellulose, its conversion to carboxy methyl cellulose and then mixing it with starch or cellulose for the efficient production of bioplastic. Production process and various parameters affecting the synthesis of these fibres are optimized at different levels. Addition of nanoparticles with the cellulose based biopolymer has an advantage of more durable and strong bioplastic with much better strength, wear and tear resistance. As it is well known that conventional plastics are a major threat to environment on the other hand cellulose based plastics doesn't possess that issue. Production of these kind of plastics is much cost effective and ecofriendly. Moreover, cellulosic biomass based plastics are crucial in reducing inevitable agricultural waste issue. Furthermore, the future market of bioplastics will be increase owing to its sustainability. Recent studies and researches are playing a crucial support to commercialize and demonstrate the biopolymer based plastics. But Nevertheless, these biopolymers are mixed with nanoparticles to achieve better strength and mechanical properties.

Keywords:

Biopolymer, Bioplastic, Nanobioplastic, Nanomaterials, Ecofriendly, Sustainable, Non-conventional, Degradable.

BrandChain: Product Anti-Counterfeiting System for Online and Offline Sales using Blockchain Technology

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Abstract:

Anti-counterfeit technology has attracted much attention with the development of economy, because many counterfeit products that are difficult for identification have been produced, which extremely damage the interests of consumers. The public's attitude of greedy for petty and cheap has encouraged unscrupulous manufacturers to take advantage of the opportunity to provide low-cost counterfeit products, suppress the profits of legitimate manufacturers, and also make the public lose confidence in the quality of the products. At present, the most widely used anti-counterfeiting system based on QR codes on the market. However, existing traceability systems are still mostly built in a centralized manner, and the central agency provides trust guarantees, but the public still has great doubts about the credibility of the central agency. The introduction of block chain technology can perfectly solve the lack of existing architecture and the environment. To ensure the identification and traceability of real products throughout the supply chain, this project is the first to propose a fully functional block chain system to prevent product counterfeiting. This project proposes the decentralized Block chain system with products anti-counterfeiting, in that way manufacturers can use this system to provide genuine products without having to manage direct-operated stores, which can significantly reduce the cost of product quality assurance.

Secure Data Sharing Using Cloud

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Abstract:

The main aim of our project is to share the data in the cloud. This paper shows how toshare the data securely, efficiently, andflexibly with others in cloud storage. Theproposed system Key- AggregateCryptosystem will produce a ciphertext of constant size such that decryption rights can be assigned to the user. By combining a set of secret keys, the system will make a compact single key. The key aggregation system is divided into five major steps. They are Set-Up, KeyGen, Encrypt, Extract and Decrypt. The setup process is designed to create an account on an untrusted server by the data owner. The keygen process is executed by the data owner to randomly generate a public/master-secret key pair. The Encryption process is executed by anyone using the public key and index value. The extract is carried out by the data owner for delegating the decrypting power for a certain set of ciphertext classes to a delegate. Decrypt is executed by a delegate who received an aggregate key generated by Extract. Cloud storage is gaining popularity recently. In enterprise settings, there is a rise in demand for data outsourcing, which assists in the strategic management of corporate data.

Experimental Study on Plasticity Characteristics of Dye Contaminated Soil

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Abstract:
The textile industry is one of the industries that engender a high volume of waste water to soil. Strong colour of the textile waste water which is let into the soil is the sternest problem of the textile waste effluent. The disposal of these wastes into water and soil cause damage to the environment. Dyes also affect photosynthetic activity in aquatic habitat because of reduced light penetration and may also be toxic to some aquatic life due to the presence of aromatics, metals, chlorides and other toxic compound. The local soil has been collected from Pongalur, Tamilnadu and dye effluent was collected from nearby dying unit. The soil is subjected to initial tests and the results are gathered. Then the soil is mixed with the dye effluent, tested again to ensure variation in soil properties by adding various percentage of effluent 5%, 10%,15%,20%,25% The influence of dye effluent on soil is been studied and the results thus obtained after the test are summarized to bring out the change in soil parameter. The results obtained show that there is a reduction in soil strength and it is advised to treat the effluent before disposal into the soil.

Design of Energy Efficient Magnitude Comparator Architecture using 8T XOR Gate

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Abstract:

This paper proposes a CMOS comparator circuitry with a three-stage topology for a high-speed Analog-to-Digital Converter (ADC). The speed of ADC is limited by the used comparator. Hence, the optimization of the comparator is crucial for a fast ADC. In computationally intensive designs, the use of comparators is inevitable. The optimization of comparator design while maximizing speed, minimizing power dissipation and minimizing area is needed. Though the dynamic logic-based comparators are successful in minimizing power consumption, they pose challenges such as low-speed and poor-noise margin. In this paper, a low power magnitude comparator is designed by utilizing an 8T xor gate. In the proposed xor gate power gating is applied so that the power consumption can be optimized. This proposed low power xor –xnor module is the fundamental circuit in the comparator circuit. Hence, the power consumption of digital comparator is also reduced. The recommended comparator is composed of 2 modules namely, CEM (Comparison Evaluation Module) and the FM (Final Evaluation Module). All the designs are simulated in Tanner EDA using 180nm technology.

Keywords:

Magnitude comparator, Power Gating, Low Power

Heart Disease Prediction using Machine Learning

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Abstract:

The human heart is a vital organ in the body. It is extremely beneficial to body functioning and removes waste materials from our bodies by pumping blood throughout our bodies. Patients with heart disease require prompt diagnosis, early treatment, and regular monitoring. So, predicting heart illness at an early stage with the use of medical domain may lower the death rate. An automated medical diagnosis system would improve medical efficiency while simultaneously lowering expenses. Machine learning (ML) has shown to be useful in assisting in the decision-making and prediction of huge volumes of data generated by the healthcare industry. Our goal is to find the most appropriate machine learning technique for predicting cardiac disease that is both computationally efficient and accurate

A Vehicle Speed Control System for Low Speed Zones with Automatic Emergency Vehicle Clearance

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Abstract:
A Vehicle speed control system is designed to control the speed of vehicle in specific zones to avoid accidents in low speed areas. In this paper, the low speed zone is considered to be with a RF range. The Arduino microcontroller will be interfaced with the sensors to detect the speed of vehicle. RF receiver will be connected with every low speed zone entrance and each vehicle enters the low speed zone carries transmitter with it. RFID used here for ambulance detection and the speed will not be reduced. In transmitter block, microcontroller is programming with a predefined speed limit and transmits signal with the help of RF wireless communication. At receiver section, it receives the speed of vehicle through the speed encoder input signal. Based on the signal received from transmitter placed in a specific zone, the speed of vehicles reduces automatically with help of this device.

A Framework for Android Based E Commerce Application for Shopping

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Abstract:

The Online Shopping is an Online application based application planned for online retailers. The fundamental goal of this application is to make it intuitive and its convenience. It would make looking, review and choice of an item more straightforward. It contains a complex web index for client's to look for items explicit to their requirements. The internet searcher gives a simple and helpful way of looking for items where a client can Search for an item intelligently and the web index would refine the items accessible dependent on the client's feedback. The client would then be able to see the total determination of every item. They can likewise see the item surveys and furthermore compose their own audits. The application additionally gives a simplified component so a client can add an item to the shopping basket by hauling the thing in to the shopping basket. The primary accentuation lies in giving an easy to understand web search tool for viably showing the ideal outcomes and its intuitive conduct. It is a web-based store that empowers application proprietors to sell their item on the web. It's application shopping basket that application empowers the day-day deals capacities. It incorporates item and client the executives modules. This application will be valuable to any individual who needs to buy things utilizing web. Accordingly the client will get the assistance of web based shopping and home conveyance from his beloved shop.

A Smart Mask for Active Defense against Corona Viruses and Other Airborne Pathogens

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Abstract:

In this present situation of covid-19, face mask have become an essential need in our day to day lives. They provide effective, easy-to- use and low cost protection against airborne pathogens including covid. However, existing masks are all passive, that is simply act as filters for nasal passage and mouth. We propose a design for an "active mask" in which the mask is equipped with smart sensors and actuators that are designed to improve both the safety of the people and the hygiene of the mask. When wetness or odd smell has been detected from the mask due to prolonged usage, this system will intimate the person thereby preventing from various health issues. Using IoT, the sensor sensed values will be monitored on the android mobile at real time. We have made an advance mask with basic features and functionality which is effective and not only protects but it provides whole new experience.

E Saline Bottle Monitoring System Using IoT

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Abstract:
The E- saline Bottle monitoring system is used to monitor the level of the saline in the bottle to reduce the risk of patients. It is mainly useful for the doctors and nurses to monitor the saline bottle of the patient in the situation of airborne disease. Here the Saline bottle is monitored using IOT devices. If any large deviation happens from the normal condition, an automated alarm system will be assigned to the doctor about the patient condition. A prescription reminder order is added in our android app to notify the patient to take the prescribed medicine by the doctor at proper time. In case of emergency patient can also call the nurse and there is a control given to the patients to change the bed position according to their comfort. The level of saline injected to the patient is monitored in to inform the nurse at the time of being finished. The microcontroller system is used for monitoring the saline flow rate automatically. A wireless message is send to the nurses or doctors' computer and display the results in the form of saline droplet rate and the number of droplets coming from saline bottle, saline solution that is given to the patient in the form of ml and remaining time to empty the saline bottle with the help of serial port test software. This system is remunerative, loyal, and comfortable for nurses. The system can be reused for the next time saline bottle. It is helpful for both nurses and doctors in rural hospitals. It helps the nurses to monitor the saline level easily from distance. It mainly helps the nurses at night time as there is no need to go to the patient's bed to check the saline level in the bottle.

Web phishing detection using a deep learning Framework

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Abstract:

Phishing attacks are becoming more common and sophisticated, putting Internet users at risk. While these assaults have shown robust to a wide number of countermeasures presented by academia, business, and research groups, machine learning algorithms look to be a viable option for discriminating between phishing and authentic websites. Existing machine learning algorithms for phishing detection have three major drawbacks. The first issue is that there is neither a framework for extracting features and maintaining the dataset up to date, nor an updated collection of phishing and genuine websites. The second point of concern is the vast number of features employed, as well as the absence of supporting evidence for the characteristics used to train the machine learning classifier. The final point of concern is the sort of datasets utilised in the research, which appear to be unwittingly skewed in terms of URL or content-based attributes. The development of our open-source and extendable system to extract features and produce up-to-date phishing dataset is described in this thesis. We integrated 29 distinct characteristics into our framework, dubbed Fresh-Phish, to determine whether a particular website is authentic or phishing. We constructed a dataset of 6,000 websites with these qualities, 3,000 of which were malicious and 3,000 of which were legitimate, and evaluated our technique using 26 features published in previous work and three novel features. Using six distinct classifiers, we were able to attain a 93 percent accuracy rate. To address the second and third issues, we propose that the domain name of phishing websites is a telltale indicator of phishing and the key to successful phishing detection. We concentrate on this aspect of phishing websites and design features that investigate the domain name's relationship to the website's key elements. Our study varies from the previous state-of-the-art in that our feature set assures that a dataset has low or no bias. On a sample dataset, our learning model achieves a true positive rate of 98 percent and a classification accuracy of 97 percent using only seven features. Our per data instance processing and classification is 4 times quicker for authentic websites and 10 times faster for phishing websites when compared to state-of-the-art work. We also show the drawbacks of utilising URL-based characteristics, since they are likely to be skewed towards dataset acquisition and consumption. We demonstrate the durability of our learning method by testing our classifiers on unknown live phishing URLs and achieving a detection accuracy of 99.7%, which is greater than the previous best result of 95%.

Drop-casted C-Pani and C-Pani/TiO2 np hybrid thin films - Synthesis and Characterization

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Abstract:
C-Pani and TiO2 np synthesized by oxidative-polymerization and sol-gel method respectively, were solution-blend in a mixed solvent to deposit C-Pani/TiO2 np hybrid thin film by drop-casting method. The effect of TiO2 np and C-Pani blend on the structural and optical properties of hybrid thin film has been discussed. C-Pani thin film exhibits p-type semiconductivity (Hall-effect). Hybrid thin film show enhanced crystallinity (XRD) and broad absorbance spectra (UV-visible absorbance). PL quenching in hybrid thin film (photoluminescence), confirms the exciton dissociation at the C-Pani and TiO2 np interface. Thereby drop-casted hybrid thin film is examined to be applied for solar cell fabrication. polymeri

Keywords:
Nanoparticles; Hybrid thin film; Crystalline; Semiconductor, Drop-cast.

