

# Music Genre Classification using Convolutional Neural Network

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## Abstract:

The project was primarily aimed to create an automated system for classification model for music genres. It automatically classifies different musical genres like classical, jazz, rap, pop, etc., from audio files. We will classify these audio files using their low-level features of frequency and time domain. The first step included finding good features that demarcated genre boundaries clearly. A total of five features namely MFCC vector, Chroma frequencies, Spectral roll-off, Spectral centroid, Zero-crossing rate were used for obtaining feature vectors for the classifiers from the GTZAN genre dataset. GTZAN genre classification dataset is the most recommended dataset for the music genre classification project and it was collected for this task only.

Music genre classification is a software program that predicts the genre of a piece of music in audio format. These devices are used for tasks such as automatically tagging music for distributors such as Spotify and determining appropriate background music for events. Currently, genre classification is performed manually by humans applying their personal understanding of music. This task has not yet been automated by convolutional algorithmic approaches since the distinction between music genres and relatively subjective and ill-defined. However, the ambiguity of genre classification makes machine intelligence well-suited to this task. This project however aims at content-based classification, focusing on information within the audio rather than extraneously appended information.

## INTRODUCTION

## Checklist: Parts of an Abstract

# Real Time Object Detection using Machine Learning (ML)

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**Abstract:** Real Time Object Detection Using Machine Learning is very easy and convenient to use. It is an approach that mainly aims to detect multiple objects from the given real time scenarios. One such application is Autonomous Vehicles. The system is complete in the sense that it is operational and it is tested by uploading an image or any live instance and hence detect all the objects from the input. Object Detection can be used efficiently and relates the computer vision and image processing that deals with detecting the instances of semantic objects of a class. The objects are detected and recognized faster by using an algorithm called YOU ONLY LOOK ONCE (YOLO) v3 algorithm. This algorithm detects all the objects in the given image or live instance. The training dataset which we have considered is COMMON OBJECTS IN CONTEXT DATASET (COCO). For a given image, object detection includes both classification and recognition of the objects and also localizes the objects by placing the bounding boxes around the objects with a specified accuracy.

The project has scope for improvement and enhancement. During the development of this, coding standards are followed for easy maintainability and extensibility.

## INTRODUCTION

In present days we came across to see many road accidents due to over speed, distracted driving, reckless driving, vehicle defects etc. As new inventions were going to take part one such invention is Autonomous Vehicles. The reasons behind this invention is to reduce the number of crashes on our roads. Government data identifies driver behaviour or error as a factor in 94 percent of crashes, and self driving vehicles can help to reduce driving error. High levels of autonomy have the potential to reduce risky and dangerous driver behaviors.

Object detection is one the important aspect and takes a major role in autonomous driving technology. To ensure the safe running of vehicles at high speed, real time and accurate detection of all the objects on the road is required. Hence the domain Machine Learning involves mainly four tasks such as

Hence, there are many machine learning algorithms in order to detect objects such CNN, RCNN, FCNN but all these algorithms cannot efficiently detect objects with high accuracy. So a new

# Mood Enhancing Emotion based Music Player using HAAR Cascade Classification

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## ABSTRACT

*The project “Mood Enhancing Emotion Based Music Player Using Haar Cascade Classification” is a novel approach that helps the user to automatically play music based on the emotions of user. The emotions are recognised using a machine learning algorithm namely Haar Cascade Classification. The training dataset that is used in this project is Extended Cohn-Kanade(CK+) dataset. It contains 593 vedios from a total of 123 different subjects and ranging from 18-50 years of age.The dataset has different types of emotions like disgust, anger, happy, sad, contempt,neutral. The webcam captures the image of user. Then extracts the facial expressions of the user to determine the emotion from the captured image. It compares the captured image with the trained model, then the emtion will be identified. The training process involves initialising*

*some random values for say happy or not happy for our model, predict the output with those values, then compare it with model’s predictions that were made previously. Some scientifically proven songs are gathered and are kept in a folder. According to the emotion, the music will be played from predefined folders.*

## INTRODUCTION

Music plays a very important role in enhancing an individual’s life as it is an important medium of entertainment for music lovers and listeners . Emotions play a vital role in our day-to-day life and facial expressions are the most natural way of relaying them. The ability to understand human emotions is desirable for human-computer interaction.In the past decade, considerable amounts of research have been done on emotion recognition from voice, visual behaviour.In the past decade, considerable amounts of research have been done on emotion recognition from

# Using Naive Bayes Classification to Predict Alzheimer's Disease

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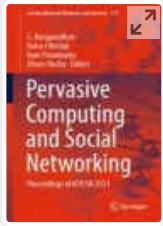
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## ABSTRACT

Alzheimer's disease is a degenerative disease that destroys the memory and normal functioning of the brain. To yet, no one test has been developed to detect this condition, and brain scans alone cannot tell whether a person is infected. Based on information from family members regarding behavioral tendencies and observations of past medical history, the physician currently believes that a person diagnosed with Alzheimer's disease. This condition may now be able to be changed due to AI and Machine Learning techniques. Data processing involves the information comes from heterogeneous and autonomous sources and evolving relationships, and keeps growing. So, in this we will take results of how much

percentage people get disease as a positive information and negative information. This project shows a Bi-processing model i.e., yes or no from the data mining perspective. Using three classification algorithms such as SVM, Decision Tree, Naive Bayes, we are processing Alzheimer percentage and values are represented as a confusion matrix. Among three classifiers, Naive Bayes classification scheme can effectively improve the accuracy and performance than previous classifications. In the dataset, we have collected 500 persons details by gathering neuropsychological test reports. Then we will predict whether the person is having Alzheimer Disease or not using Naive Bayes classifier.



**Pervasive Computing and Social Networking** pp 619–638

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## A Detailed Analysis of the CIDDS-001 and CICIDS-2017 Datasets

[K. Vamsi Krishna](#), [K. Swathi](#), [P. Rama Koteswara Rao](#) & [B. Basaveswara Rao](#)

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### Abstract

The contributions of this paper are threefold—(i) to provide a detailed analysis of two benchmark datasets CIDDS-001 and CICIDS-2017, (ii) to evaluate three prominent feature ranking methods and to quantify the closeness factor between the features and the class label through statistical analysis, and (iii) to evaluate the performance of different traditional classifiers on cloud environment using these datasets. These datasets are generated on cloud environment which contains contemporary attacks. These contributions will provide a prior knowledge to the

# Classification of brain tumours using artificial neural networks

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## ABSTRACT

Magnetic Resonance (MR) brain Image is very important for medial analysis and diagnosis. These images are generally measured in radiology department to measure images of anatomy as well as the general physiological process of the human body. In this process magnetic resonance imaging measurement are used with a heavy magnetic field, its gradients along with radio waves to produce the pictures of human organs. MR brain image is also used to identify any blood clots or damaged blood veins in the brain. A counterfeit neural organization is a nonlinear information handling model that have been effectively used preparation models for tackling administered design acknowledgment assignments because of its capacity to sum up this present reality issues. Artificial Neural Networks (ANN) is used to classify the given MR brain image having Benign or malignant tumour in the brain. Benign tumours are generally not cancerous tumours. These are also not able to grow or spread in the human body. In very rare cases they may grow very slowly. Once it is eliminated, they do not come again. On the other hand, malignant tumours are cancer tumours. These tumour cells are grown and also easily spread to other parts of the human body. Benign also known as Harmless. These are not destructive. They either can't spread or develop, or they do as such leisurely. On the off chance that a specialist eliminates them, they don't by and large return. Premalignant In these growths, the cells are not yet harmful, however they can possibly become threatening. Malignant also known as threatening. Malignant growths are destructive. The cells can develop and spread to different pieces of the body. In our proposed framework initially, it distinguishes Wavelet Transform to separate the highlights from the picture. Subsequent to separating the highlights it incorporates tumour shape and power attributes just as surface highlights are distinguished. Finally, ANN to group the information highlights set into Benign or malignant tumour. The main purpose as well as the objective is to identifying the tumours whether it belongs to Benign or Malignant.

**Section:** RESEARCH PAPER

**Keywords:** Artificial neural networks; brain tumour; classification; magnetic resonance brain image; wavelet transform

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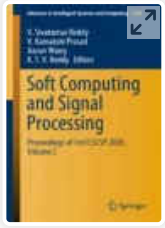
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## 1. INTRODUCTION

If any person having a brain tumour, the doctor may recommend a number of tests and procedures to identify the tumour which are present in the brain or it may be spreads into any parts of the body. If the tumour has found in the brain the doctor takes the biopsy and collecting the sample tissue and conduct the examination. In certain situations, the person may

be affected to paralysis of their body. In this situation before testing of biopsy Magnetic Resonance (MR) [1] brain images were taken to study whether the tumour may be benign tumour or malignant tumour. There are two different types of tumours mainly found in the MR brain image those are benign tumour and malignant tumour [2] [3]. The stages of the study for our proposed work are Magnetic Resonance Imaging (MRI), Feature extraction and Classification. In the following sub sections, we have described the benign and malignant tumours.



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## A New Approach in Cloud Environment to Improve Data Security Using Multiple Bits

[D. Suneetha](#), [D. Rathna Kishore](#), [P. Narendra Babu](#) & [P. Chinna Babu](#)

Conference paper | [First Online: 24 July 2021](#)

**714** Accesses

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### Abstract

Cloud computing is one of the prominent dynamic term, which provide different services for the user and also prevent the user from burdens of local storage issues.

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## Chronic kidney disease prediction using Machine Learning

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### ABSTRACT

*The feature of Kidneys is to clearout the blood and to do away with wastes from the body. All of the blood in our body passes through the kidneys several instances a day. The kidneys get rid of wastes, manage the body's fluid stability, and modify the stability of electrolytes, it's feasible to lose as a good deal as 90% of kidney function without experiencing any signs and symptoms or problem. Kidney ailment is a silent killer detection and prevention need to be achieved before the scenario receives even worse and the situation is known as continual kidney sickness also known as chronic kidney disease (CKD) or chronic renal disorder. It is essential to have powerful methods for early prediction of CKD, machine learning strategies are powerful in CKD prediction, In this paper statistics is acquired from the patients and then prediction is done whether that individual is having any continual kidney disorder or not.*

**Keywords:** Machine Learning, SVM, Random Forest, Chronic Kidney Disease, Disease Prediction

### 1. INTRODUCTION

The kidneys are one among the foremost important organs of human body; they filter waste and excess fluids from the blood. If kidneys fail to figure, waste build up within the body. Symptoms of renal failure aren't very specific to the disease. Some symptoms may include body pains, back pains, anemia, and weak bones. Some people haven't any symptoms in the least and are diagnosed by a lab test. Medication helps manage symptoms. But what if an individual doesn't have any quite symptoms, this might cause individual fatal. So detection and prevention of the disease is necessary.