A Smart Bus Ticket Booking System Using Raspberry pi

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Abstract:
The aim is to make a smart bus ticket booking system in which the ticket can be booked without the use of passenger's internet. The device can be used in private buses or government buses. It is mainly designed for the uneducated persons and senior citizen. In this method, while booking the passenger's details are gathered and will be sent to the admin using raspberry pie. By using this device, passenger's details information hacking can be avoided. This whole process will be working on an application software named Smart E Book. Senior citizens can easily operate the device and book the ticket. After booking the ticket confirmations detail will be shown in the display. Dual operations can be done in this module, which is operated by microcontroller. It also designed for zero contact between conductor and passenger. The smart ticket booking will be mainly used in the festival occasions to provide easy way of Transportation to public.

Estimation of Antioxidant Capacity of Differnet Crude Extracts of Azadirachta Indica Leaf and Protein Analysis Through Page

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Abstract:
In this article, different solvent extracts of *Azadirachta Indica* are tested for antioxidant capacity. Extraction of *Azadirachta Indica* compounds is done using various solvents like ethanol, methanol, benzene, ethyl acetate, toluene which are widely used over industries as solvents. This article provides wide information of invitro studies for estimation of antioxidant capacities of different extracts of *Azadirachta Indica*. Through this study it can be easily and precisely understood that how antioxidants plays vital role in many of regular activities in human body. Finally all the ORAC values are compared with the standard drug known as tocopherol. Further for purpose of qualitative analysis number of compounds extracted by particular solvent is done with chromatographic technique which evidences the presence of different compounds. PAGE analysis is done for isolation of proteins present in extract for qualitative analysis purpose. Two-way ANOVA Analysis shows that there is a significant change in ORAC% by changing the solvents used for extraction. The order of extraction in decreasing order was observed as follows: Ethanol< Benzene< Methanol< Toluene< Ethyl acetate
However no significant change was observed in the extraction by using different volumes of ethanol extract viz., 50, 38 and 25μl

Keywords:
Azadirachta Indica, Solvent Extraction, chromatographic analysis, characterization, in vitro studies, Antioxidants, ORAC value, proteins, PAGE analysis.

Swarm Optimization Based Intrusion Detection System

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Abstract:
Network security plays a critical role in our lives based on the threats and attacks to which we are exposed and that increase daily, these attacks result in the need to develop different protection methods and techniques. Network intrusion detection systems are a way to detect several malicious network attacks. Many existing systems focused on developing intrusion detection based on Machine Learning (ML) approaches to detect variants of attacks. ML approaches can automatically discover the essential variances between normal and abnormal data by analysing the features of a large dataset. Indeed, many features are extracted without discrimination, increasing the computational complexity. By applying a feature selection method, a subset of features is selected from the whole feature set with the aim of improving the performance of ML based detection methods. The Salp Swarm Algorithm (SSA) is a nature-based optimization algorithm that has demonstrated efficiency in minimizing processing challenges to perform optimization for feature selection problems. The proposed system investigates the impact of the SSA on improving ML-based network anomaly detection using Naive Bayes' classifier.

Keywords:
Intrusion, Machine Learning, Feature Selection, SSA, Naive Bayes' classifier

Psychological Immunity, Attachment, and Technology: Exploring the Influence of Technology on Attachment and Psychological Immunity of Secondary School Students

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Abstract:

Technology is influencing various domains of human life such as education. Employment, purchase behavior, psycho-social and socio-emotional engagement. Studies reveal that the use of social media has hampered and negatively influenced the social attachment among youth especially adolescents causing a sense of social isolation, dependence on virtual avatars, increased distraction, anxiety attacks, and relatively poor social connectedness. This has been found to adversely impact the social functioning and attachment of the individual which further adversely influences the Psychological Immunity.

Research has pointed out the adverse effects of technology use on the physical health and immunity of individuals by affecting vision, posture, mental health, and emotional well-being. The present study makes use of a survey research design to collect data from 300 senior secondary school students (class XI), studying in private and public schools of Delhi-NCR with the aim of exploring the adverse influences of technology on their social attachment relationships and Psychological Immunity. The participants responded on a self-developed, validated questionnaire modeled on a 5-point Likert scale.

The findings clearly indicate that students are dependent on technology often treading the thin line between optimal use and overuse. The study found the overuse of technological devices in form of tablets, smartphones, laptops, and desktops along with i-pods and smartwatches, among students owing largely to the sudden shift from offline to remote classes due to the Covid -19 pandemic. The students reported poor social connectedness and low levels of social attachment to parents and siblings among both private and government school students. Also, it was seen t influence and impact the Psychological Immunity of the respondents.

The study recommends the appropriate and monitored usage of technological devices among school-going adolescents, the need for training in mindfulness, and other positive behavioral management supports. It is imperative for parents and teachers to understand the emotional needs of the students and provide need-based psycho-social support and emotional care. There is also a need to connect adolescents with counseling services to facilitate the development of resilience and positive self-esteem.

Keywords:

Adolescents, Mindfulness, Mental Health, Physical Health, Psychological Immunity, Resilience, Secondary School, Social Attachment, Social-Emotional Health, Technology

Performance of Soil Prediction Using Machine Learning For Data Clustering Methods

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Abstract:

Objective: Agricultural play a major role in human life. The crop yield prediction is the needed one, because the investment and work process consume high but the yield output going low in every year. **Methods:** Here introduces machine learning (ML), which can be a key differentiator for obtaining real, estimated predictions for yield issues. In ML, we choose the random forest algorithm for the yield predictions. The classifier model used here includes logistic regression, naive Bayes, and random forests, of which extended random forests provide maximum accuracy **Findings:** Based on the dataset provided, we got the yields prediction by RF. The crop yield is different by the crops and usage of fertilizer. The fertilizer also depends upon the soil of the place. **Novelty:** The clustering method considers data-related environmental factors, soil factors and weather, soil fertility, and production over the past year, and recommends profitable plants that remain mature in the expected atmospheric conditions.

Keywords:

Crop Yield, Machine Learning, Random Forest Algorithm, Fuzzy K-Means, Yield Prediction.

Projective Exploration on Individual Stress Levels using Machine Learning

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Abstract:

Recently, Stress Prediction in every individual based on their profile and behaviour is a challenging task in the current sector. Current system is a manual process where it is difficult to identify the stress in the college students or employees. There is no automation for any stress prediction. System uses machine learning algorithms or AI algorithms to find out the stress levels, these technologies are used for application development. The purpose of this project is to reduce stress in students and employees. Computer science has come a long way in the last few years. It is massive and multifaceted. It has been used in a variety of applications to meet the basic needs of human society. In the field of healthcare, machine learning has made significant progress. Stress is a deadly disease that kills a large number of people worldwide. We examine how machine learning techniques can assist reduce the risk of stress prediction, which can lead to accidents, in this study.

Keywords:

Machine Learning, ASP.NET, Stress detection, social communication, Labelled and unlabelled data set.

Face Mask Detection Using Machine Learning Technique

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Abstract:

The new COVID-19 has an serious impact globally and by end of November 2020, the number of new coronavirus cases had already exceeded 60 million and the number of deaths 1.4 million as per the data from the World Health Organization (WHO). Wearing masks has become the new norm to control the spread of the disease in public settings . To monitor this norm, there have been research into automatic face-mask detection with the aim to contain the pandemic. The existing techniques operate in detection of face masks only as detection performance and not if the masks worn are in par with the regulations. In this study, we aim to analyze the following questions

- The performance of the face detectors to detect if the placement of
- Masks is complaint with the regulations
- How the existing techniques help in combating the pandemic.

Our research focuses in conducting a study to focus the above questions and explore the usefulness of existing deep learning models and design a correct face mask placement detection technique . The publicly available MAFA , WIDER datasheets along with FMLD data sheet where the data is labeled as compliant and non - compliant is being used in our study .

Classification of COVID-19 in X-Ray Images Using Deep Learning

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Abstract:

Deep learning (DL) has proved successful in medical imaging and, in the wake of the recent COVID-19 pandemic, some works have started to investigate DL-based solutions for the assisted diagnosis of lung diseases. While existing works focus on CT scans, this paper studies the application of DL techniques for the analysis of lung ultra sonography (LUS) images. Specifically, we present a novel fully-annotated dataset of LUS images collected from several Italian hospitals, with labels indicating the degree of disease severity at a frame-level, video-level, and pixel-level (segmentation masks). Leveraging these data, we introduce several deep models that address relevant tasks for the automatic analysis of LUS images. In particular, we present a novel deep network, derived from Spatial Transformer Networks, which simultaneously predicts the disease severity score associated to a input frame and provides localization of pathological artefacts in a weakly-supervised way. Furthermore, we introduce a new method based on uninorms for effective frame score aggregation at a video-level. Finally, we benchmark state of the art deep models for estimating pixel-level segmentations of COVID-19 imaging biomarkers. Experiments on the proposed dataset demonstrate satisfactory results on all the considered tasks, paving the way to future research on DL for the assisted diagnosis of COVID-19 from LUS data.

Diagnosis of Chronic Kidney Disease using Deep Learning

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Abstract:
Chronic kidney disease is a leisurely loss of kidney function for months or years. Chronic Kidney disease is a condition in which the kidney is damaged and cannot filter the blood as well as it should, because excess fluid and waste from blood remain in the body and may cause other health problems, such as heart disease and stroke, and Kidney failure. Using Deep Learning Algorithms we can predict the disease. Deep Learning predictive analysis is nowadays the most common for kidney disease detection. In this project, we used some of the algorithms to identify the CKD. The algorithms are Logistic regression, Random forest, KNN, DNN, SVM (Support vector machine), and Stochastic gradient descent. Deep learning(DN) is becoming a point of interest in research. Its application is penetrating into different fields and solving intricate and complicated problems. DL has now been applied in health to detect various ailments like cancer and diabetes. Unfortunately, a technical approach to predicting the disease is yet to be attained. We obtained a record of 400 patients with 10 attributes as our dataset from General Hospital. We used the DL model to predict the absence or presence of CKD within the patients. The model produced an accuracy of 98%. Furthermore, we identified and highlighted the Feature's importance to supply the ranking of the features utilized in the prediction of the CKD. the end result revealed that two attributes; Creatinine and Bicarbonate have the best influence on the CKD prediction.

Android Based Diagnosis of Pest and Plant Disease Using TensorFlow

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Abstract:

Identification of the plant diseases is the key to preventing the losses in the yield and quantity of the agricultural product. The studies of plant diseases mean the studies of visually observable patterns seen on the plant. Health monitoring and disease detection on plants is very critical for sustainable agriculture. It is very difficult to monitor the plant diseases manually. It requires a tremendous amount of work, expertise in the plant diseases, and also requires excessive processing time. Hence, image processing is used for the detection of plant diseases. Disease detection involves the steps like image acquisition, image pre-processing, image segmentation, feature extraction and classification. This paper discussed the methods used for the detection of plant diseases using their leaves images . Any new emerging disease can be added by proper botanists and their associations for the awareness of farmers. The machine learning system learns about the plant diseases from large datasets and gets trained to correctly identify new test cases given as the input by the farmers through the camera of their smart phones. Here we propose the methodology uses the TensorFlow incorporated with Android application which can suggest the user about the disease.

Seamless Call and Messenger System without Internet Using Mobile To Mobile Communication

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Abstract:

GSM (Global System for Mobile communication) is a digital mobile network technology utilized globally to communicate with the mobile devices. GSM digitizes and compresses data, then sends it down a channel with two other streams of user data, each in its own time slot assigned using the Time Division Multiple Access (TDMA). Cellular communication is a form of communication technology that enables the use of mobile phones. The proposed method allows the devices to connect by applying the network reconfiguration which enabling nearby user equipment to directly communicate with each other bypassing the cellular base stations. The challenge in the design of the terminals connects to the management of trade between the flexibility of how to use the spectrum and needed space and power to give a platform. Mobile to Mobile (M2M) communication is the key technologies that can help to solve the problems occur in cellular networks. M2M communication enables users to connect to nearest devices and interact with each other even during absence of a mobile network. Such technologies help to maintain the necessary communication between user devices without network service. The common element of all generations of cellular communication technologies is the use of defined radiofrequencies (RF), as well as frequency reuse. It enables the creation of wide communication networks by fully integrating the advanced capabilities of the mobile phone. Direct communications between devices can provide several benefits to users in various applications where the devices are in close proximity. And also enables the user to make the call and messaging system without network services and internet. This could allow large volumes of media or other data to be transferred from one device to another over short distances and using a direct connection. This form of device to device transfer would enable the data to be transferred without the need to run it via the cellular network itself, thereby avoiding problems with overloading the network.

Stroke Prediction Using Machine Learning Algorithm

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Abstract:
A Stroke is health situation that is caused by the damage of pulling apart the blood vessels in the brain. It could also possibily occur when it seems to be a halt in the blood flow and the other nutrients present in our body. According to World Health Organization (WHO), stroke is the major cause of death and disorder worldwide. Most of the work has been accomplished on the prediction of heart stroke but very fewer works results the risk in the brain stroke. With this concept, different machine learning models are constructed for identifying the possibility of stroke in the brain. This paper has taken various physiological factors and used machine learning algorithms like Decision Tree Classification, Random Forest Classification to process the data and produce the output in form of graph with various modulus imported and the web page is built using HTML code and also css is also used to for styling purpose the user can give the patient data into the field once user submit the patient data then it will produce the result.

Calm Care Solutions : Heart Attack Detection Using Machine Learning.

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Abstract:

In majority, Heart attack diseases are the common illness. This ailment is fairly common these days, and we used various factors that may be linked to this heart condition to design a better forecasting strategy as well as prediction algorithms. To evaluate a dataset based on risk variables, the Naive Bayes approach is utilised. We also used decision trees and a combination of algorithms to forecast heart disease based on the parameters stated above. The findings show that the naive Bayes technique delivers correct answers when the dataset is small, whereas decision trees produce accurate results when the dataset is large. In today's medical health, the main asset is to provide posh and higher-quality services and accurate diognising . Even if heart disease is present, In recent years, they have been identified as the world's leading cause of death, and they are also the ones that can be properly cured and handled. The precise timing of disease detection determines the accuracy of disease management. The suggested research aims to percieve certain unhealthy state early in order to steer clear of catastrophic effects.

Production of Erythritol on Industrial Substrates

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Abstract:

Natural sweetener erythritol is widely used by pharmaceutical and food industry, diabetics and overweight persons due to its low-calorie value. The large-scale production of erythritol uses glucose derived from enzymatically hydrolyzed corn or wheat starch. In India and South East Asia sugar rich feedstocks are available in abundance. Till date sugar based industrial feedstocks like molasses has not been investigated for erythritol production. In the present study, erythritol production was compared on pure sugars and first-generation feedstock molasses by *Moniliella* sp. and *Trigonopsis* sp. In pure glucose, microbial strains of *Moniliella* sp. and *Trigonopsis* sp. respectively showed erythritol production yield of 0.22 and 0.05 g/g of total sugar while in pure sucrose it was 0.22 and 0.01 g/g of total sugar. In first generation feedstock molasses, *Moniliella* sp. and *Trigonopsis* sp. showed erythritol production yield of 0.1 and 0.01 g/g of total sugar respectively. On comparison of erythritol yields of *Moniliella* sp. and *Trigonopsis* sp., *Moniliella* showed higher yield as compared to *Trigonopsis* sp.

Keywords:

Erythritol, glucose, sucrose, molasses.

Poly-3-Hydroxybutyrate Production Using Methylocystis Hirsuta from Methane

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Abstract:

Sustainable development of bioeconomy can be achieved through continuous expansion of industrial biotechnology based products and processes. Feedstocks play a central role in the development of any biobased product. Methane could provide a suitable substrate for the production of biomass. Methane is cheap and plentiful not only as natural gas, but also as biogas. Methane (CH_4) emissions account for 20–30% of the global warming effect worldwide based on the 25-times higher ability of this greenhouse gas (GHG) to absorb Earth's radiation compared to CO_2.

Methanotrophs are microorganisms that have the ability to oxidize methane. They grow only on C1 compounds and have become the focus of much attention due to the wide availability of this carbon source. Methane is abundantly available and due to the prohibitive cost of storage and transport in many oilfields it is simply flared. The limited gas–liquid mass transfer represents the main challenge in the operation of cost-effective bioreactors devoted to the treatment of poorly soluble gas pollutants such as CH_4. Poly-3-hydroxybutyrate (PHB) is a bio-based and biodegradable polymer produced by microbial fermentation from wide verity of feedstocks including methane.

In the present study we report an improved method for production of Methylocystis hirsuta at fermentation scale. In comparison with biogas to pure methane at screw cap bottle the biomass was increased from 0.255 to 0.934 g DCW L-1 within 9 days of retention time. It was observed that the rate of biomass production in bioreactor increased 1.68 fold as compared to screw cap with methane. The maximum PHB production 14 % w/w was achieved at 14 L bioreactor from M. hirsuta. The development of cost-efficient and environmentally-friendly technologies for CH_4 utilization is alternative solution to achieve an effective climate change mitigation.

Analysis of Arithmetic Operations for Fuzzy Numbers

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Abstract:

This paper deals with fundamental arithmetic operations on fuzzy numbers and use of these operations for carrying out various fuzzy processes. When modelling specific problems in the field of sciences as well as engineering, it's common to notice that the problem's characteristics aren't known precisely and instead fall into a range. Interval arithmetic, which permits mathematical evaluations (operations) to be conducted on intervals in order to produce significant estimations of required values in terms of intervals, has already been used to deal with similar problems. Fuzzy arithmetic can be thought of as an extension of arithmetic interval, in which numerous levels in [0,1] are considered instead of only one (constant) level.

Keywords:

Arithmetic Operations, Crisp value, Fuzzy number, Fuzzy output.
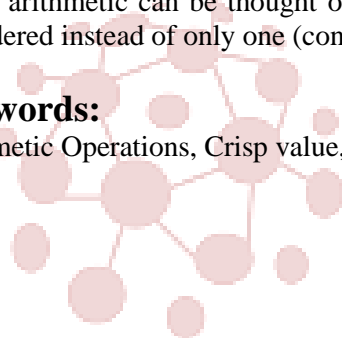
Comparative Analysis of Defuzzification Techniques for Fuzzy Output

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Abstract:

In many situations, a single crisp value is required as a fuzzy process's output instead of a fuzzy output. A defuzzification operation is one that works with a fuzzy output and transforms it into a definite and decisive crisp value. In contrast, fuzzification is an operation which helps to convert a sharp value into a fuzzy one. For a given fuzzy operation, the output may be analytical combination of two or more than two membership functions elucidated on universal set of the output varying quantity. This paper focuses on the study of the various methods used to defuzzify the fuzzy output. The method of defuzzification is to turn a value quantity into a concrete value.

Keywords:

Defuzzification, Crisp value, Fuzzy number, Fuzzy output.
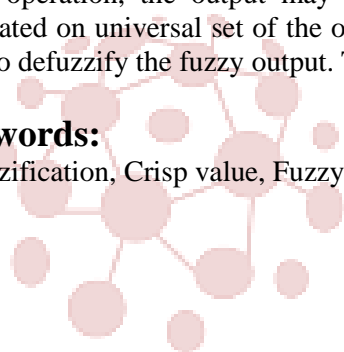
Smart Vehicle Accident Alert System

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Abstract:

Nowadays Road accident causes serious issues and many people's lives are at risk in their day-to-day life. Due to the rapid growth in science and technology, every problem which arises in today's world can be easily tackled. Road accidents are occurring at a high rate in today's world. India ranks 1st in the number of road accidents death across 199 countries followed by the U.S and China. In 2019 alone India accounts for a total of 4,49,002 road accidents reported by State union territory. Most death cases are mainly due to a lack of medical support. Even if they ended up causing accidents in remote areas, they never get medical support immediately. Due to the delay in reporting the accident, there is always some delay in ambulance arrival at the location of the accident. Thus, to prevent the delay and to get proper medical support, there must be an emergency working model which would send an exact location of the accidental zone to the nearby hospitals and police stations. With the use of modern technology, developing an automatic alert system that sends the location of the accidental zone to the nearby hospitals through GPS/GSM can be achieved and can save precious time and provide a sustainable environment where no lives can be at risk. The camera captures the accident, which can be later analyzed for investigation. The effectiveness of the proposed project is examined using PROTEUS software and simulation results are analysed.

Unifying Architecture to Generate Descriptions: Features To Text

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Abstract:

Automatically interpreting visuals is one of the challenges that has plagued Artificial Intelligence (AI). It connects the two domains of computer vision and natural language understanding. We employ recent advances in neural networks, such as CNN and RNN, to deliver the finest captions in this research. The model that is single end to end to predict the caption given a photo which unifies the two architecture to create the text utilizing the features. Two forms of discriminator architectures (CNN and LSTM-based structures) are introduced, each with its unique set of benefits. The variety of inscriptions created was forced to a breaking point by these approaches. There should be no assumptions about explicit preconditions in the model. Instead of relying on predetermined forms, standards, or classes, you must figure out how to construct sentences from the preparatory data. The accuracy of the model is proved by comparing it to numerous datasets. Many evaluation indications show that our model is highly accurate. Our model is validated using the benchmark datasets Flickr8K and Flickr30K. One of the approaches used to evaluate is BLEU scores.

Keywords:

Deep Learning, Neural Networks, Architecture, Text Description.

Synthesis and Characterization of a Novel Ce (Iv) Ion Imprinted Polymer Network Based On Alginic Acid and Crosslinked Polyacrylamide

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Abstract:

Molecular imprinting technology had made a significant attention by posessing promising characteristics such as economical and easy synthesis, higher stability and excellent reusability. This study demonstrates the preparation and characterization of a novel Ce(IV) ion imprinted polymer by ion imprinting strategy which exhibits high affinity towards Ce(IV) ions in aqueous solutions. The Ce(IV) ion imprinted polymer (IIP) network was synthesized with monomers acrylamide , alginic acid and the crosslinking agent NNMBA with potassium persulphate as initiator . The prepared IIP was charaterized by FTIR and UV-Vis spectroscopic studies. The effect of various parameters such as initial concentration of Ce(IV) ion , time and weight of polymer on Ce(IV) ion binding to the prepared IIP was studied. The metal ions shows very fast binding. The results obtained shows an increase in the uptake of Ce(IV) ion with increase in the parameters stated above. The developed IIP shows good swelling ability and has been investigated by determining the EWC value.

Air and Noise Cognizer using IoT and Machine Learning

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Abstract:

At present, the world population is expected to be around 7.9B. A survey from the recent study has shown that 18% of the population in the world owns at least one vehicle. In recent years, the air and noise pollution have become one of the major causes around the world. The level of pollution is increasing rapidly due to the factors such as industries, urbanization, increasing population, vehicle use that are affecting human health. The present actual data of the air and noise quality is gained from the smart devices and its impacts on the residents is studied. The smart sensors can measure the Carbon Monoxide, temperature, LPG, smoke, humidity, sound and few other deleterious matters in the atmosphere. This paper reviews the existing system in an attempt to explain the current state of understanding on IoT based air and noise pollution monitoring.

Keywords:

Air Pollution, AQI, internet of things (IoT), Sensors, buzzer, liquid crystal display (LCD), Air Quality Index, health effects

Landslide Detection Using Machine Learning Algorithms

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Abstract:

Landslides are among the most destructive natural disasters that may occur in hilly terrain such as the Himalaya. The study of landslides has gotten a lot of interest lately, mostly because people are becoming more conscious of the socio-economic consequences of landslides. Remote sensing pictures give a wealth of important land use information that may be combined in a GIS setting with other spatial characteristics that influence the incidence of landslides to get a more complete picture of the landscape. The creation of a landslide inventory is an essential step in conducting a landslide hazard analysis using geographic information systems (GIS)[1].