Generally the disease are often identified when it crosses the initial stages and becomes severe, severity of disease may results in death, therefore the patient should get to understand about the disease in earlier stages, it's going to not be possible through the optical observation of symptoms by the doctors. Now the work is to form this process as easy as

possible to assist doctors to in identifying the disease in order that it helps to scale back the damage caused by the disease.

This paper mainly specialize in disease prediction because the disease prediction should be done as quickly as possible otherwise it shows negative results on patients health

### 2. LITERATURE REVIEW

P. Sinha compared KNN classifier and support vector machine (SVM) they used matlab in which SVM performed well that KNN [1]

K.R. Lakshmi studied the capability of kidney dialysis using Artificial Neural Network (ANN), Decision Tree, and logistic regression [2]

D. Sunil used data mining technologies such as Naïve Bayes and Artificial Neural Networks for the chronic kidney disease prediction [3]

The analysis system proposed by S. Dayanand to predict internal organ diseases with the help of support vector machine and Artificial neural network in 2015 [4]

H. Zhang investigated the performance of Artificial Neural Network (ANN) models while applying to the prediction on chronic kidney disease patients [5]

The existing system uses some traditional data mining techniques for the prediction which gave the scope for building a model that uses latest machine learning like SVM and Random forest algorithm for prediction of chronic kidney disease

### 3. FACTORS CAUSING KIDNEY DISEASE

Kidney disease occurs when a disease or condition impairs kidney function, causing kidney damage. Diseases and conditions that cause chronic kidney disease include:

- Type 1 or Type 2 diabetes
- High blood pressure



# Efficient Identification of Disaster Related Tweets From Twitter

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**ABSTRACT:** Social media platforms provide a lot of data for obtaining extra data on people's behaviour, trends, opinions, and human-impacting events such as natural catastrophes. During a crisis, social media delivers a wealth of information, including details on the incident, the feelings of those impacted, and relief activities. Twitter has grown in importance as a means of communication.

We propose automating this operation by utilizing data available on social media networks. Through the use of twitter postings created by users, we demonstrate an innovative application to study the consequences of disaster on people and society in this project. The tool may save relevant (filtered) data from Twitter and generate a thorough forecast of disaster-related tweets.

**Keywords:** Twitter, Social Media, Disasters, Users, Tweets.

## INTRODUCTION

Microblogging is a type of lightweight chat that allows users to send short messages to the rest of the online community. Twitter is one of the most well-known microblogging platforms available. For this research, we will concentrate on Twitter, which allows users to send brief messages known as Tweets, which are limited to 160 characters or less. These messages (tweets) can be sent and retrieved via a variety of methods and front-end clients, such as text messaging, e-mail, the web, and other third party programmes that use Twitter's public API.

Users are mostly using Twitter, the most popular of microblogging network, to share news, photographs, and views from crisis sites throughout the world. Twitter is mainly uncensored, widely available, and user-centric because it is real-time data created by the user community. As a result, customers have access to a more convenient, comprehensive, and cost-effective analysis approach. The difficult problem is sentiment analysis, specifically the behavior and feelings expressed by users from natural catastrophe crisis sites to globally scattered users.

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## A Fast, Dynamic method to identify attributes sets using Correlation-Guided Cluster analysis and Genetic algorithm Techniques

S. Nyamathulla, Dr. P. Ratnababu, Dr. G. Shobana, Dr. Y. Rokesh Kumar, K.B.V. Rama Narasimham

**Keywords:** Feature selection (FS), hybrid search, genetic algorithm, cluster.

### ABSTRACT

Dimensionality reduction is essential in both data mining and machine learning techniques. Reduction of the number of functions can be defined as "dimensionality." Computational expense and large amounts of data are making machine learning models challenging to use in the present environment. As the number of characteristics grows, the model becomes more dynamic, and overfitting becomes more likely. As training a machine learning model on a large number of features produces overreliance on the training data, model performance is low on real-world data, resulting in poor outcomes. Based on correlation-based cluster analysis and Genetic algorithm, this research offers a novel FS hybrid three-stage method. Two methodologies are developed in order to better pinpoint the target region of the third phase. These methodologies are a function clustering-based technique with minimal computational cost and a filter FS approach. The third stage is to find a subset of functions that provides an ideal mix of readability and functionality by way of a global readability evolutionary algorithm. Symmetrical insecurity-based removal, fast link-based clustering, and genetic algorithm: These stages are meant to increase the efficacy of a symmetrical insecurity-based removal procedure, a quick link-based clustering technique, and a genetic algorithm. For the sake of comparison, the suggested algorithm is contrasted to other FS algorithms found on openly accessible datasets in the physical world. The experimental findings shown that, with the least price of computation, the method can discover a successful function subset.

# **ADAPTIVE DIFFUSION OF SENSITIVE INFORMATION IN ONLINE SOCIAL NETWORKS**

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**Abstract** —In this paper, We introduce the time factor into the user payoff, enabling the GT model to not only predict the behavior of a user but also to predict when he will perform the behavior. Both the global influence and social influence are explored in the time dependent payoff calculation, where a new social influence representation method is designed to fully capture the temporal dynamic properties of social influence between users. Experimental results on Sina Weibo and Flickr validate the effectiveness of our methods.

## **INTRODUCTION**

The current studies on information diffusion modeling can be divided into two categories: theory-centric models and data-centric models. Theory-centric models mainly come from epidemiology, sociology and economics. The most widely-studied diffusion models of this category are the epidemic

model, the independent cascade model and the linear threshold model. Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than ACM must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission. These models are helpful for studying the information diffusion problems such as influence maximization problem [6, 4, 5]. However, they assume that the users in the network are passively influenced to spread information. Due to the lack of support from actual diffusion data, these models do not have the ability of diffusion prediction. Data-centric models are usually learned from actual information

## CREDIT CARD FRAUD DETECTION AND BEHAVIORAL PATTERN USING RANDOM FOREST ALGORITHM AND NEURAL NETWORKS

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**Abstract** — Nowadays, Credit cards are widely used for online transactions. Just by having credit card details is more than enough for making online transactions. Thus, the credit card has made online transactions more convenient and easier. However, as payments using a credit card has been increased, frauds associated with it also been increased. The enhancement in technology and availability of information has opened many doors for fraudsters to steal credit card details and do frauds. Due to these frauds, Banks, Companies, Product vendors and Cardholders are largely affected and may face huge financial loss.

### INTRODUCTION

Credit card fraud is increasing day by day. Credit card fraud can be done in both online and offline transactions. In offline transactions Physical cards are required while in online transactions the virtual cards are required for doing illegal or fraud activities. Thus these fraud activities in

credit card may lead to many fraud transactions without the knowledge of the actual users. The fraudsters are looking for sensitive information such as credit card number, bank account and other user details in order to perform transactions. In case of offline transactions the fraudsters has to steal the credit card of the user to do the transactions and for the online transactions the fraudsters has to steal the user's identity and online details to perform the online transactions. Thus the credit card fraud has become the major issue in today's technological world which has a massive problem in bank transactions. There are many fraud transactions which cannot be easily identified by the user and also by the banking authority which leads to loss of sensitive data. There are various models which are used for detecting the fraud transactions based on the behavior of the transactions and these methods can be classified as two broad categories such as supervised learning and unsupervised learning algorithm. In existing system for finding the accuracy of the fraudulent activates they have used methods such as Cluster Analysis, Support Vector Machine, Naïve Bayer's Classification etc.

## **DETECTION OF PHISHING WEBSITES USING ML**

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**Abstract** —This paper aims to review many of the phishing detection strategies recently suggested for the website. This will also provide a high-level description of various forms of phishing detection techniques. Here proposed a multidimensional element phishing recognition approach dependent on a quick discovery method by using deep learning (MFPD). In the initial step, character succession highlights of the given URL are separated and utilized for snappy characterization by profound learning, and this progression doesn't need outsider help or any earlier information about phishing. In the subsequent advance, we consolidate URL measurable highlights, website page code highlights, site page content highlights and the brisk characterization consequence of profound learning into multidimensional highlights. The

methodology can diminish the identification time for setting an edge. Testing on a dataset containing a huge number of phishing URLs and genuine URLs, the exactness arrives at 98.99%, and the bogus positive rate is just 0.59%. By sensibly changing the limit, the test results show that the discovery effectiveness can be improved

### **INTRODUCTION**

The Internet is widely used among people and it has become an inseparable part of our life. Therefore, huge amounts of data are exchanged. Those users could be more or less experienced using the web. But, nevertheless, nobody is safe from the huge threat that is available there outside. Those threats are phishing websites that are hard to differentiate from the original ones. These websites are used to collect personal and confidential user data that usually should be protected. Later, information is misused and people are experiencing consequences. Some of the consequences could be identity loss or

## Multi Scale Image Fusion through Laplacian Pyramid and Deep Learning on Thermal Images

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### ABSTRACT

Scale is an imperative parameter in image processing. Images can contain different objects and regions with variations in size as well as variations in resolutions. Appearance of objects in the image mainly depends on the scaling parameter. In order to analyse the images in a better way it is necessary to represent images in different scales because a single scale image is restricted to a fixed bounded window. To have useful information from the available images there is a necessity of representing images in a multi scale fashion. Thermal imaging means producing visible images from invisible thermal radiation that is it is a method of generating images with the help of heat given to the object. Development of thermal images took place in 1950<sup>s</sup> and 60<sup>s</sup> for the purpose of military applications. In this paper, focussed in providing advanced and enhanced fusion on thermal images by using multi scale laplacian pyramid in combination with deep convolutional neural networks. The proposed approach includes fusion method based on laplacian pyramid and deep learning on thermal images for clinical applications, The results of this method shown improved results in identifying abnormalities in the medical images with the help of seven different image metrics.. In the fields of defence and law enforcement object or person identification is needed for their work. The resultant fused image of the second method gave better image metric values in order to provide more significant visual information.