The use of geographic information systems (GIS) enabled the rapid analysis of a large amount of data, and the artificial neural network proved to be an excellent tool for landslide hazard estimates. In order to perform a risk analysis, the DEM, the distance from the danger zone, the land cover map, and the damageable items that were at risk were all considered. Demarcating catchments and masking risky zones in the landslide area were accomplished via the use of digital elevation models (DEMs). The hazard map was generated via the use of geographic information system (GIS) map overlaying technology. This information might be used to calculate the danger to people, property, and existing infrastructure, such as transportation. As part of the effort to develop real-time weather forecasting and image processing methodologies, this study may benefit from the addition of concepts and technologies such as embedded systems, the Internet of Things, and digital image processing to its repertoire.

Keywords:

ANN, SMOTE, Landsliding

Sushrut - Diagnosis Made Easy

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Abstract:
Given the state of healthcare in our nation, the unavoidable reality is that, although being a fundamental right, it is not always accessible and, even when it is, it is not always of high quality.

According to a poll done by Thomson Reuters in 2011, a large percentage of misdiagnosis occurs in many healthcare institutions, resulting in lasting repercussions and affecting the person's livelihood. Thyroid and Arthritis are two such disorders. While it is believed that 42 million people in India alone suffer from Arthritis, 210 million people worldwide suffer from it in some form or another.

Usually, the diagnosis of thyroid is carried out with the help of the test results and the tests take a lot of time since it is based on the level of hormones such as thyroxin hormone, triiodothyronine hormone and thyroid stimulating hormone that are produced by the glands in our body.

A similar situation arises in the case of Arthritis where the patient takes the scan and gets it evaluated by a doctor. The time and effort of the patients as well as the doctors can be saved.

In order to determine whether or not a person has Arthritis and Thyroid, our model use the CNN algorithm. It takes image data from users, feeds it into an algorithm, and decides whether the user has Arthritis. When it comes to thyroid detection, the model analyses thyroid scans to see whether there are any nodules present. And correctly infers whether the individual has an abnormal growth around the thyroid gland.

Our objective while going about our research and project was to uncover the flaws or drawbacks of the existing system in the detection of such diseases and make an attempt at overcoming the problems.

Keywords:
CNN, Arthritis, Thyroid

Malware Propagation via Website Compromise: An Analysis of Attacker Methods and Detection Techniques

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Abstract:

Malware is a term used to describe harmful software programmes that are used by cyber criminals to corrupt computer systems by exploiting security flaws. Malware includes viruses, spyware, worms, Trojan horses, rootkits, and other dangers to your computer's security. Several websites have been compromised and modified by an attacker in order to spread malware. They are usually legal pages belonging to firms in various sectors of industry that have been modified by a cybercriminal who gained access to the server where they are hosted due to a vulnerability, poor protection, or inadequate configuration.

Viruses, worms, Trojan horses, and dangerous mobile programmes are among the types of malware discussed in this review study. This review paper explores a variety of attacks (blended and non-blended) along with detection techniques. The several cyber attacks have been classified, and a summary of the passive strategy has been given.

In all examples of malware propagation, the primary goal is to disseminate misinformation by replacing the original content in an email or webpage with something malicious.

Systematic Transportation of Manure Using Antcolony Optimisation

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Abstract:

The most important duty of the people in the agricultural sector is to provide sufficient and good-quality yields to the human population which is being expected to have a surge by 30% by the year 2050. For this, there has to be a major increase in the production. The agricultural sector is considered to be an important contributor to the degrading of soil, pollution of the water, and also pollution of the air. Basically, livestock farming has a lot of negative effects on the environment. The Farms produce large amounts of animal manure, which, if not properly managed, can contaminate nearby underground and aboveground water bodies as well as release nitrous oxide into the atmosphere. If handled and distributed correctly, manure can be applied as organic fertilizer in crop fields that produce different types of fruits and cereals, nuts and vegetables, thus saving substantial amounts of chemical fertilizers that come at a high economic and environmental cost. The main objective here is using manures as fertilisers which are organic rather than chemical fertilisers for farming by analyzing the availability and need of manure based on location using optimisation algorithm.

SEVA: Secure E-Voting Application

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Abstract:

Voting is an important part of the administration of a country. People still have to travel to voting booth for voting. The process is not secure vote tampering cases have been observed. This paper aims at mitigating the common issues in the voting process with the help of Blockchain and Machine Learning. Encryption and hashing are used by blockchain to make every vote secure. The vote is considered a transaction in this system. A peer to peer network is created and shares this distributed ledger having voting transaction using a private blockchain. The blockchain encrypts votes in order to protect every vote from forgery. The details of the underlying system are hidden from the user. Every voter is uniquely identified and extra security measures are used while voting for verification of the user. When a voting is done as a transaction all the peers then get synch up. Voters vote cannot be traced back. Since voting is made accessible everywhere, this paper will increase the voter numbers. Also, any institution or private corporation that wishes to conduct polls and questionnaires or to conduct a specific study in order to collect opinions from people of society can simply use this system to reach them.

Keywords:

Blockchain, Ethereum, p2p, smart contract, solidity, E-voting

Planogram Automation and Shelf Space Planning: The Need of the Hour

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Abstract:

An organized shopping environment appeals customer, prevents stock outs, drives inventory productivity, reduces operating costs and significantly increases the performance of the store. Optimizing shelf space in planograms have been a matter of concern and study for a significant amount of time. In fact, the orientation in which various products are assigned and allocated in a shelf plays a crucial factor is influencing the sales of that particular product. The orientation of placement of a product is termed as facing and each facing is the indication of each unit of the product on the shelf. With new technology (e.g., planning software, data availability) and the effects of various research domains, the needs for shelf space planning in reality are expanding (e.g., marketing, food chemistry, logistics). These parameters should be carefully examined while developing shelf space models in order to deliver helpful solutions. Based on the tenure of employment at a company that focuses on creating software solutions for retailers to curb real-world problems, a great deal of experience and exposure was picked up that enabled in identifying key findings for the paper. The purpose is to share insights from experience and highlight previously undetected issues so that both parties, merchants and researchers, may receive useful knowledge while simultaneously improving their job. Finally, certain relatively unnoticed but critical elements of shelf space distribution are discussed, indicating future study directions.

Keywords:

Planogram Automation, Operations research, Retail, Shelf space optimization, Product allocation, Assortment Optimization

ForwARd – An Augmented Reality Application to Assist in Visualization

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Abstract:

Augmented Reality gives better approaches to convey computerized 3D models and information. It proposes a particular utilization of the device based, 3D displaying for the plan advancement process. This innovation is used to make virtual item models, address the innate challenges with the conveyance of actual models and furthermore shares feedback to all constituents associated with the plan interaction.

The issue noticed was that the current strategy utilized in schools for imparting knowledge isn't fully informed regarding the technological progressions. Ideas that are intriguing in the junior schools are being given in lengthy lectures where pupils tend to lose concentration. This is one among the significant problems observed. According to XR Association's "2019 Augmented and Virtual Reality Survey Report," the education market is a top-three promising area of development for AR and VR technology. With the power of augmented reality, the classrooms of the future may not look much like the classrooms of the past. Hence, we propose ForwARd - an application making the use of augmented reality and computer vision to generate 3D visuals of the image scanned by the user, that can be of any topic i.e. biology, astronomy, mathematics and so on. This will help students to learn and remember concepts easily and make pedagogical foundations easier for the teachers as well.

Keywords:

Augmented Reality, application, computer vision, education, real-time, school, students, visualization

Forensic Application using Deep Learning

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Abstract:

Biometrics is one of the most fascinating ways to solve the crime. Image recognition and classification using convolution neural network is a significant application of image processing. Effective and exact identification have turned into an imperative prerequisite for forensic application because of varieties of crimes. The fingerprint matching issue is conceived as an arrangement in which a model is created to learn to distinguish between a true and impostor pair of fingerprints. Previously, they used to exercise feature extraction prior to comparing a pair of fingerprints. The ability to learn fingerprint patterns directly from raw pixels in photos is a significant contribution of the technology. CNN has proved to be have marvelous success for many images processing task. However, there are only a couple of attempts to develop a complete CNN method to influence challenges in the fingerprint recognition problem.

Keywords:

CNN, Fingerprint Recognition, Facial Recognition, Biometrics

Sterile Insect Technique - A Novel Method for Control of Mosquito-Borne Diseases

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Abstract:

There are a number of disease-causing viruses, protozoans transmitted to people mainly through the bite of infected mosquitoes. It's true that total elimination of a single vector may lead to an empty niche that will be invaded by another, perhaps more harmful, vectors can emerge. Mosquito-borne diseases are becoming more prevalent worldwide. Many communities around the world are using ineffective and pesticide-intensive mosquito management strategies due to a lack of adequate information and effective technologies. There is an increased interest in applying Sterile Insect Technique approach to vector control. SIT is a novel, eco-friendly and effective method can be adopted to any vector borne area which has a strong record of success which uses radiation to produce genetic mutations or chromosomal breaks to generate sterile adult insects.

Mating of released sterile males with native females leads to a decrease in the females' reproductive potential and ultimately, if males are released in sufficient numbers over a sufficient period of time, to the local elimination or suppression of the pest population. We may not get sterile males mosquitoes in the right place at the right time to control. SIT usually involves mass rearing of male mosquitoes, taken to sterilization by chemicals or irradiation, and release of large numbers of irradiated males to mate with wild females. Sterile males may compete with wild types of male mosquitoes and reduce reproduction by wild females; finally this method becomes an effective in eradication of vectors. This technology can be adopted by any metropolitan cities and habitat.
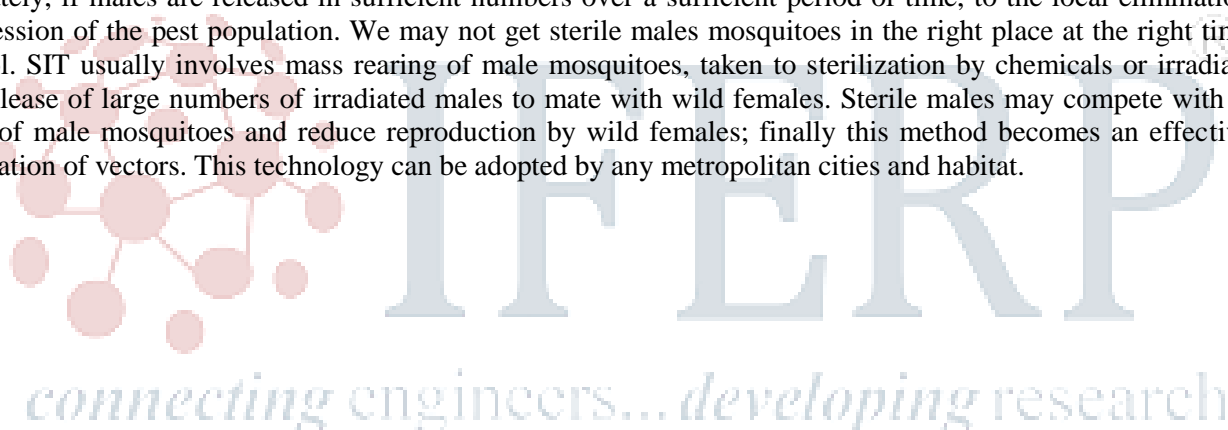
HomeNet Shield

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Abstract:

The aim of the project is to detect intrusions in an IoT network by using deep learning algorithms to analyze various aspects of network traffic, such as packet flow rate, flow duration, packet volume, and so on. The CICIDS2018 dataset will be used since it contains attributes that are relevant to an IoT environment. The goal is to employ a hybrid network to analyze and classify a tuple as benign or malicious, such as a Botnet or DDoS attack. All the rows with NaN data must be removed from the data set. The types of attacks are classified using a single hot encoding. The Cu-DNNGRU and Cu-DNNBLSTM neural networks combine to form the hybrid network. Both networks' Cuda variants are employed because they have been demonstrated to be nearly 5x quicker than non-cuda variants. Both networks assist in classifying data points in a dataset as benign or malicious, and subsequently assigning a Botnet or DDoS class label. The goal is to catch such invasions in the act.