**Keywords:** Image Fusion, Deep Learning, Neural Networks, Laplacian Pyramid

### Introduction

Image fusion examination is predominantly owing to the fashionable improvements in the arenas of high resolution, robust, multi-spectral and cost in effect image sensor policy technology. Subsequently a few decades ago, with the outline Image fusion has emerged as the most advanced of these multisensory imaging techniques remained an emergent arena of examination in medical imaging, remote sensing, military and civilian avionics, night vision, concealed weapons detection, Various monitoring and protection system implementations, including autonomous vehicle navigation [6,3]. At hand has been an allocation of enhancement in enthusiastic High spatial and spectral resolution in real-time imaging systems, as well as faster sensor technology, are thriving. The elucidation for data training can be happened by an analogous intensification in the quantity of dispensation units, using more rapidly Digital Signal Processing (DSP) and greater memorial devices. This explanation conversely, can be pretty exclusive. Picture fusion algorithms at the pixel level symbolize an effective explanation to this problematic of operative allied information surplus. Pixel Level fusion effectually lessens the quantity of information that necessities to be handled deprived of any substantial loss of valuable info and also assimilates info from multi-scale images[1]. Explicit stimulation for the exploration work has derived from the requirement to progress some proficient image fusion systems, as well as enhancements to existing fusion technologies [9].



# Detecting the outliers in high dimensional datasets using poisson regression

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## ABSTRACT

Detecting an Outlier has been a critical issue in the field of machine learning. The issue is about identifying the patterns distinctly different from normal behaviors. Several algorithms have been projected to conquer the challenges as well as to improve the results in the field of outlier mining, but these methods are unable to yield potentially higher accuracy results in such environments. Now a days, developing an efficient method for detecting the outliers in a large database is a crucial task. In this research article, Poisson Regression technique is projected for outlier's detections in high dimensional datasets. The proposed methodology is realized in the open source software called Rapid miner. Here, the factors like Average Precision 0.327, Average R-Precision 0.452 are calculated using iris dataset. And also the Root relative squared error is 91.48% and relative absolute error 85.09% and Outcomes from experimental analysis illustrate that Poisson method identifies the outliers with potentially higher precision in high dimensional datasets.

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## 1. Introduction

Detecting Outliers has been creating a phenomenal interest to research community for past few years. The main focus of data mining techniques is to determine the objects/patterns that contains abnormal, inconsistent and different behaviour in the large databases, when compared to normal data objects/patterns. Due to increasing of the data from internet users and personal computers, it creates new challenges as well as opportunities for researchers. For a long period, the problem of detection of Outlier has been studied in many real-world applications across a variety of fields, including damage detection, intrusion detection, fraud detection, aviation safety and various applications in image processing. Regarding the specific application, outlier detection is a crucial task. For scenarios that require a high standard of safety, outliers indicate the abnormality conditions which could cause significant degradations of system performance.

Now a days, identification of outliers in high dimensional is the significant and research. It contains many dimensions with noisy data and detection also very difficult. And also distance between pair of variables becomes more alike. Due to more distance and inconsistent patterns accuracy automatically degraded. In this research article, Poisson Regression technique is projected for outlier's detections in high dimensional datasets.

The remainder of this research work is systematized as follows. In Segment 2, the literature work relate to outlier detection is summarized. Segment 3 examines the Poisson model. Then, Segment 4 designates the research Methodology in detail and compared experimental outcomes with other models, followed by summary and forthcoming work is described in Segment 5.

## 2. Related work

With the advancement of data innovations, the quantity of databases, and their measurement and multifaceted nature, grow rapidly. Along with the growing about the need for analysis using automation of enormous quantity of diverse organized data. For these significant factors, the networks of data mining have been extensively

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## Astrological causes for late marriage: A study

**Mamillapalli Phani Kumar and Kompalli Udaya Sri**

### Abstract

In Hinduism, ritualistic practices are inherent Samskaras, a Hindu is expected to follow at various stages of his/her life. "Marriage" is one of the samskara out of 16 samskaras available. Marriage is bliss if it happened at a proper timings. But then, it becomes curse if not done at suitable age or with correct match. Marriage is supposed to be the most sacred institution of our society. Marriage is intended to be a life long commitment. Marriage is an exclusive commitment of two individuals to each other who nurture love and mutual support. In this way they not only make a good family but contribute in the formation of a stable and a healthy society. The present study is about the astrological causes or the planetary positions which are leading the person for "Late Marriage".

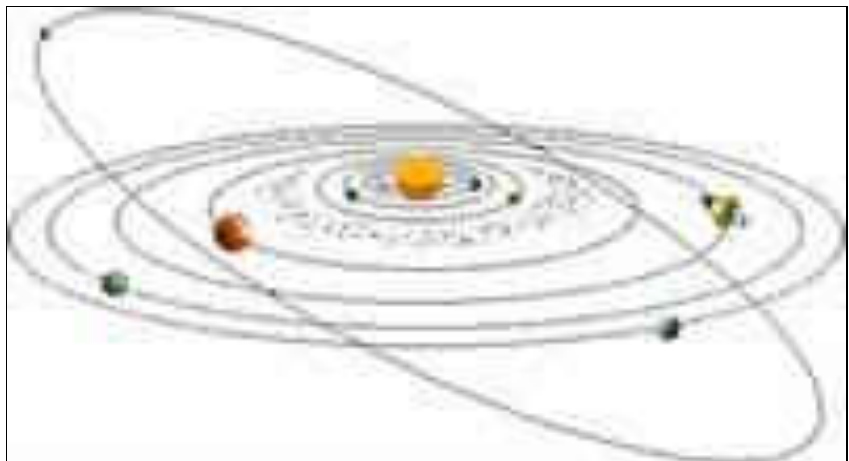
**Keywords:** astrology, marriage, late marriage, Saptama Bhava, 7<sup>th</sup> house

### Introduction

As everything old is good and everything new is bad a common saying is not appreciable. So also everything new is good and vice versa is also not acceptable. The Jyothish sastra is prominent and primitive of all the sciences. It is developing from the beginning of the creation and is evergreen.

*"Yada sukha mayuranam naganam manayo yada  
Tadvat Vedanta sastranam Jyothisham moorhanisthitam"*

Astrology sees mankind as being not only influenced by hereditary factors and the environment, but also by the state of our solar system at the moment of birth. The planets are regarded as basic life-forces, the tools we live by as well as the basis of our very substance. These planetary forces take on different forms, depending on their zodiacal position and on the way they relate to one another. The aspects formed between the planets describe these relationships, the positions of the planets in relation to the place of birth tell us of their expression in the spheres of life depicted by the astrological houses. By interpreting the roles of these players (the planets) and their qualities (the elements, signs and houses) and creating a synthesis, astrology is able to present a complete and comprehensive picture of the person and his potential, based on the natal horoscope.



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## TRUST-BASED VIDEO MANAGEMENT FRAMEWORK FOR SOCIAL MULTIMEDIA NETWORKS

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A.P., India.

**P.RAGHUVVEER** Assistant Professor, Dept. of MCA, NRI INSTITUTE OF  
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**Abstract** —In this paper, Social Multimedia Networks (SMNs) have attracted much attention from both academia and industry due to their impact on our daily lives. The requirements of SMN users are increasing along with time, which make the satisfaction of those requirements a very challenging process. One important challenge facing SMNs consists of their internal users that can upload and manipulate insecure, untrusted and unauthorized contents. For this purpose, controlling and verifying content delivered to end-users is becoming a highly challenging process. So far, many researchers have investigated the possibilities of implementing a trustworthy SMN. In this vein, the aim of this paper is to propose a framework that allows collaboration between humans and machines to ensure secure delivery of trusted videos content over SMNs while ensuring an optimal deployment cost in the form of CPU, RAM, and storage. The key concepts beneath the proposed framework consist in i) assigning to each user a level of trust based on his/her history,

ii) creating an intelligent agent that decides which content can be automatically published on the network and which content should be reviewed or rejected, and iii) checking the videos' integrity and delivery during the streaming process. Accordingly, we ensure that the trust level of the SMNs increases. Simultaneously, efficient Capital Expenditure (CAPEX) and Operational Expenditures (OPEX) can be achieved.

**Index Terms**—Social multimedia network, video streaming, trust model, and trust management.

### INTRODUCTION

A distributed system may have a common goal, such as solving a large computational problem.<sup>1</sup> Alternatively, each computer may have its own user with individual needs, and the purpose of the distributed system is to coordinate the use of shared resources or provide communication services to the users.

RESEARCH

Open Access



# Web crawling based context aware recommender system using optimized deep recurrent neural network

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## Abstract

Recommendation systems are obtaining more attention in various application fields especially e-commerce, social networks and tourism etc. The top items are recommended based on the ability of recommender system which predict the future preference out of the available items. Because of the internet, the people in the current society has too many options that's why the recommendation system is very essential. The recommendation is achieved by the particular users who predict the ratings for numerous items and recommend those items to other users. Majorly, content and collaborative filtering techniques are employed in typical recommendation systems to find user preferences and provide final recommendations. But, these systems commonly lacks to take growing user preferences in various contextual factors. Context aware recommendation systems consider various contextual parameters into account and attempt to catch user preferences appropriately. The majority of the work in the recommender system domain focuses on increasing the recommendation accuracy by employing several proposed approaches where the main motive remains to maximize the accuracy of recommendations while ignoring other design objectives, such as a user's an item's context. Therefore, in this paper an effective deep learning based context aware recommendation model is proposed which can be act as an efficient recommender system by showing minimum error during recommendation. Initially, the dataset is pre-processed using Natural Language Tool Kit (NLTK) in Python platform. After pre-processing, the TF-IDF and word embedding model is used for every pre-processed reviews to extract the features and contextual information. The extracted feature is considered as an input of density based clustering to group the negative, neutral and positive sentiments of user reviews. Finally, deep recurrent neural Network (DRNN) is employed to get the most preferable user from every cluster. The recurrent neural network model parameter values are initialized through the fitness computation of Bald Eagle Search (BES) algorithm. The proposed model is implemented using NYC Restaurant Rich Dataset using Python programming platform and performance is evaluated based on the metrics of accuracy, precision, recall and compared with existing models. The proposed recommendation model achieves 99.6% accuracy which is comparatively higher than other machine learning models.

**Keywords:** Context aware recommendation, Web crawling, User preference vector, Similarity measure, Deep recurrent neural network

## Social Distancing Detection Detect Humans in the Frame with YOLO

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### Abstract:

The ongoing COVID-19 corona virus outbreak has caused a global disaster with its deadly spreading. Due to the absence of effective remedial agents and the shortage of immunizations against the virus, population vulnerability increases. In the current situation, as there are limited vaccines available; therefore, social distancing is thought to be an adequate precaution against the spread of the pandemic virus. The risks of virus spread can be minimized by avoiding physical contact among people.

The purpose of this work is, therefore, to provide a deep learning platform for social distance tracking using an overhead

perspective. The framework uses the YOLOv3 object recognition paradigm to identify humans in video sequences. The transfer learning methodology is also implemented to increase the accuracy of the model.

In this way, the detection algorithm uses a pre-trained algorithm that is connected to an extra trained layer using a noverhead human dataset. The detection model identifies people using detected bounding box information. Using the Euclidean distance, the detected bounding box centroid's pairwise distances of people are determined. To estimate social distance violations between people,



# Multivariate Forecasting using Natural Language Processing to Gain insights of Social Media Data

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## ABSTRACT

*Detection and classification of events in social media is different from detection and classification in other text format. The rationale why detection of events in social media streams is tougher is brief and noisy content, diverse and rapidly changing topics, and enormous volumes of knowledge. Many people within the world use social media to remain connected to their friends, relations and colleagues through their computers and mobile phones. Due to their real-time existence, social media like Facebook, Snapchat, Whatsapp and Twitter have recently received tons of attention. The proliferation of social media exposes many opportunities for research. For several reasons, social media information might be used, like monitoring accidents, predicting events, and even early warning systems. Messages posted on Twitter revealed everything from everyday tales to the new news and events at the local and global level. Event detection and classification has become a crucial task in social media platforms. It facilitates the exploration and navigation of events with early preventive action plans. The most challenges are the features of short / conversational, heterogeneous and live social media data. Online social network apps like Facebook, Weibo, have played a key role within the lives of individuals. Now days there's rapid development of social media platforms and Twitter is one among the social media's most famous platforms. This project focuses on collecting numerous tweets from twitter, preprocessing the tweets and therefore the tweets are classified into specific categories by using Decision tree classifier.*

## 1. INTRODUCTION

Detection and classification of events in social media is different from detection and classification in other text format. The reason why detection of events in social media streams is more challenging is short and noisy content, diverse and rapidly changing topics, and large volumes of data. Millions of people in the world use social media to stay connected to their friends, family members and colleagues through their computers and mobile phones. Because of their real-time existence, social media like Facebook, Snapchat, Whatsapp and Twitter have recently received a lot of attention. The proliferation of social media opens up many

opportunities for research. For many reasons, social media information could be used, such as monitoring accidents, predicting events, and even early warning systems. Messages posted on Twitter (tweets) revealed everything from everyday tales to the latest news and events at the local and global level.

Event detection and classification has become an important task in social media platforms. It facilitates the exploration and navigation of events with early preventive action plans. The main challenges are the features of short / conversational, heterogeneous and live social media data. Online social network apps like Facebook, Weibo, have played a key role in the lives of



## Design Of Robust Hybrid Recommender System For Optimal Business Decision Model In E-Commerce Digital Systems

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<sup>2,3,4,5</sup>Student, Department of CSE, NRI Institute of Technology, Vijayawada, A.P., India.

### Abstract

Now a day's many e-commerce applications amount of data like products and its details, images, description, reviews etc. Recommender systems make life easier by making recommendations. In e-commerce, often some products doesn't get sold or less profits are earned from the product. Identification of the reason behind the less profits from the product, was a difficult task. So we are proposing a hybrid recommender system that helps the item manufacturer to improve his product. We built a hybrid recommender system by combining various regression algorithms along with backward elimination, CAR(Context-Aware Recommendation)model, user to user collaborative filtering. Finally the optimal business decision is taken by the manufacturer.

### I. Introduction

Recommender systems are software tools used to generate and provide suggestions for items and other entities by exploiting various strategies. Hybrid recommender systems combine two or more recommendation strategies in different ways to benefit from their complementary advantage. In this project we combine regression algorithms with backward elimination, CAR model and User to User collaborative filtering model.

### II. Existing System

Recommendation algorithms are best known for their use on e-commerce Websites, where they use input about a customer's interests to generate a list of recommended items. Many applications use only the items that customers purchase and explicitly rate to

represent their interests, but they can also use other attributes, including items viewed, demographic data, subject interests, and favorite artists.

At Amazon.com, we use recommendation algorithms to personalize the online store for each customer. The store radically changes based on customer interests, showing programming titles to a software engineer and baby toys to a new mother. The click-through and conversion rates — two important measures of Web-based and email advertising effectiveness — vastly exceed those of untargeted content such as banner advertisements and top-seller lists.

☆☆☆☆ Beautiful ♥♥  
Reviewed in India on 23 September 2021

Verified Purchase

TooPro- 1. Slim & sleek design

2. Better front camera

3. Good battery life, one day for your daily activity

4. Good sound quality - surround sound

Cons-

1. Needs more improvement in fast charging as only 18 watt fast charging given, can charge phone in 1.5 hrs

2. Needs quad camera as triple camera given in back side (picture quality in rear camera was not good)

3. Little bit heavy

4. Needs AMOLED display at this price range as led display is given

5. Needs atleast 90 hz refresh rate as it supports only 60 hz

In the existing system customer reviews are stored in textual format and it is difficult task to understand which context is not satisfied by the customer by giving overall rating.

### III. PROPOSED SYSTEM

Unlike the existing recommender system algorithms we are proposing a new recommender algorithm to improve the sales of the product manufacturer.

Implementation of real-time data analysis on the dataset helps in extracting the useful information like: The reason behind the less sales of product and which context leads to less sales of a product.

Anyone can register on this application. Through this application we can collect the reviews of the user in a context based way. Based on the ratings of the



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December 19, 2021

Dear, Chinta Venkata Murali Krishna , Dr.G.Appa Rao , Dr.S.AnuRadha ,K.V.Daya Sagar

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**Manuscript Title:** Prediction Of Overall User Gratification In European Continent Tourism Domain

Thanks for submission of your work with us.

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Regards,  
IOP Conference Series: *ECS Transactions*  
Online ISSN: 1938-5862  
<https://iopscience.iop.org/journal/1938-5862>



# Detecting Fake Faces In Smart Cities Security Surveillance Using Image Recognition And Convolutional Neural Networks

Daya Sagar K.V.<sup>1</sup>, Dr.DBK Kamesh<sup>2</sup>, T. Srinivasa Rao<sup>3</sup> and Chinta Venkata Murali Krishna<sup>2</sup>

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## Abstract

Smart cities are planned to have millions of Internet-connected sensors and devices. Sensors can create a huge amount of data in a range of applications. In modern urban environments, quality of life in a Smart City is heavily dependent on the safety of its residents. For a long time, public safety has been a major source of anxiety. For everyone, stopping a breach of private space security has become a priority. Traditional security systems raise an alarm whenever they detect a breach of safety. It is possible to find a breach of an advanced model by using image processing and a deep analysis of convolutional neural networks to classify images. Because of the ability to reduce complicated aspects from photographs using exact algorithms for facial and body detection. The results of specific machine learning, such as deep learning techniques are outstanding. The processing time of the proposed system is reduced, and true rate of face recognition is 72.7% under varying distance from 2m to 5m. This paper aims to show that when used together the security sector, the two can achieve more than might have been previously assumed models.

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# Prediction of User Overall Gratification in Indian Tourism Domain on Hotel Classes and Trip Types

Chinta Venkata Murali Krishna<sup>1</sup>, G. Appa Rao<sup>2</sup>, S. AnuRadha<sup>2</sup> and K.V. Daya Sagar<sup>2</sup>

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<sup>1</sup> GITAM(Deemed to be University

<sup>2</sup> n/a

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## Abstract

The revenue and economy of the country in the past years significantly depend on tourism. The hotel sector's role is even more prominent in tourism. The plans and decisions of tours of users can be recommended with the collaboration of E-commerce and hotel management. The traveling proportion of the population is getting minor over the months due to the worst impact of COVID-19. Thus not just the tourism, the hotel sector is also in vain in terms of revenue. Users' past experiences and opinions help boost their satisfaction levels by providing recommendations and retaining them. The present scenario and stats prove that the selection and decision of hotels have enormous support on user reviews. This research article tries to find and analyze the various aspects that contribute more towards the gratification levels of users in Indian top tourism city hotels listed by the Master and VISA Inc. survey. This survey focuses on the item-item collaborative filtering and regression techniques based on TripAdvisor reviews of recent times. Once the dimensions are known, it helps in improving them and thus even enhances the ratings of Asian continental hotel management. This study proves that the online travel platform helps obtain reviews from users to maintain the travel recommender systems.

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December 19, 2021

Dear, Dr.DBK Kamesh, A.Prakesh, Dr.K.V.Daya Sagar, T.Srinivasa Rao, Chinta Venkata  
Murali Krishna

We would like to inform you that your manuscript id ECS-522 has been accepted for publication  
in *ECS Transactions* is the official conference proceedings publication (**ISSN: 1938-5862**),

**Manuscript Title:** Real-time Detection of Anomalies on Performance Data of Container  
Virtualization Platforms

Thanks for submission of your work with us.

A handwritten signature in black ink, appearing to be 'Murali Krishna', is written above the closing text.