Keywords:

Botnet, CICIDS2018, DDoS, IoT

Survey on Detection of Fraud on Credit Card using Machine Learning

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Abstract:

With increasing in advancement in technology, Credit card consumption gets also increasing in shopping. Credit card is most popular mode of payment, so due to this credit card fault is also rising. In this paper the techniques used in credit card fraud detection is presented as review paper. Fraud detection should be done afterwards as soon as once it has been done. Fraud detection methods are continuously developing to prevent or defend from the criminal in adopting their strategies. Transaction found to be normal, abnormal, suspicious according to its initial belief. Once the transaction found to be suspicious, its belief is further strengthened or weakend by comparing similarity it with fraudulent or genuine transaction using Bayesian learning.

Keywords:

credit card, fraud detection, genuine transaction fraudulent transaction
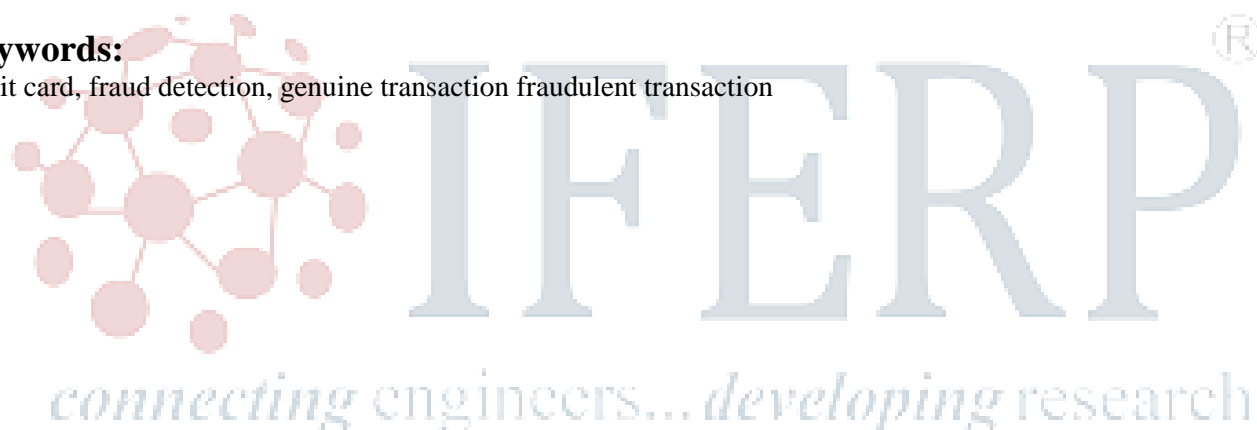
Human Activity Recognition from Video Using PSO Algorithm with LSTM Method

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Abstract:

Human Activity Recognition (HAR) from video is the most attractive, cost-effective computer vision based recognition research and it has wide range of applications such as Closed circuit Television (CCTV) surveillances, gaming and health care unit. The recognition of human activity labeled by the appearance and motions observed from the video. The rise of social informatization, the prominent information technology mentioned by machine vision is applied to many more scenes. The conventional methods of HAR facing problems such as slower recognition and precision rate are low. With the advancement of deep learning approach, the difficulties faced in HAR are addressed. For this analysis, various kinds of neural network have been recommended by researchers and they did HAR effectively. This study also proposes a neural network so called Long Term Short Memory (LSTM) combined with Particle Swarm Optimization (PSO) to predict human activities more accurately in a video. The dataset chosen for this study includes variety of actions including such as pushups, mixing, kayaking, playing basketball, drumming, etc. This approach improves the temporal and spatial dimensions to maximize the recognition rate. The accuracy obtained by processing UCF-50 dataset is relatively higher than the existing approach.

Keywords:

Human Activity Recognition (HAR), CCTV, Long Term Short Memory (LSTM), Particle Swarm Optimization (PSO), UCF-50, Data Mining, Machine Learning

A Study on Machine Learning Algorithms

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Abstract:

Machine learning is a subset of Artificial Intelligence which enables machines to learn by experience. Machine Learning can be used in cases where strict algorithms cannot be implemented, as it learns through previous patterns. Generally, Machine Learning algorithms are categorized into three types, the supervised, unsupervised and reinforcement learning. Numerous algorithms are available under each category. This paper discusses some of the supervised algorithms used for classification namely the Logistic Regression, Naïve Bayes, K-Nearest Neighbors, Decision Tree, Support Vector Machine. These algorithms or classifiers can be used for real world problems like Risk Assessment, Image classification, Fraud Detection, spam filtering, cyber fraud detection, face recognition etc.

Keywords:

Machine Learning, Classification, Supervised learning, Decision Tree, Naïve Bayes, Support Vector Machine

Liver Tumor Detection in Multi Phase CT Images by Phase Attention Mask RCNN

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Abstract:

Tumor detection and segmentation are critical preparatory procedures in computer-aided diagnosis of liver cancers. We presented a phase attention mask R-CNN based approach for simultaneous identification and segmentation of liver cancers in multi-phase CT images in this research. The proposed network keeps up with the data for each stage while as yet choosing the proper data from the triple stage picture. We planned a progression of consideration modules to zero in the organization on additional helpful regions to specifically gather highlights from the particular component guides of the NC stage, ART stage and PV stage. The attention network extracts each feature of the triple phase image separately for each scale. For single-phase CT pictures, segmentation accuracy (Dice value) is around 0.60 0.66, however with multi-phase CT images, the suggested method using attention network can improve the accuracy to around 0.77.

Keywords:

multi-phase CT image, detection, segmentation, liver-tumor, Mask R-CNN, phase attention

A Novel Heart Rate Monitoring System for Paralyzed and Mute People

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Abstract:

The main goal of this project is to build a health-care system that will be useful for paralysed and mute persons, as well as for heart attack detection. A dumb person uses gesture-based communication for correspondence all over the world. The evolution of the implanted framework can provide space to plan and construct an interpretive framework to convert gesture-based communication into discourse. Because sign language is predominantly used by the deaf, but it is also used by those who can hear but have difficulty communicating, the approach utilised in this analysis is vision-based. The glove is equipped with a three-dimensional flex sensor that collects data from every figure and hand motion to separate and distinguish each word from a specific sign. Heart attack is the leading cause of death in both men and women. Its recurrence, however, cannot always be predicted. An EKG machine is the most popular technology used to diagnose cardiac abnormalities. While it is reliable for typical users, it is not portable enough to be used as a continuous monitoring device for a heart patient. The goal of this research is to create an algorithm that can identify a heart attack and inform doctors, family members, and emergency services if one occurs. As a result, we present a smart health-care system that will address the difficulties and needs of disabled and mute persons, as well as aid in the diagnosis of heart attacks. We used a handicap wheelchair in this system, which works on the principle of acceleration. One acceleration sensor provides two axes, and the output of the acceleration sensors, which is analogue, varies depending on the acceleration applied to it. Using a simple formula, we calculate the amount of tilt, and the output of tilt will decide which direction to move in. Sensor produces independent X- and Y-axis outputs, which are supplied to an ADC and then to a microcontroller, which chooses whether or not to move based on the pulse width.

A Survey on Stock Movement Predictions

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Abstract:

To meet the needs of the financial sector and financial market and increase the rate of returns, Accurate stock moment prediction of stock markets is challenging and volatile due to its unpredictable and non-linear increasingly complex. The stock market is a trading platform where different investors sell and purchase, according to the stock availability. It's challenging to predict stock moments as it depends on various factors. Several research works are being carried out daily to predict accurate results and get the best out of them. Various fields have shown an accurate rate of results by using Deep Learning algorithms and models. Prediction and movement of how the stock market performs are quite challenging. The movement of stocks is difficult as it depends on various thousands of investors.

Water Quality Prediction for Smart Mariculture

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Abstract:

Water is one of the major compounds that profoundly influence ecosystem. But, nowadays it is been exploited heavily due to rapid industrialization, human waste and random use of pesticides and chemical fertilizers in agriculture, which leads to water contamination. Thus, a water monitoring system is necessary to observe the water quality in a large area such as lake, river, and marine areas. As per the current world situation, Internet of Things (IoT) and remote sensing techniques are used in heterogeneous areas of research for supervising, congregate and analyzing data from the remote locations. In this paper, the suggested system is a minimal price real time water quality prediction system in IoT environment. This system comprise of numerous sensors for assessing the physical and chemical parameter. The factors of water that can be assessed using these sensors are pH, turbidity, conductivity, LDR (Light Dependent Resistor). Using this system the real time quality of water bodies can be determined, the data loaded over the Internet is analyzed using machine learning algorithms.

Keywords:

Machine Learning, IOT, Water quality prediction, Smart Mariculture, water parameters

Lane and Object Detection for Accident Prevention in Automated Cars

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Abstract:
Artificial Intelligence and Machine Learning is on the rise and there are many projects and innovations that are coming up with the help of the same. We can develop unbelievable things that might have the intelligence levels of a baby and many more.

The self-driving car or the automated car is one such innovation in the modern world. An automated car can travel on the road with minimal human intervention and can relax the driving process for the humans.

This paper mainly deals with the implementation of a self-driving car or an automated car using various technologies such as IoT, Deep learning, Machine learning and algorithms such as CNN, Hough transform, image processing and canny edge detection.

Keywords:
Automated car, self-driving car, Image processing, Deep learning, Hough transform

Development of an Anti-Theft Vehicle Security System using GPS and GSM Technology with Biometric Authentication

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Abstract:
Vehicle theft is on the increase in Nigeria due to an unprecedented level of insecurity. Fortifying vehicles against theft and unauthorized users is very important. Therefore, a system which is capable of identifying and tracking vehicle from any geographical location is needed. This paper presents a vehicle anti-theft system using Global Positioning System (GPS) and Global System for Mobile Communication (GSM) with fingerprint recognition technique for enhancing security of vehicles in an automobile industry. The improvements done to the existing work are the integration of fingerprint recognition module and the use of the real-time cloud database for data storage. The fingerprint module identifies and regulates the access of an intruder in starting the engine. If the person is confirmed, access to the vehicle is allowed and if not, alert message will be sent to the owner either via SMS or mobile app to immobilize the engine, thus preventing vehicle theft and time wastage in tracking stolen vehicles. The system consists of GPS module, GSM modem, fingerprint scanner sensor, Espressif ESP32 development board, 4WD Double Layer Smart Car Chassis and Immobilizer anti-theft relay. The GPS and GSM modules are utilized to determine the exact location of vehicles and to establish a two-way communication between authorized user and the device installed in the vehicle.The microcontroller is programmed using embedded C/C++.

Keywords:
Vehicle security system, GSM, GPS, fingerprint, mobile app, SMS, microcontroller.

End to End Data Security Using Modified AES

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Abstract:

Cloud computing is often used in various fields like industry, medicine, college, etc. For various services and storage of huge amount of data. Data stored in this cloud can be accessed or retrieved on the users request without direct access to the server computer. But the major concern regarding storage of data online that is on the cloud is the Security. This Security concern can be solved using various ways, the most commonly used techniques are cryptography and steganography. We have introduced in our proposed project a new security mechanism that uses a combination of multiple cryptographic algorithms of symmetric key and image steganography. In this proposed system AES algorithm used to provide security to data. All the algorithms use 128- bit keys. LSB steganography technique is used to securely store the key information. Key information will contain the information regarding the encrypted part of the file, the algorithm and the key for the algorithm. File during encryption is split into two parts. These individual parts of the file will be encrypted using different encryption algorithm simultaneously with the help of multithreading technique. The key information is hidden in an image by the LSB technique. Our methodology guarantees better security and protection of customer data by storing encrypted data, using RC6 algorithm.

IoT Based Low Cost Smart Ambu-Bag Compressing Machine for Low Cost Ventillators

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Abstract:
Ventilators are one of the most important devices to keep COVID-19 patients in the most critical condition alive. As the global demand for ventilators is increasing and there is shortage of ventilators in our country as well, also managing patients during this time is a big task, so the design of portable rechargeable battery operated Ambu bag compressing machine is been developed. The prototype model sends real time cloud messages to the doctors about the condition of the patient. It can be used for emergency purposes, in hospitals, Corona virus quarantine coaches, isolation wards and rural areas as well. The shortage of ventilators can be met effectively by developing this project on a larger scale. This project is a low cost yet effective ventilating system for the people affected with COVID-19. The prototype model includes the hardware specifications with heartbeat sensor that senses the heart rate and pulse oximeter for sensing the blood oxygen saturation. A Wi-Fi module is used to transmit the information from Controller unit (ATMEGA 328P) to IoT architecture. Ventilator module is placed in connection with the controller via Stepper motor to control the Ambu-bag. On the software perspective, Arduino IDE and Embedded C compiler is used. A user-friendly mobile application has been developed to monitor the status of the compressing machine. The overall operation is being powered by solar energy using solar panels.