Regards,  
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Online ISSN: 1938-5862  
<https://iopscience.iop.org/journal/1938-5862>



## COVID-19 FUTURE FORECASTING USING SUPERVISED MACHINE LEARNING MODELS

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**U.NIHARIKA, Y.MANASA, P.RAVI KISHORE, K.SUMANTH** Student, Department of CSE, NRI INSTITUTE OF TECHNOLOGY, Vijayawada, A.P., India.

### ABSTRACT

Machine learning (ML) based forecasting mechanisms have proved their significance to anticipate in perioperative outcomes to improve the decision making on the future course of actions. The ML models have long been used in many application domains which needed the identification and prioritization of adverse factors for a threat. Several prediction methods are being popularly used to handle forecasting problems. This study demonstrates the capability of ML models to forecast the number of upcoming patients affected by COVID-19 which is presently considered as a potential threat to mankind. In particular, forecasting models, such as polynomial regression (PR) and support vector machine (SVM) have been used in this study to forecast the threatening factors of COVID-19. Three types of predictions are made by each of the models, such as the number of newly confirmed cases, the number of deaths, and the number of recoveries for the upcoming days. The results produced by the study proves it a promising mechanism to use these methods for the current scenario of the COVID-19 pandemic.

### INTRODUCTION

Machine learning (ML) has proved itself as a prominent field of study over the last decade by solving many very complex and sophisticated real-world problems. The application areas included almost all the real-world domains such as healthcare, autonomous vehicle (AV), business applications, natural language processing (NLP), intelligent robots, gaming, climate modeling, voice, and image processing. ML algorithms' learning is typically based on trial and error method quite opposite of conventional algorithms, which follows the programming instructions based on decision statements like if-else. One of the most significant areas of ML is forecasting, numerous standard ML algorithms have been used in this area to guide the future course of actions needed in many application areas including weather forecasting, disease forecasting, stock market forecasting as well as disease prognosis. Various regression and neural network models have wide applicability in predicting the conditions of patients in the future with a specific disease. There are lots of studies performed for the prediction of different diseases using machine learning techniques such as coronary artery disease, cardiovascular disease prediction, and breast cancer prediction. In particular, the study is focused on live forecasting of COVID-19 confirmed cases and study is also focused on the forecast of COVID-19 outbreak and early response. These prediction systems can be very helpful in decision making to handle the present scenario to guide early interventions to manage these diseases very effectively.

This study aims to provide an early forecast model for the spread of novel coronavirus, also known as SARS-CoV-2, officially named as COVID-19 by the World Health Organization (WHO). COVID-19 is presently a very serious threat to human life all over the world. At the end of 2019, the virus was first identified in a city of China called Wuhan, when a large number of people developed symptoms like pneumonia. It has a diverse effect on the human body, including severe acute respiratory syndrome and multi-organ failure which can ultimately lead to death in a very short duration. Hundreds of thousands of people are affected by this pandemic throughout the world with thousands of deaths every coming day. Thousands of new people are reported to be positive every day from countries across the world. The virus spreads primarily through close person to person physical contacts, by respiratory droplets, or by touching the contaminated surfaces. The most challenging aspect of its spread is that a person can possess the virus for many days without showing symptoms. The causes of its spread and considering its danger, almost all the countries have declared

**Journal of the Oriental Institute**  
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**HAND GESTURE MUSIC CONTROLLER USING TENSORFLOW**

**LAKSHMI NAIDU THATIKONDA, MOUNIKA KODALI, KALYAN KANIKELLI, YUVA VENKATA BHARGAV ATTI** Student, Department of CSE, NRI INSTITUTE OF TECHNOLOGY, Vijayawada, A.P., India.

**Mr.B.DASARADHA RAM** Associate professor, Department of CSE, NRI INSTITUTE OF TECHNOLOGY, Vijayawada, A.P., India.

**ABSTRACT**

This project is a novel approach to help the user to control the music player using Hand Gestures of the user. The webcam captures the user's hand gestures. These hand gestures are then extracted and processed. According to the gesture of the user, the music player will be automated to its working. of this, coding standards are followed for easy maintainability and extensibility.

By keeping mind that today we are using the music controllers using the Keyboards, Mouse etc... For making the operation of the music controller easy, we are now presenting this music controller, that shows the system for the hand gesture that made as the basis of the detection of the features that are based on the data that we have processed before they are like shape based features like the orientation, thumb in terms of raised, thumb in terms of folded fingers of the hand, status of the fingers that are placed and the location of the image. By this, one can do the simple gesture of the movement of hand in front of the webcam, or can simply wave that which can turn the switch or pause the music player, move to next song, move to previous song that was being played by the person. Hence we introduced the Hand gesture music controller using Tensor-flow.

**INTRODUCTION**

Gesture recognition is a computer science and the language of technology that made as the goal for interpreting human gestures by mathematical algorithms. It is just like the Chief John Anderton(played by Tom Cruise) that he controls the computer by the deftly moving his hands around in a 3D space that has provided by the system.

In the present days as Technology has been developed, people more often depending on the computers only. To perform any task, Keyboard and mouse are the input devices used widely that are used for the interaction of user with computer. For that purpose the people who are in need spends time more in front of the computers only, because of this situation people are affected by the health problems. As an alternate method we can use the body language and the signatures that make the work of a person easy because of the vision, synaptic interactions that are initiated during the functioning of the brain that leads to the development.

For this scenario here we have utilized the web camera that is present on the system to capture the image. By taking the input that has been used can be static hand gesture that uses only single image that can be processed at the end of the input classifier. The process of the pre-processing can be applied here for the removal of the Background noise. The segmented hand can be processed for the extraction of the features of the hand gestures. Here we trained a convolutional neural network(CNN) that can be used to match the features of the hand gesture of the people. The output that is present in the trained model can be used to perform the corresponding action on the music controller.

## CROP YIELD PREDICTOR

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### ABSTRACT

Agriculture is one of the prominent occupations in India. The agriculture has a major role in growing India's economy. Machine learning can act as a great advantage in the agriculture sector by choosing a good crop that can be cultivated at a certain place and in particular season for a better yield. This paper presents the issue on predicting the crop yield by performing various algorithms of machine learning. The results of these algorithms are compared based on accuracy percentage. The prediction of crop yield made by these machine learning and deep learning algorithms can be used by a farmer to decide which crop can be grown to get the maximum crop yield by taking various parameters like season, crop, area into consideration.

### INTRODUCTION

The agriculture has an important role in growing India's economy. [2]. India ranks second in agriculture sector in Indus Valley Civilization Era. Agriculture and some other sectors make 15.4 percent GDP of the country which is a very great amount. India takes first place net cropped area in the country. Agriculture is a great source of income since decades and also plays an important role in the overall economy of the country. Data Mining has emerged as a research field in crop analysis. Yield prediction is a prominent phase in agricultural. Crop prediction is used to predict the best crop by considering various parameters.

### EXISTING SYSTEM

There was a time on the earth where the purity of nature is on its heights. Soil on every land is fertile, water in every water body is clean and most importantly the seasons in environment are perfect on their time. Those were the times when farmers need to think and analyze a lot to grow a crop. Every crop grown on a certain time and season with proper care would be a great success. But the present is not same as past. Soil and water are not enough for the farmers to grow a crop with a good yield. Farmers are facing many problems in growing a crop due to inconsistency in the environment. We have a lot of practical examples of farmer decided to end their life due to this effective issue.

### PROPOSED SYSTEM

Since it's we who are responsible for this situation of inconsistency, we need to take the responsibility of bring back the times where yield of a crop is maximum. Machine learning is a good technology to integrate it with the agriculture sector for predicting the crop yield by which a farmer can be able to decide the crop that can be grown with maximum yield based on the various parameters like crop, year, season, area and etc. Recurrent neural network (RNN), Long short-term memory (LSTM), Feed forward neural network and decision tree algorithms are applied to train the model. Dataset containing the details of various crops grown in the Indian districts in various seasons from the year 1994 – 2012 are used for the training process of the model which is tested later with the test data. The results of these algorithms are compared based on accuracy percentage. This system is completely a new strategy of producing agricultural crop management.



## E-VOTING FOR UNIVERSITIES USING FACE RECOGNITION

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### ABSTRACT

This report describes an online voting system designed to meet the needs of colleges and universities. Voting is a widely spread, democratic way of making decisions and can be used for electing student presidents and class representatives at the college level. The main objective of the proposed system is to develop a more secure and user-friendly voting system compared to the existing methods. The process of voting is critical in terms of safety and security. The proposed system allows the voters to scan their faces, which is then matched with the already saved images within the database. There is a high chance that the voter's choice to be revealed in the traditional system, which is not the case in this proposed system. By using face recognition, it provides enough security to eradicate the dummy votes. The system also provides clear visualization of data regarding the percentage of total votes cast, the percentage of votes each party secured, and the final winner in the election.

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**BOOSTING CLASSIFICATION TECHNIQUE FOR PREDICTION OF TONSILS DISEASE IN MACHINE LEARNING**

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**ABSTRACT**

Tonsils is a disease occurring mostly in human beings as this disease may take to the other effects. Now a days, a detection of tonsil grand exploits medical doctors diagnosis to check on oral cavity. Medical data are highly dimensionally and sparingly characterized by the difficult use of traditional statistical methods and therefore classification and prediction-based machine-learning algorithms are used. In this, we are proposing boosting classification technique for prediction of tonsils disease. In this, the entire project works on how accuracy and how efficient that the boosting classification technique works on.

**INTRODUCTION**

**Parts of an Abstract**

**Motivation:**

Machine learning (ML) has had tremendous impacts on numerous areas of modern society. For example, it is used for filtering spam messages from text documents, such as e-mail, analyzing various images to distinguish differences, and extraction of important data from large datasets through data mining. ML makes it possible to uncover patterns, construct models, and make predictions by learning from training data<sup>1,2</sup>. ML algorithms are used in a broad range of domains, including biology and genomics<sup>3,4</sup>. Deep learning (DL) is a subset of ML that differs from other ML processes in many ways. Most ML models perform well due to their custom-designed representation and input features. Using the input data generated through that process, ML learns algorithms, optimizes the weights of each feature, and optimizes the final prediction. DL attempts to learn multiple levels of representation using a hierarchy of multiple layers<sup>5</sup>. In recent years, DL has overtaken ML in many areas, including speech, vision, and natural language processing<sup>1,6</sup>. DL and ML are also increasingly used in the medical field, mainly in the areas of ophthalmology and speech<sup>3,7</sup>. The deep neural network (DNN) is a type of DL that uses multiple hidden layers<sup>8</sup> and is renowned for analysis of high-dimensional data. As bioinformatics data are usually high dimensional, DNN may be a suitable model for bioinformatics research<sup>2,5,9</sup>. In addition to image and text data from medical charts generated in hospitals, various types of laboratory data must be analyzed, which are mostly composed of numbers. However, very few studies have applied DNN to structured numerical medical data.

**Problem Statement:**

**Approach:**

In this, original data is partitioned into k subsets for probability score computation. Probability based class wise distribution score is computed to each instance in the kth subset of medical data. Here, isolation score is computed to each average path of the isolation tree. This score is used to check the outliers in the medical data for data transformation process.

**EXISTING SYSTEM**

Several Machine learning algorithms have been used in the past for classification techniques. K-Nearest Neighbours (KNN) and Support Vector machines (SVM) are widely used. Neural Networks have been observed to obtain a higher accuracy for classification. Also, Neural

**NETFLIX RECOMMENDATION AND ANALYSIS USING COLLABORATIVE  
FILTERING**

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**ABSTRACT**

Now a day's recommendation system changes the searching style. All the related requirements are done by the recommendations. This plays a main role in online marketing. There are many types of recommendations areas such as books, music, articles, videos, e-commerce's, news etc. In this we are doing movie recommendation system based on the Netflix data. Understanding speed is also important for people so that we are making visualizations. These visualizations also play a critical role because of high usage in pictorial format. Human brain can easily grasp and high remembering power when they see some things rather than reading.

These recommendations and graphical formats are very interesting to people to come and spend more time. Recommendations are done by the ratings of users. Compare the user between the all users and give the accurate output as the movie id and as per movie name.

**INTRODUCTION**

Data is buzz word for now a day. Rapidly increased of online usage gives more data according to person. And also, many applications or any technologies we take it surely depends on the data. Based on data here we are going to recommend the movie names to user. Before going to further discussion what is the starting point of Netflix we are going to explain.

Netflix initially started as a DVD rental service in the year 1998. It mostly relied on services to deliver its DVDs to the users. That days it goes with more profits. Slowly usage of DVDs is reduced because of the internet usage. This results in heavy loss to company.

In 2010 Netflix stated online streaming. All are very comfortable at Netflix with application. In 2014 the growth of the company is started. They start increasing their project and expand their business. They store the data in database. The database consisting of movies information. They implement new ideas and increase the customers. They give the service in the form of recommendations.

Recommendations mainly deals with classification method in machine learning. As we know the supervised machine learning algorithms can be classified into regression and classification. Classification is mainly used to predict the categorical values. In classification it observes the data and classifies new observations into classes or groups. In this classification we use collaborative filtering technique for recommendations.

Collaborative filtering is a technique used by recommendation system, collect the taste preferences from the previous data on analyzing and recommend according to user. In collaborative filtering, we are using item-item based system. In this type we are taking based on the similarity between the items calculating the rating given by user. Compare the one movie with all other movies and based on the similarity matrix we are giving recommendations.

ANALYSIS AND PREDICTION OF CRIME IN A REGION

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**ABSTRACT**

Crime analysis and prediction is a systematic approach for identifying and analyzing patterns and trends in crime. By using the concept of Data Mining, we can extract previously unknown useful information from unstructured data. Supervised learning uses data sets to train, test, and get desired results on them whereas Unsupervised learning divides inconsistent, unstructured data into classes or clusters. Decision trees, Naive Bayes, and Regression are some of the supervised learning methods in data mining and machine learning on previously collected data and thus used for predicting. With the increasing advent of computerized systems, crime data analysts can help Law enforcement officers to speed up the process of solving crimes. Even though we cannot predict who all may be the victims of crime but can predict the place that has probability for its occurrence. This system can also be used by any crime department for reducing crime and solving crimes with less time.

**INTRODUCTION**

Day by day the crime rate is increasing considerably. Crime cannot be predicted since it is neither systematic nor random. Also, modern technologies and hi-tech methods help criminals in achieving their misdeeds. According to Crime Records Bureau crimes like burglary, arson, etc have been decreased while crimes like murder, sex abuse, etc have been increased. Even though we cannot predict who all may be the victims of crime but can predict the place that has probability for its occurrence. The predicted results cannot be assured of 100% accuracy, but the results show that our application helps in reducing the crime rate to a certain extent by providing security in crime-sensitive areas. So, for building such a powerful crime analytics tool we have to collect crime records and evaluate them. It is only within the last few decades that the technology made spatial data mining a practical solution for wide audiences of Law enforcement officials which is affordable and available. Since the availability of criminal data or records is limited, we are collecting crime data from various sources like websites, news sites, blogs, social media, RSS feeds, etc. This huge data is used as a record for creating a crime record database. So, the main challenge in front of us is developing a better, more efficient crime pattern detection tool to identify crime patterns effectively.

**EXISTING SYSTEM**

As far as now there is no proper existing system for this, but there is a lot of data which may be of grouped data or ungrouped data. This data is available in many police stations so when the data is required one must dig into it manually. So, this takes a lot of time in searching and gathering information. And all the old data is not digitalized it will be present as a hard copy. This record is only accessible to limited people. There are different techniques to solve a crime but there is no proper prediction system so we cannot find when the crime is going to happen. Storing the data in a physical driver is so difficult because of the size of the data. So, the large amount of data maintenance is a big problem; searching and analyzing the particular data manually is practically not possible.

**PROPOSED SYSTEM**

In the proposed system we introduce an application that will analyze and predict the crime that occurs in the future. This system works mainly on the types of crimes of a particular region. As the data varies from region to region the analysis and prediction will also be different. All the previous data



## PERSON IDENTIFICATION ATTENDANCE USING LOCAL BINARY PATTERN HISTOGRAMS

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### Abstract:

The most arduous task in any organization is attendance marking. In this project we proposed an automated attendance management system which tackles the predicament of recognition of faces in biometric systems subject to different real time scenarios such as illumination, rotation and scaling. This model incorporates a camera that captures input image, an algorithm to detect a face from the input image, encode it and recognize the face and mark the attendance in database and convert it into PDF file. The camera captures the image and sends it to the server where faces are recognized and attendance is calculated on basis of it. We used Histogram of Oriented Gradients (HOG). One of the most popular and successful "person detectors" out there is the HOG with LBPH (a type of machine learning algorithm for classification) approach to recognize HOG descriptors of people.

### INTRODUCTION

Person Identification based attendance system is a process of recognizing the students face for taking attendance by using face biometrics based on high - definition monitor video and other information technology. A Person Identification attendance system uses facial recognition technology to identify and verify a person using the person's facial features and automatically mark attendance. The software can be used for different groups of people such as employees, students, etc. The system records and stores the data in real-time.

### Checklist: Parts of an Abstract

- **Motivation:**

The main motivation for this project was the slow and inefficient traditional manual attendance system. So, why not make it automated fast and much efficiently. Also, such face detection techniques are in use by the department of a criminal investigation where the usage of CCTV footages and detecting the faces from the crime scene and comparing them with criminal database to recognize them. It is also becoming as a feature of daily life in China, where authorities are using it on the streets, in subway stations, and at airports.

### PROBLEM STATEMENT

Attendance is an important part of daily classroom evaluation. At the beginning and ending of class, it is usually checked by the teacher, but it may appear that a teacher may miss someone or some students answer multiple times. Face recognition-based attendance system is a problem of recognizing face for taking attendance by using face recognition technology based on high definition monitor video and other information technology. The concept of person identification is to give a computer system the ability of finding and recognizing human faces fast and precisely

- **Approach:**

Use of face recognition for the purpose of attendance marking is the smart way of attendance management system. Face recognition involves two steps, first step involves the **detection of faces** and second step consist of identification of those detected face images with the existing database.



# Women Safety in Indian Cities Based on Tweets Using XG Boost Algorithm

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## ABSTRACT

*Ladies are encountering a good deal of savagery and badgering go into the open spots in numerous urban communities beginning from following to inappropriate behaviour or attack. This project centres round the job of online media in advancing the safety of girls in Indian urban communities, given the exceptional relation to the task of web based media sites or applications. Now-a-days most people are using social networking sites to precise their feelings and if any women feel unsafe in any area then she's going to express negative words in her post/tweets/messages and by analysing those messages we will detect which area is more unsafe for women's. This might be very beneficial to extend safety in dangerous areas for ladies travellers.*

*The main objective of our project is to investigate the assorted types of violence and threats against the ladies by making use of preferred and powerful social media data and by using the concept of machine learning. The quantity of likes, tweets, comments, blogs and post on the actual incident against woman may be used for this analysis. These Social networking sites collectively update the feedback about particular incident and it'll be exhibit under the discussion of the many people. This can give the world picture of assorted crimes against woman and showcase how the intention framed and motivation behind the scenario. This data would be helpful to safeguard the lady from the unlikely violence against them within the society.*

## 1. INTRODUCTION

In India ladies are revered by individuals regarding them as goddesses where as there are expanding number of savagery against ladies. The brutality against ladies has expanded by numerous folds because of the more prominent openness of ladies in each field of life. Wrongdoing against ladies like assault, corrosive tossing, endowment killings, honour killings and constrained prostitution of little youngsters has been accounted for in India. The examination across most mainstream Metropolitan urban areas of India including Delhi, Bangalore and Mumbai shows that ladies feel risky while going out to work or while going out in the open vehicle and so on, true insights show a

sensational expansion in the quantity of revealed wrongdoings against ladies.