Stock Price Prediction Using Machine Learning

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Abstract:
Stock market prediction is an act of trying to determine the future value of a stock. But it is a really difficult to predict the future stock price. Stock market prediction algorithms are helpful for the investors and traders to know the future price, so that they can enter and exit the market at the right time and right price. Although there are different methods to predict future price, new algorithms and deep learning performed quite well in this. In this paper Long Short Term Memory (LSTM) is used to predict stock price and here we studied the implications of epochs and batch size in the model.
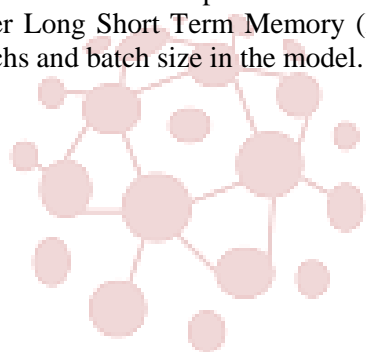
Patient Health Monitoring System Using IOT

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Abstract:
At present in hospitals, based on patient health condition doctors need to check regularly. If there is sudden change in their patient health condition, it is not immediately known to the healthcare professional. In case of such emergency situation, we can use health sensors. These sensors are attached to patient's body, and that sensors will monitor patient health condition from time to time. In this work, we are proposing how patient gradually changing health condition is monitored by healthcare professional who is nearer to the patient and who is distant from the patient also.
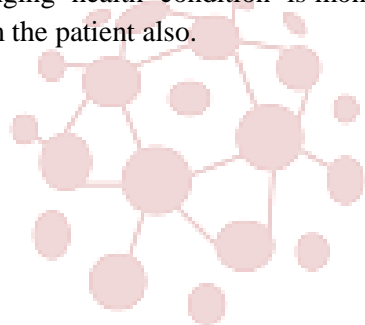
Door Unlock System with Face Recognition Using Modified Adaboost Algorithm

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Abstract:

Face recognition system is broadly used for human identification because of its capacity to measure the facial points and recognize the identity in an unobtrusive way. In this work, face of an person was detected and which implies door unlock system by using face recognition system. It has been used with hardware and software. Initially a webcam is fixed in the door and it captures the image of a person, if the image is matched with the predefined dataset, door is unlocked using stepper motor. In term of speed, Haar cascade algorithm is implemented to detect the face faster and achieve 97% success in detecting the faces and basics with machine learning technique. The modified Adaboost algorithm is essentially utilized for face recognition compared to real time face algorithm (RTFC) and node face net. The modified adaboost algorithm proves to be 98% successful for face recognition sector. Arduino is used as a major hardware component and open SSH, python 3.10 have been expelled as a software component in this work. This system can be applied to surveillance at home, workplaces and campuses accordingly.

Influence of fiber treatment on morphology and mechanical behaviour of hibiscus canabinus with curaua fiber

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Hariharan G
Jagan M
Nithish Kumar R

Abstract:
Kenaf fiber and PALF (pineapple leaf) has wide applications in automobile industry in order to achieve superior result on untreated hybrid composite can provide mechanical properties, i.e., tensile strength, comparable to those of synthetic fiber with lower density than traditional materials, resulting in lightweight and eco-friendly polymer composites. Epoxies are used primarily for fabricating high performance composites with superior mechanical properties, resistance to corrosive liquids and environments, superior electrical properties, good performance at elevated temperatures, good adhesion to a substrate, or a combination of these benefits. Epoxy-based composite materials are widely used in load-bearing applications, e.g., automotive, aerospace, construction, oil and gas, and marine industries, because of their low cost, good mechanical properties, high specific strength, super adhesiveness as well as good heat and solvent resistance.

Keywords:
Kenaf fiber, Curaua fiber, Epoxy resin, Properties.

Experimental investigation on Mechanical properties of laser weld and cold welded CR sheet metals

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Abstract:

Laser welding process is a promising technology for joining of thin sheet metals. In the growing technology cold welding process are competing with the good mechanical properties for thin sheet metals. To produce minimal distortion and optimal weld quality, LWB and cold weld blanks are used. During the welding process negative residual stresses are introduced, reducing the lifetime of LWBs and CWBs. The purpose of this research is to examine the effects and mechanical properties of LWBs (Tensile-Stress Strain Curve, Microstructure-SEM, EDS, and Laser Penetration Depth). The effect of various process parameters are examined and identified that applying the high-level spot size improves the joining quality of the weld zone and to prevent the probability of brittle crack.

Keywords:

Welding, Laser weld, Cold weld, Residual stress, Brittle
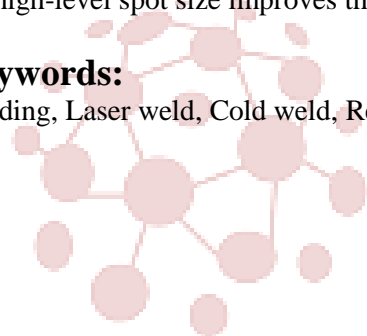
Prototype Design for Real-Time Emergency Vehicle Siren Sound Detection Using Pic Microcontroller

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Abstract:

We proposed a scheme for prototype real time traffic signal controller with emergency override, based on a pic microcontroller as vehicular traffic is endlessly increasing everywhere in the world and can cause terrible traffic congestion at intersections. Most of the traffic lights today feature a fixed green light sequence, therefore the green light sequence is determined without taking the presence of the emergency vehicles into account. Therefore, ambulances stuck in a traffic jam and delayed in reaching their destination can lead to loss of property and valuable lives. With the world moving towards smart cities, one of the major problems faced by almost all of cities is that finding the way for the ambulance in the traffic signals. In this we attempt to find the ambulance and turning the signal from red to green in the particular lane. Sometimes higher traffic density at one side of the junction demands longer green time as compared to standard allotted time. The traffic is analysed continuously through data collected from sound sensors and finds the ambulance, if any found it will automatically turns into green and provide path for the ambulance.

Prototype Design for Smart Home Water Level Control System using LoRa

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Abstract:

Present weather conditions stations permit real-time monitoring of several atmospheric variables. Remote Sensor Networks (WSN) give correspondence among hubs and the Network Coordinator (Gateway). In our proposed work even object also can be communicating each other device to device, communication in this concept is call the internet of things (IoT). This project focuses on smart home automation for water level controller using low power microcontroller. In this treated water tank is not easily accessible so we don't want to change the batteries too often. due to location of the listen, The LoRa WAN specification is a Low Power, Wide Area (LPWA) networking protocol designed to wirelessly connect battery operated 'things' to the internet in regional, national or global networks, and targets key Internet of Things (IoT) requirements such as bi-directional communication, end-to-end security, mobility and localization services. LoRa Wireless AN/ the things network was a logical choice for the transmission of the measures the water level controller for both overhead and underground tank. In displays the level of water and when it is at the lowest level. A pump is activated automatically to refill the tank, the tank is filled to is maximum capacity, the pump is automatically de-energized some components are used to set up power unit they include 12V step town transformer, a bridge rectifier circuit, smoothening capacitor and a voltage regulator Integrated Circuits. The sensor unit is responsible for sensing the level of water and transfer the current position of water of the microcontroller.

Keywords:

Automatic sensor. Microcontroller with LoRa. Electrical device.

IoT Based Field and Plant Monitoring System Using Open CV

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Abstract:

Agriculture, which would be the backbone of the Indian economic, contributes to the nation's economic growth. Unfortunately, because the usage of obsolete agricultural technology, our productivity is low compared to world standards, and people from rural areas are relocating to urban areas for other viable activities, leaving agriculture behind. As initiative to increase India's declining food self-sufficiency rate and revitalize the field of agriculture, the concept of smart agriculture is currently being implemented. However, number of skilled farmers who can contribute to gathering crop growth data requires machine learning and these data are also limited to local-and-environmental based conditions. Farming has always been innovative, but the Internet of Things (IoT) is positioned to take smart farming to the next level. An Internet of Things system consists of actuators or sensors, or both, that provide direct or indirect internet connectivity. We propose a system for obtaining composite growth data in various environments and crop targeted for home gardens and paddy fields. An interactive cultivation sensing system consisting of IoT-based technologies is designed and realized to ensure the continuous growth of crops in optimum conditions daily. With this, progress will be made in determining the efficient cultivation conditions for open cv and in finding solutions to future problems of agricultures.

Keywords:

Internet of Things, Machine Learning.

A Low Cost Smart Wearable Nutrition Tracker for Health Analysis

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Abstract:
Among the various threats to human beings, fitness nutrition-associated illness, at the moment, are rising as a risky threat to human fitness. To keep a healthful way of life balancing strength consumption and expenditure is an essential step. To reveal the everyday meals consumption of an man or woman correctly we gift the gadget Android Based Health Care System using the Internet of Things. Food is a vital issue for the survival of life. With the right consumption, it results in having and amazing healthful life. When thinking about the meals, calorie consumption and nutrients stability is the required hassle in fitness care. The strength fee of meals is measured via way of means of the unit calorie. The vitamins which can be of various paperwork particularly Carbohydrates, Fats, and Proteins are the strength fuels your frame. When the frame doesn't soak up the essential Vitamins, there takes place a severe hassle, nutrient deficiency. This is a consumer electronics product that consists of Wi-Fi enabled sensor for meals nutrients quantification and a phone software that keeps dietary statistics of the meals ingredients. This gadget permits customers to at once have interaction with their everyday dietary values. The gadget, in addition, video display units the coronary heart pulse charge and frame temperature of the person.

Keywords:
Internet of Things, Machine Learning, Data Set.

Real Time Warning System for Drivers Using IOT

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Abstract:

Driver Drowsiness has been the significant cause of horrible accidents which is causing deaths and fatalities injuries, with a lack of sleep and more tiredness which causes drowsiness of the driver. This project implements a new experimental model is designed for detecting drowsiness of driver with buzzer sound and water spraying is activated to make driver active and to reduce accidents caused. First Driver face is captured and eye retina detection and facial feature extraction are done and blinking values are calculated then threshold values are set. Secondly, the AURDINO module is used which is integrated with suction pump, buzzer and GPS sensors for real-time calculation of driver location and sent through gsm module. Object detection using Haar feature-based cascade classifiers is an effective object detection method.

Keywords:

Drowsiness, face detection, eye detection, road safety, wearable devices.

Accident Detection and Alert System Using GPS and GSM

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Abstract:

Nowadays we are able to track vehicles using many applications which helps in securing personal vehicles, public vehicles, feet units and others. Furthermore there is a rapid increase in the occurrence of the Road accident. This paper is about a system which is developed to automatically detect an accident and alert the nearest hospitals and medical services about it. This system can also locate the place of the accident so that the medical services can be directed immediately towards it. The goal of this paper is to build up a Vehicle accidental monitoring system using MEMS, GPS and GSM Technology. The system comprises of accelerometer, MCU, GPS & GSM Module support in sending message. The accelerometer is used to detect fall and Threshold Algorithm are used to detect accident. Short Message will contain GPS [Latitude, Longitude] which helps in locating the vehicles.

Keywords:

GSM, GPS, MEMS, Accelerometer.

Malicious URL Prediction using Machine Learning

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Abstract:

A malicious URL is a website link that is designed to promote virus attacks, phishing attacks, scams, and fraudulent activities. When a user clicks a malicious URL they can download computer viruses such as Trojan horses, ransom ware, worms, and spyware. A malicious URL can also be used to lure people to submit their personal information on a fake website. This makes these people share their personal and sensitive information with unknown people. The harm caused by these malicious URLs can be very large and are responsible for over 60% of most cyber-attacks.