Nowadays women are experiencing plenty of violence like harassment in places at several cities. This starts from stalking which then results in abusive harassment or also called abuse assault. during this project we mainly concentrate on the role of social media which may be wont to promote the security of girls in India, given the special relevancy the participation of the many social media websites or applications like Twitter, Facebook and Instagram platforms. This project motivation is to develop the responsibilities among the people on the varied parts of

## Random Forest Modeling for Intrusion Detection System

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### ABSTRACT

The primary goal of this research is to identify the attacks discovered on the system. Technology is been rising very quickly in present scenario. As a result, everyone wants their data or files to be safe and secure. However, several issues such as confidentiality, integrity, and availability are being raised. As a result, network attacks are the most serious dangers. Intruders can simply get access to the system and steal information. Internal attackers, who are genuine users, can attack the system from within, and it is extremely difficult to detect the attacks.

Probing, Remote to User (R2L), Denial of Service (DoS), and User to Root (U2R) attacks are examples of network attacks that can have a big impact on big systems. As a result, an intrusion detection system scans traffic travelling through computer

systems on a network for malicious activities and known threats, and issues alerts when it discovers them. To guard against malicious traffic, all machine learning methods can be devised and deployed with the intrusion system. To increase classifier performance and shorten detection time, the "KDDcup 99 Dataset" is used to collect all of the data, and pre-processing and feature selection techniques are applied to the dataset.

### INTRODUCTION

In Computer attacks are expanding not just in number but also in variety as the Internet continues to grow. Industry, business, and different aspects of human life all use computer networks. As a result, IT managers must focus on establishing trustworthy networks. On the other hand, the rapid growth of information technology has generated a lot of challenges in building a reliable network, which is a difficult task. There are numerous



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# SPEECH EMOTION RECOGNITION USING RECURRENT NEURAL NETWORK

D.P.C.L. Gayathri, M. Sushmitha, G. Durga Prasad, M. Tharun Jamal Kumar, CH. Surya Kiran

## ABSTRACT

Speech Emotion Recognition is a project that identifies the emotion of a person based on his/her voice. This project is based on the Recurrent Neural Network(RNN), which uses different modules for emotion recognition. The classifiers are used to identify various emotions namely happiness, anger, sadness, disgust, fear, neutral state and surprise.

In this there will be a recorded voice of a person and our system identifies the emotion from that recorded audio. Various features are extracted from the voice using the LIBROSA package of language python. Our system uses the same phenomenon that animals like horses and dogs use to understand human emotion. It analyzes the audio files in WAV format and returns the intended outcome i.e. the emotion.

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# Face Mask Detection using Opencv

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## ABSTRACT

*Coronavirus pandemic has quickly impacted our everyday life disturbing the world exchange and developments. These virus transmitted through droplets from one person to another person easily. In order to prevent this spreading of virus almost all of us need to wear a mask. Wearing a defensive facial covering has turned into another ordinary. Sooner rather than later, numerous public specialist co-ops will request that the clients wear veils accurately to profit of their administrations. Therefore, facial covering identification has turned into a pivotal undertaking to help worldwide society...*

*So our web application developed by using the methods open cv and tensor flow. Opencv which detects faces of a person and tensor flow detects whether the person is wearing a mask or not. This methods help us to detect whether the particular person is wearing a mask or not. If the person is not wearing a mask then the system finds out the particular person details from the database and then it sends a warning text message to the Admin of the institute who is monitoring whether the person wearing the mask or not.*

## 1. INTRODUCTION

Covid 19 affects Many people in different ways. Most covid 19 affected people will develop mild symptoms to moderate illness and recover without hospitalization. The covid 19 pandemic severe affect on the social and economic trade around the world these pandemic disturbed the studies of the Young people are particularly vulnerable to the disruptions the pandemic has caused, and many are now at risk of being left behind in economic, education moments and health and wellbeing during a crucial stage of their life were develop By using mask we can protect ourself from virus. The development of an solution to detect if the person is wearing a face mask and allow their entry would be great help to the society.

We cannot keep an eye on every person whether they are wearing a mask or not while they are coming to work. Therefore the need of face mask detection takes place. In this model we are using the Convolutional Neural Network. It is a deep neural network model used for analyzing any visual imagery. It takes the image data as input, captures all the data, and send to the layers of neurons. It has a many layer, which processes which gives the output that is the prediction output of the image.

In this project we are maintaining dataset. The dataset consists of the attributes like Name of the person, image of the person.

In our web application we are using Opencv. It is an open-source library which is primarily used for



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Username

Password

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KEYWORDS

Cloud Computing, Access Control, Security Encryption, Encryption Techniques. Access control, attribute-based encryption (ABE), disruption-tolerant network (DTN), multi authority, secure data retrieval, CP-ABE. Adaptive Voltage Control, Distributed Generation System (DGS), Stability Analysis, Standalone Operation, Uncertainties, Voltage Source Inverter Attribute-Based Access Cloud computing, searchable encryption, privacy-preserving, keyword search, ranked search Cloud storage, data sharing, key-aggregate encryption, Public Key Encryption. Cryptography, Key Management, Group Key Agreement, Broadcast Encryption. Data alignment, data annotation, web database, wrapper generation Data alignment, data annotation, web database, wrapper generation. Data deduplication, Confidentiality, Hybrid cloud, Authorized Duplicate check, Authorization. Deduplication, authorized duplicate check, confidentiality, hybrid cloud. Digital signature, digital

## DATA SECURITY USING STEGANOGRAPHY THROUGH MEDIA FILES

Burri Yaswanth Sai, Kolli Greeshma, Gorijavolu Sai Keerthi, Meer Kamal Arif, B. Dasaradha Ram

### ABSTRACT

Although cryptography and steganography can provide data security, each of them has a problem. The problem with cryptography is that the cipher text looks meaningless, so the attacker will interrupt the transmission or make more careful checks on the data from the sender to the receiver. In steganography, once the presence of hidden information is revealed or even suspected, the message becomes known. According to this paper, a merged technique for data security is proposed using both cryptography and steganography techniques to improve data security. Therefore, two levels of security will be provided using the proposed hybrid technique. In addition, the proposed technique provides high embedding capacity and high-quality images and videos.

Cryptography means encrypting the message using a symmetric key and decrypting the message using the same key. Steganography is the art of hiding the fact that communication takes place by hiding the information in other media files. So, encrypting the message and hiding that encrypted message in the media file is called double security providing. This project hides the message in the media file.

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There are currently no refbacks.

## STOCK FORECAST USING DECISION TREE AND LINEAR REGRESSION

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### ABSTRACT

In financial and academic research, stock price forecasting is a popular and essential issue. Share market is an untidy place for predicting since there are no significant rules to estimate or predict the price of share in the share market. Many methods like technical analysis, fundamental analysis and statistical analysis, etc... are all used to attempt to predict the price in the share market. By establishing an automated stock data gathering and predictive analysis tool, we hope to adopt a predictive modeling and technical indicators analysis approach to anticipate stock prices in this project. Predictive modeling is very effectively implemented in forecasting stock price, returns, and stock modeling and the most frequent methodologies are the Decision Tree Algorithm and the Linear Regression Algorithm.

### INTRODUCTION

Stock is a place where we see so many people will buy/sell the shares of so many listed companies. In simple terms, if any person wants to sell shares of a particular industry, the stock market will help him to meet the seller who is willing to buy the shares of that particular industry. The stock costs of an organization don't just rely on the monetary status of the organization. It relies upon different factors, for example, the measures of stock purchased in one day, its development, its picture and numerous different elements. So we can't have consistent stock prices. The stock prices will change day by day. We can't even know which second will the price get high and in which second it gets low or fall down. So, here we are analyzing the past recorded stock price data. With the help of Decision Tree and Linear Regression algorithms we will predict the future stock price.

### EXISTING SYSTEM

We tend to propose in the Existing System that internal communication patterns predict a company's performance in terms of stock price movement. Despite the potential importance of such data regarding corporate communication, very little work has been tired this vital decision. We use a machine learning algorithms to investigate the relationship between a firm's communication data and its share price, in an attempt to fill these research gaps.

### PROPOSED SYSTEM

In the proposed system accuracy plays an important role in the stock price prediction. Although many algorithms are available for this purpose, selecting the most accurate one continues to be the fundamental task in getting the best results. In order to achieve this, in this project we have compared and analyzed the performance of various available algorithms and we used Linear Regression.

This involves training the algorithms, executing them, getting the results, comparing various performances parameters of these algorithms and finally obtaining the most accurate one.

### IMPLEMENTATION (modules)

The STOCK EXCHANGE FORECAST System will perform a specific task to accomplish the final result.

**INPUT:** Firstly we are going to upload a dataset which contain the following columns date, high, low, open, close, volume, Name. The dataset helps to process and get the final output.

**TRAIN MODEL:** By using dataset and machine learning algorithms like decision tree and linear

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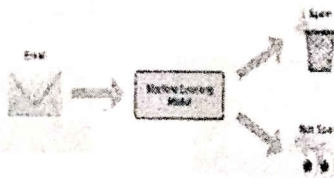
### ABSTRACT

Nowadays, Email Spam has become a major issue. With rapid growth of internet users, Email spam is also increasing. People are using them for illegal and unethical conducts, phishing and fraud. Sending baleful links through spam emails which can harm our system and can also seek in into your system. Creating a fake profile and email account is a simple task for the spammers, they pretend like a genuine person in their spam emails, these spammers target those people, who are not aware about these frauds. So, it is needed to Identify those spam mails which are fraud, this project will identify those spam by using techniques of machine learning, this paper will discuss the machine learning algorithms and apply all those algorithms on our data sets and best algorithm is selected for the email spam detection having best precision and accuracy.

As the use of Email is increasing day by day because of effective and cheap way of exchanging information, the email spamming is also increases. This Project will identify those spam mails and provides only the ham mails to the users by using Random forest algorithm. Email users receives hundreds of spam emails with a unique address every day and using this project those spam mails are can be filtered and removed.

### INTRODUCTION

Spam e-mails are unsolicited emails sent in large numbers through email, often known as junk mail or just spam (spamming). In a Monty Python skit, the canned pork product's name is referenced. Ignoring spam is impossible since it's everywhere and it's always the same. For more than a decade now, spam has been continuously increasing, and by 2014 it was expected to account for about 90% of all email traffic. Spam is basically postage due advertising since the receiver bears the majority of the costs. A perfect illustration of a negative externality, in other words. Even while spam's legal definition and status vary from country to country, it hasn't proven to be a very effective deterrent. There is a high percentage of spam email that is commercial in nature. As a type of attention stealing as well as a threat, many are not only obnoxious but also harmful since they may include links to phishing web sites or sites that are hosting malware. From chat rooms, websites, customer lists, newsgroups, and viruses that harvest users' address books, spammers gather email addresses. Occasionally, these email addresses are sold to other spammers as well.