It is imperative to detect and act on such threats in a timely manner. Traditionally, this detection is done mostly through the usage of blacklists. However, blacklists cannot be exhaustive, and lack the ability to detect newly generated malicious URLs. Due to inefficient security technologies, there is an exponential increase in the number of victims. The anonymous and uncontrollable framework of the Internet is more vulnerable to phishing attacks. Existing research works show that the performance of the phishing detection system is limited. There is a demand for an intelligent technique to protect users from the cyber-attacks. To improve the generality of malicious URL detectors, machine learning techniques have been explored with increasing attention in recent years. A personalized whitelist approach for phishing webpage detection: This approach combines a personalized whitelisting approach with machine learning techniques. The whitelist is used as filter that blocks phish web pages used to imitate innocuous user behavior. The phishing pages that are not blocked by the whitelist pass are further filtered using a Support Vector Machine classifier designed and optimized to classify these threats. We present a novel approach that not only overcomes many of the difficulties in detecting phishing websites but also identifies the phishing target that is being mimicked. We have proposed an anti-phishing technique that groups the domains from hyperlinks having direct or indirect association with the given suspicious webpage. We study the structure of URL, the lexical feature in URL characters and the phishing target brand name and propose a MLP-based phishing URL detection solution.

Keywords:

Malicious URL, Machine Learning

Numerical Analysis of Friction Stir Welded Dissimilar Joints

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Abstract:

It is essential to evaluate crucial factors, models, and use simulation approaches to acquire physical insight into the FSW process. Finite elements modeling of friction stir welding is a complex problem involving coupled temperature displacement, grain structures and non-liner phenomena like large stain and stains rate, frictional heat generation and heat transfer. For analysis we use latest software Abaqus it is developed by Dassault System. Considering materials like aluminum alloy plate and Inconel 800 plate for analysis. Analyzing the plate with different types of tool profiles. The parameters are temperature distribution, static stress, thermal stress and event simulation.

Keywords:

Friction stir welding, Abaqus, Aluminum alloy.

Drowsiness Alert System Using IoT

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Abstract:
Smart is the way of the future. Smart features are increasingly becoming an eligibility condition for products looking to break into the market. Drowsy driver detection is becoming the most important process for preventing any road accidents, most likely worldwide. The goal of this paper is to develop a smart warning technique for intelligent vehicles that can detect and avoid drowsy driving while also controlling the engine. To avoid the source of the incident, a comprehensive alarm system must be designed. When the driver's weariness is identified, the IoT module sends a warning message to the Raspberry Pi monitoring system, along with information on the impact of a collision and the driver's location.

Study of Battery Management system using Buck Converter

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Abstract:

In recent trend, electric vehicles are dominating the automobile industry. By implementing electric vehicles, we can reduce fuel consumption and atmospheric pollution. To design an efficient and effective electric vehicle, proficient energy storage system is required. The paper describes the design of an active cell balancing using converter for series connected lithium ion cells. A methodology that allows development of converter based cell balancing to charging series connected cells in lithium ion batteries equally, which helpful to enhance the lifetime and capacity of the battery is presented. Lithium-ion batteries are used for electric vehicles to obtain high efficiency by store the energy obtains from the renewable energy resources. Lithium ion cells are intolerant to overcharge and over discharge, where overcharged cell causes explosion and over discharged cell reduce the life cycle of the battery. The proposed system employed with two MOSFET switches, one switch for charging the cell and another switch for discharging the cell. Based on the output of charge controller, bidirectional switching activation is takes place. The SOC of an individual cell is analysed to monitor the individual cell voltage by this methodology better efficiency was achieved .The performance of the proposed system is analysed through simulation and the results are validated through hardware experimination.

Numerical Analysis of Different Tool Profile for Friction Stir Welding

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Abstract:
A cylindrical tool with a pin like attachment is rotated and slowly inserted into the rigidly clamped joint to be welded. The frictional and deformational effects due to the rotating tool surface in contact with the workpiece cause plasticization of the metals to be joined.In this simulation, the compatibility and parametric test on tungsten carbide tool of different tool profile by using different modeling and simulation techniques in different environments.For this test Abaqus software version 2017 is adapted,which will be efficient for analysing the parameters and optimizing.Input parameters are tool geometry, tool rpm and feed rate will be considered to analyse and the results are temperature distribution,static stress,thermal stress,event simulation,shape optimization are obtained.

Design and Development of Novel Deep Drawing System for Superalloy Thin Walled Components

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Abstract:
Manufacturing of super alloy's part by using deep drawing method is novel and advanced process. Deep Drawing (DD) is one of the sheet metal forming processes widely used in automobile, electronics, aerospace and allied industries to produce the hollow parts. Although the deep drawing process of high strength / low formability metals has an extensive industrial application area. Deep drawing platform (die) are developed based on the term of deformation load, spring back analysis, friction effect and microstructure progression. Select the Cylindrical cup and teeth cap profile in super alloy for testing purpose under the condition of fixed spacing and proper strain rate with the objective of hard-to-form material.

Keywords:
Deep drawing, Super alloy, Sheet metal, Die.

Facial Mask Recognizer Using Machine Learning

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Abstract:

Amid current pandemic, COVID-19 has made to realize the importance of face masks and this will need to understand the crucial efforts of not wearing one, now more than ever. Presently, there are no face mask detectors installed at the crowded places. In this project, tried to build a face mask detector which will be easy to deploy at the mentioned outlets with the help of computer vision, it is now possible to detect and implement this on large scale. In this project CNN models are used for the implementation will train the face mask detector on our selected dataset using TensorFlow and Keras. It is a large varied and augmented dataset. So that the model is able to clearly identify and detection the face mask in real time videos. The trained model was tested on both real time videos and static pictures and in both the cause the accuracy was more than the other designed models.

Production of Erythritol on Industrial Substrates

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Abstract:
Natural sweetener erythritol is widely used by pharmaceutical and food industry, diabetics and overweight persons due to its low-calorie value. The large-scale production of erythritol uses glucose derived from enzymatically hydrolyzed corn or wheat starch. In India and South East Asia sugar rich feedstocks are available in abundance. Till date sugar based industrial feedstocks like molasses has not been investigated for erythritol production. In the present study, erythritol production was compared on pure sugars and first-generation feedstock molasses by *Moniliella* sp. and *Trigonopsis* sp. In pure glucose, microbial strains of *Moniliella* sp. and *Trigonopsis* sp. respectively showed erythritol production yield of 0.22 and 0.05 g/g of total sugar while in pure sucrose it was 0.22 and 0.01 g/g of total sugar. In first generation feedstock molasses, *Moniliella* sp. and *Trigonopsis* sp. showed erythritol production yield of 0.1 and 0.01 g/g of total sugar respectively. On comparison of erythritol yields of *Moniliella* sp. and *Trigonopsis* sp., *Moniliella* showed higher yield as compared to *Trigonopsis* sp.

Keywords:
Erythritol, glucose, sucrose, molasses.

Root Finding Algorithm

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Abstract:

Muller's Method is a root finding algorithm that constructs a parabola passing through 3 previous points and requires only one function evaluation per iteration with an order of convergence and efficiency index of 1.839. One of the advantages of this method is that this can converge to complex roots even if the initial guess is a real number, which is also a crucial disadvantage of this method. The present method tends to jump to a complex solution even if all roots are real and square root evaluation at each iteration also increases computational cost. A modified method is obtained that requires only one function evaluation as in Muller's method and it avoids the square root evaluation which is present in Muller's method. The present method restricts the algorithm from jumping the solution to complex roots whenever real initial guesses are provided without compromising the order of convergence 1.839 as in Muller's method.

Virtual Toll Collection System

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Abstract:
ATCS is an Automated Toll Collection System used for collecting tax automatically. In this we do the identification with the help of radio frequency. A vehicle will hold an RFID tag. This tag is nothing but unique identification number assigned. This will be assigned by RTO or traffic governing authority. In accordance with this number we will store, all basic information as well as the amount he has paid in advance for the TOLL collection. Reader will be strategically placed at toll collection center. Whenever the vehicle passes the toll collection center, the tax amount will be deducted from his prepaid balance. New balance will be updated. In case if one has insufficient balance, his updated balance will be negative one. To tackle this problem, we are alarming a sound, which will alert the authority that this vehicle doesn't have sufficient balance and that particular vehicle can be trapped. As vehicles don't have to stop in a queue, it assures time saving, fuel conservation and also contributing in saving of money. Automatic Toll Collection systems have really helped a lot in reducing the heavy congestion caused in the metropolitan cities of today. It is one of the easiest methods used to organize the heavy flow of traffic.

KINISI EMS: Emergency Medical Services

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Abstract:
The development of industrialization and urbanization has prompted a tremendous increment inside the populace constantly prompting ascend inside the amount of vehicles on street this has cost many lives which might have been saved in any case with convenient drug. This is because of vehicle traffic on the streets. The climb of the Internet of Things has offered metropolitan networks an opportunity to propel their traffic situation by using the web to assist with facilitating their traffic issues. The web has moreover helped by presenting progression, and with improvement came viability and presence of mind. Various people groups have begun using programming and applications for simplicity of voyaging. This paper targets making a rescue vehicle amicable traffic framework, by directing the traffic with the assistance of the versatile application introduced in the rescue vehicle driver's telephone works as indicated by the traffic thickness on the particular road.

Keywords:
Software-Defined Networking, Internet of Things, Quality-of-Service, Routing, CNN (Convolutional neural network).

Colouring of Grayscale Image using Generative Adversarial Network

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Abstract:

Attempts to colorize grayscale photographs into natural-looking colourful images have been made in the past. The concept of automatic image colorization has piqued attention in the recent decade for a variety of applications, including the restoration of aged or deteriorated photos. There have been various time and energy consuming traditional approaches. Throughout all of the research, various deep learning approaches have evolved as a development in the world of technology. The most important reason to colorize a picture is to give it a unique and genuine appearance. In this research, we compare how colorization was handled previously to how deep learning is tackling it now. Many attempts are made linear to get the simplest objectives. In this research, we compare how colorization was handled previously to how deep learning is tackling it now. Many attempts are made the linear manner to achieve the simplest results, which range from choosing colours from one end to the other, deciding the colour palette, and a variety of other metrics. Deep learning user-guided and non-guided approaches have been established as technology has advanced over the last 20 years. This document compares and contrasts all of the methods, as well as their benefits and drawbacks. We're working on an image colorization technique that's completely automated. In this work, we compare how colorization was handled previously to how it is being handled by deep learning. To achieve the best results, many efforts have been made the linear way, which ranges from selecting colours from one end to the other, deciding the colour palette and many other such metrics. With the evolution of technology over these 20 years, deep learning user-guided and non-guided methods have been introduced.

Keywords:

CIELAB colour space, neural network, Colorization, Deep learning

Deep Learning Based Feature Description for Correlation Filter Tracking

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Abstract:

Correlation filter based tracking has shown impressive and exciting results in the object tracking domain. The types of features used in the family of these trackers significantly affect the effectiveness of the tracking process. To gain important features, deep networks can be integrated with correlation trackers. This work proposes an in-depth network learning model for correlation filter tracking. For which, a new model with better network architecture has been devised that eliminates network loss or error and to process with feature maps to extract both the sharp and smooth edge features. Correlation filter-based object monitoring is therefore done on the model in deep network learning. The proposed system is rated for consistent performance parameters on four benchmark datasets, where it consistently exceeds sophistication. Also, it requires less memory and computational cost to achieve that high performance.

Keywords:

Visual tracking; Correlation filter; Feature-based learning; CNN; Object tracking
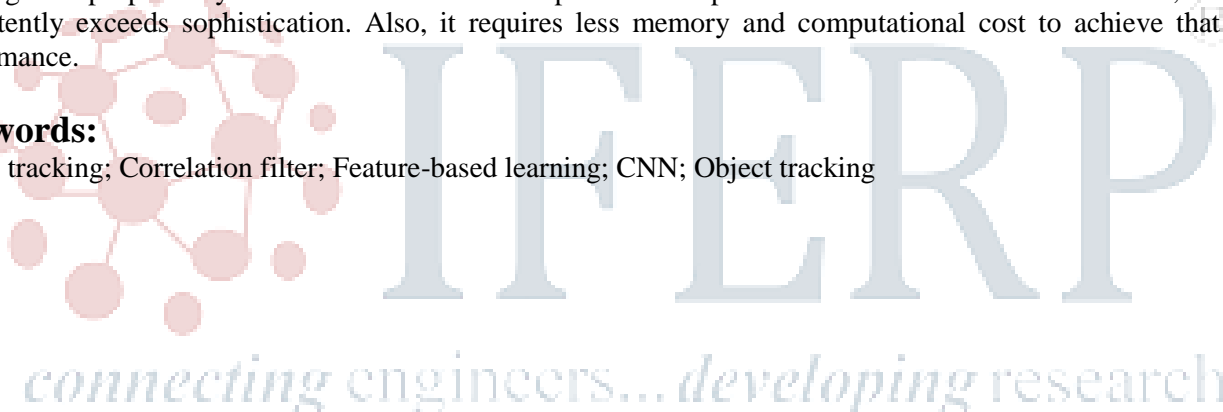
Brain Tumour Segmentation using K-Means Clustering and Fuzzy C-Means Algorithms and its Area Calculation

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Abstract:

This project deals with the implementation of Simple Algorithm for detection of range and shape of tumor in brain MR images. Tumor is an uncontrolled growth of tissues in any part of the body. Tumors are of different types and they have different characteristics and different treatment. Brain tumor is inherently serious and life-threatening because of its character in the limited space of the intracranial cavity (space formed inside the skull). Most Research in developed countries show that the number of people who have brain tumors were died due to the fact of inaccurate detection. Generally, CT scan or MRI that is directed into intracranial cavity produces a complete image of brain. This image is visually examined by the physician for detection & diagnosis of brain tumor.This project uses computer aided method for segmentation (detection) of brain tumor based on the combination of two algorithms. This method allows the segmentation of tumor tissue with accuracy and reproducibility comparable to manual segmentation. In addition, it also reduces the time for analysis. At the end of the process the tumor is extracted from the MR image and its exact position and the shape also determined. The stage of the tumor is displayed based on the amount of area calculated from the cluster.

Deep Learning for Whole Brain Cognitive Decoding

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Abstract:

Research in many fields has shown that transfer learning (TL) is well-suited to improve the performance of deep learning (DL) models in datasets with small numbers of samples. This empirical success has triggered interest in the application of TL to cognitive decoding analyses with functional neuroimaging data. Here, we systematically evaluate TL for the application of DL models to the decoding of cognitive states (e.g., viewing images of faces or houses) from whole-brain functional Magnetic Resonance Imaging (fMRI) data. We first pre-train two DL architectures on a large, public fMRI dataset and subsequently evaluate their performance in an independent experimental task and a fully independent dataset. The pre-trained models consistently achieve higher decoding accuracies and generally require less training time and data than model variants that were not pre-trained, clearly underlining the benefits of pre-training. We demonstrate that these benefits arise from the ability of the pre-trained models to reuse many of their learned features when training with new data, providing deeper insights into the mechanisms giving rise to the benefits of pre-training.

Vehicle Accident Detection and Locating using GSM and GPS

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Abstract:

The quickest development of innovation has made our way of life solace. The innovation likewise expanded the traffic gambles and the street accidents happen habitually which causes colossal death toll on the grounds that deficient of crisis office. To have the option to plan an item utilizing an incorporated innovation will be useful to any designing issues and an immense commitment to the local area. A significant mark of endurance rates after a accident is the time between the accident and when crisis clinical faculties are dispatched to the accident area. By dispensing with the time between when an accident happens and when the people on call are dispatched to the scene diminishes death rate and can save lives. One way to deal with killing the deferral between accident event and specialist on call dispatch is to use in vehicle programmed accident location and warning frameworks.

This framework means to alarm the precious ones of the individual in the vehicle about the accident to give prompt clinical guide. On time clinical guide can help in saving lives, in this system when a vehicle meets with an accident, Sensors, for example, Accelerometer and Eye flicker sensor identifies signal in the event of an accident and convey a message to the associated microcontroller. The area of accident shipped off the recently coded numbers so prompt assistance can be given by emergency vehicle or the family members concerned. GSM innovation is utilized to imply the vehicle position as latitude and longitude organizes through SMS. The area spot is recovered utilizing GPS satellites, and afterward after a message send to the essential assistance and hence rescue vehicle administration or family members can arrive at the spot as quickly as time permits.

Smart ATM security using vibration sensor and DC motor

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Abstract:

The concept of smart ATM safety using vibration sensor and DC motor is birth with the observation in our actual life incidents going on around us. An Automatic teller machine is an electronic telecommunications device that enables customers of financial institutions to perform financial transactions, such as cash withdrawals, deposits, transfer funds, or obtaining account information, at any time and without the need for direct contact with bank staff. The user couldn't able to know the cash availability in an ATM without card processing. The user must complete the all process for taking the money whether the cash available or not. End of the process only we can know the unavailability of the cash and also wasting the time duration. This problem can be solved by using smart ATM safety using vibration sensor and DC motor.

The sensor unit is fixed in each cash tray which is used to identify the cash availability of the ATM in outside of the room through the display unit. The user can know the cash availability of the machine without entering and checking. This system also includes additional feature like monitoring and controlling schemes against robbery. Recent days, there is no adequate security for ATM machines. Robbery in ATM machines has been increased in large way. By using the existed technology, ATM machines are not safe in order to provide proper security for the money. So, the proposed system will overcome this problem and provide more security to the ATM.

Automatic Human Follower Trolley Using Huskylens

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Abstract:

A robot that performs independently, the correspondence between the individual and the robot is the main element. A critical mindfulness has been noticed with respect to the utilization of such an innovation. This examination has an insignificant contribution in the improvement of such robots. A robot that capacities completely independently shouldn't just get done with the tasks that are wanted of them yet additionally some way or another lay out an association among themselves and the individual working them. A ton of examination has been done of these sorts of robot a ton of work actually should be finished. For a robot to impart and communicate with the individual, it ought to likewise be fit for following that specific individual. Remembering this, there ought to be a limit in the robot to get data from the environmental elements while scrutinizing the expected item. The essential objective of our work was to plan and create a robot that tracks the objective as well as moves towards it while doing the following. To simplify everything, an extraordinary variety tag was put on the individual that the robot needs to follow. The principal deterrent in this sort of work is that the discovery of the objective is something delicate to do. The item should be exceptional for the robot to remember it and complete the goal. The straightforward variety label eliminates this issue of uniqueness and makes the undertaking genuinely simple. A little camera records the video, and the processor processes it to remove the ideal data from it. Shielding the robot from impact with the article is one more issue that should be handled so to do this, a sensor is utilized. All the handling is done by the microchip while the control of the engines is completed by the regulator.

A CNN Model for Disease Detection in Potato Leaves

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Abstract:

India is a predominantly agricultural country, and its crop production rate is a key source of concern. We created a strategy to boost agricultural produce rates and prevent disease infection in plants, making farmer work easy to some extent. They can use Deep neural Networks, an AI subfield, to detect damaged plants without having to do so manually, and to cure them before it's too late. This research examines a number of studies and concludes that Convolution Neural Networks (CNN) perform better at detecting leaf disease. CNN also contributes the maximum achievable accuracy for disease detection.

Keywords:

Neural Networks (NN), Deep Learning (DL), Convolutional Neural Network (CNN), Architecture.
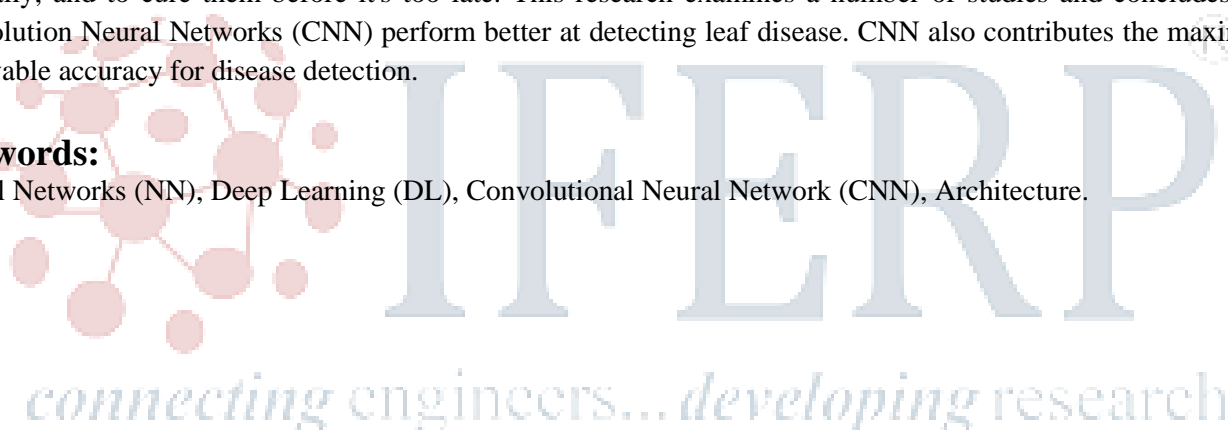
Projective Exploration on Individual Stress Levels using Machine Learning

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Abstract:
Recently, Stress Prediction in every individual based on their profile and behaviour is a challenging task in the current sector. Current system is a manual process where it is difficult to identify the stress in the college students or employees. There is no automation for any stress prediction. System uses machine learning algorithms or AI algorithms to find out the stress levels, these technologies are used for application development. The purpose of this project is to reduce stress in students and employees. Computer science has come a long way in the last few years. It is massive and multifaceted. It has been used in a variety of applications to meet the basic needs of human society. In the field of healthcare, machine learning has made significant progress. Stress is a deadly disease that kills a large number of people worldwide. We examine how machine learning techniques can assist reduce the risk of stress prediction, which can lead to accidents, in this study.

Keywords:
Machine Learning, ASP.NET, Stress detection, social communication, Labelled and unlabelled data set.

A Smart Energy Meter with Power Theft Monitoring and Home Automation using IoT

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Abstract:

The advent rise in technology has made the necessity of electrical and electronics devices by human beings in order to live a comfortable and secured life. Electricity being the important element of human beings for powering electrical and electronics applications like domestic, agricultural and industrial purposes. Power theft being a major issue had become a threat to our grid systems, creating a loss to electricity boards. These situations are more frequently observed in countries like India. Resolving this issue can save a lot of power there by creating an uninterruptable power supply to the costumer and there by strengthening the economic aspects of the electricity markets. Implementation of Smart energy meter can resolve this issue. Smart Energy Meter (SEM) is an electric device used for monitoring the energy consumption patterns and uses a wireless protocols for transferring data and communicating in a bidirectional way. This paper presents power theft detection and an automated billing process using smart energy meter. With smart meter the rate at which energy is consumed is monitored and their corresponding amount will be displayed there by transferring the data to the base station. The data transferred between the consumer and the utility helps in controlling and detecting power theft. This smart energy meter can be con figured as post-paid or prepaid meter. The proposed system interchanges conventional meter reading techniques and facilitates the energy provider to access the energy meter remotely.

River Cleaning and Water Quality Monitoring System Using Turbidity Sensor

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Abstract:

River Water Cleaning Machine work has done looking at the current situation of our national rivers which are dump with crore litters of sewage and loaded with pollutants, toxic materials, debris etc. The government of India has taken charge to clean rivers and invest huge capital in many river cleaning projects like "Namami Gange", ''Narmada Bachao'' and many major and medium projects in various cities like Ahmadabad, Varanasi etc. By taking this into consideration, this machine has designed to clean river water surface. Nowadays almost all the manufacturing process is being atomized in order to deliver the products at a faster rate. Automation plays an important role in mass production. In this project we have fabricated the remote operated river cleaning machine. The main aim of the project is to reduce the man power, time consumption for cleaning the river. In this project we have automated the operation of river cleaning with help of a motor and chain drive arrangement. Some needs of automation are described below. Here using RF transmitter and receiver are to control the cleaning machine. Automation can be achieved through computers, hydraulics, pneumatics, robotics, etc., of these sources, pneumatics form an attractive medium for low cost automation. In India water pollution is increasing day by day so this is becoming serious problem for rivers, ponds etc. This mainly consist of impurities like waste water debris, plastics, garbage on floating water surface. These impurities mainly affect on health of human being and also effect on life of aquatic animals. Normally this project based on renewable energy sources, so there is reduction in use of non renewable energy sources like oil, petroleum, electricity and all type of mineral sources. So by this non renewable energy sources are saved and this project helps to reduce the water pollution.

Keywords

River Cleaning Machine, Battery, sensor, GSM Module