Spam is simply unwanted, phishing is expressly designed by a malignant actor to harm a company or individual by obtaining sensitive information. It often takes the form of a seemingly legitimate-looking message from a trusted sender. Phishing emails target banking credentials, passwords, cash advances, or other information of value. Identity theft often results.

Signs of phishing email include:

- Misspelled words
- Discrepancies between the language of links and the URLs they direct to
- Requests for personal information
- Forms within emails



## STOCK MARKET PREDICTION USING LSTM UNDER THE ESTEEMED GUIDANCE

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### ABSTRACT

Stock market prediction is that the scene of trying to complete the long-run value of company stock. LSTM networks maintain to stay contextual information of inputs by associate a loop that permits information to travel from one step to the following. These loops make recurrent neural networks seem magical. Each x train has the last 60 days value for the present-day y data. This can add more

accurate results when a measure to existing stock price prediction algorithms. The network is trained and evaluated for accuracy with various sizes of knowledge, and also the results are tabulated.

In Stock Market Prediction, the aim is to predict the future value of the financial stocks of a company. The recent trend in stock market prediction technologies is the use of machine learning which makes predictions based on the values of current stock market indices by training on their previous values. Machine learning itself employs different models to make prediction easier and authentic. The paper focuses on the use of Regression and LSTM based Machine learning to predict stock values. Factors considered are open, close, low, high and volume.

### INTRODUCTION

The stock market is basically an aggregation of various buyers and sellers of stock. A stock(also known as shares more commonly) in general represents ownership claims on business by a particular individual or a group of people. The attempt to determine the future value of the stockmarket is known as a stock market prediction. The prediction is expected to be robust, accurate and efficient. The system must work according to the real-life scenarios and should be well suited to real-world settings. A correct prediction of stocks can lead to huge profits for the seller and the broker.

The vital part of machine learning is the dataset used. The dataset should be as concrete as possible because a little change in the data can perpetuate massive changes in the outcome. In this project, supervised machine learning is employed on a dataset obtained from Yahoo Finance. This dataset comprises of following five variables: open, close, low, high and volume. Open, close, low and high are different bid prices for the stock at separate times with nearly direct names. The volume is the number of shares that passed from one owner to another during the time period. The model is then tested on the test data. Regression and LSTM models are engaged for this conjecture separately. Regression involves minimizing error and LSTM contributes to remembering the data and results for the long run. Finally, the graphs for the fluctuation of prices with the dates (in case of Regression based model) and between actual and predicted price (for the LSTM based model) are plotted.

### EXISTING SYSTEM

The problem with estimating the stock price will remain a problem if a better stock market prediction algorithm is not proposed. Predicting how the stock market will perform is quite difficult. The movement in the stock market is usually determined by the sentiment of thousands of investors. Stock market prediction, calls for an ability to predict the effect of recent events on the investors. These events can be political events like a statement by a political leader, a piece of news on scam etc. It can also be an international event like sharp movements in currencies and

# Using Naive Bayes Classification to Predict Alzheimer's Disease

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## ABSTRACT

Alzheimer's disease is a degenerative disease that destroys the memory and normal functioning of the brain. To yet, no one test has been developed to detect this condition, and brain scans alone cannot tell whether a person is infected. Based on information from family members regarding behavioral tendencies and observations of past medical history, the physician currently believes that a person diagnosed with Alzheimer's disease. This condition may now be able to be changed due to AI and Machine Learning techniques. Data processing involves the information comes from heterogeneous and autonomous sources and evolving relationships, and keeps growing. So, in this we will take results of how much

percentage people get disease as a positive information and negative information. This project shows a Bi-processing model i.e., yes or no from the data mining perspective. Using three classification algorithms such as SVM, Decision Tree, Naive Bayes, we are processing Alzheimer percentage and values are represented as a confusion matrix. Among three classifiers, Naive Bayes classification scheme can effectively improve the accuracy and performance than previous classifications. In the dataset, we have collected 500 persons details by gathering neuropsychological test reports. Then we will predict whether the person is having Alzheimer Disease or not using Naive Bayes classifier.

# Efficient Symbolic Language Recognition using Convolutional Neural Network

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## ABSTRACT

Inability to speak is considered to be true disability. People with this disability use different modes to communicate with others, there are number of methods available for their communication one such common method of communication is sign language. Developing sign language application for deaf people can be very important, as they'll be able to communicate easily with even those who don't understand sign language. Our project aims at taking the basic step in bridging the communication gap between normal people, deaf and dumb people using sign language. The main focus of this work is to create a vision to audio based system to identify sign language gestures from the video

sequences. The reason for choosing a system based on vision relates to the fact that it provides a simpler and more intuitive way of communication between a human and a computer. This can be done using Machine learning which is nothing but a system's capability to learn by itself by using its past actions. Symbolic language recognition (SLR) system takes an input expression from the hearing impaired person gives output to the normal person in the form of text or voice.

## INTRODUCTION

The goal of this project was to build a neural network able to classify which letter of the Efficient Symbolic Language (ESL) alphabet is being signed, given an image of a signing hand. This project is a first step towards building a possible sign language

# Image Anonymization using Deep Convolutional Generative Adversarial Network

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**Abstract.** Advancement in deep learning requires significantly huge amount of data for training purpose, where protection of individual data plays a key role in data privacy and publication. Recent developments in deep learning demonstrate a huge challenge for traditionally used approach for image anonymization, such as model inversion attack, where adversary repeatedly query the model, in order to reconstruct the original image from the anonymized image. In order to apply more protection on image anonymization, an approach is presented here to convert the input (raw) image into a new synthetic image by applying optimized noise to the latent space representation (LSR) of the original image. The synthetic image is anonymized by adding well designed noise calculated over the gradient during the learning process, where the resultant image is both realistic and immune to model inversion attack. More precisely, we extend the approach proposed by T. Kim and J. Yang, 2019 by using Deep Convolutional Generative Adversarial Network (DCGAN) in order to make the approach more efficient. Our aim is to improve the efficiency of the model by changing the loss function to achieve optimal privacy in less time and computation. Finally, the proposed approach is demonstrated using a benchmark dataset. The experimental study presents that the proposed method can efficiently convert the input image into another synthetic image which is of high quality as well as immune to model inversion attack.

**Keywords:** Adversarial learning, generative adversarial network, data privacy, deep learning, model inversion attack, machine learning.

## 1. Introduction

Image anonymization technique has been developed to make it more difficult to identify a particular image from provided altered image. In image anonymization, one is provided with the original image, and our task is to convert that original image into some another anonymized image by changing the pixel or adding random noise, etc., in such a way that an image recognition model or a human eye, would not be able to label/recognize the original image. Image anonymization plays an important role in today's world, as many tasks in today's world require realistic data and these realistic data may contain confidential information of an individual and the particular individual doesn't want to disclose the information because making this dataset public will affect the privacy of the individual. Even, if the dataset is made private, but if the model is not constructed properly, there are some attacks possible over these private datasets to capture the original image by continuously querying the model.

Social media is also one of the domains, where confidential data may be captured in an image, which alarms the privacy issue. Usually, social media get millions of images from all his users, and these images, may contain some confidential information of a person, which he/she doesn't want to disclose. This raise to a privacy issue and may lead to legal actions. Image anonymization is one of the tasks which can be carried out to prevent such privacy issue and legal actions. Machine learning also requires big amount of data to prepare their model, more precisely this large amount of data is required to train the



# Prediction of bank loan status using support vector machine algorithm

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**ABSTRACT** - With the improving banking concerns day by day and the increasing fashion of taking loans, a large population applies for bank loans. Banks face many problems with the increasing rate of default loans and also face difficulty in correctly assessing the loan applications. So in this project, we correctly assess the applications received to select the right applicant whether the person will repay the amount or not, and saves the bank efforts. Many financial companies approve a loan based on the person's data but there is no surety the right applicant is selected or not. Predicting the right applicant is important for banks/financial companies to improve their profit. Thus in this project, we can predict based on previous data whether the particular applicant is safe or not, and the process of validation and verification is automated by a machine learning algorithm.

**KEYWORDS:** Bank loan, Prediction, SVM, Machine Learning, Credit score, Accuracy, Approve/Reject.

## 1. INTRODUCTION

Banks make profits with the interest paid by the lender who takes a loan from the bank. The distribution of loans is a business part of every bank. Banks sanction the loans after researching the background status of the applicant whether he/she repays the loan amount with daily interest paid to the bank.

Financial companies approve the loan status based on credit score. In general, the Banking industry's success and failure are based on its credit risk [1]. Using credit scores, banks approve the loan status of each person. The two groups Application scoring and behavioral scoring are under credit scoring tasks. Application scoring is used to separate the applicant into good or bad and Behavioral scoring is used to check the previous data of customers based on their payment history. The credit score is medium or high, there is a chance to approve the applicant he/she get the loan or the applicant will be rejected.

Collect the data from previous records on different websites which contains the information of the person that the bank collects to check the background for approval of the loan. The attributes are Gender, Marital status, Dependents, Education,

SelfEmployed, Applicant income, Co-applicant income, Loan\_Amount, Loan\_amount\_term, Credit\_History, Property area, and Loan\_Status, SVM mine these data to discover useful information. In this paper, we use the support vector machine algorithm, which predicts the loan status by testing the previous record and tests the data with a model to find the accuracy. The main aim to classify the loan applications into 1 or 0 is to calculate the right applicant should have a loan or not by using the main attributes are applicant's income, education, credit score, dependents, etc. Fit the SVM model to the trained data and test with testing data to calculate the accuracy.

## 2. TECHNOLOGIES USED

### 2.1 PANDAS

Pandas are an important library that provides high-level data structures and a variety of analysis tools. It is fast and powerful for manipulating data [Fig: 1].



Fig: 1. Pandas

### 2.2 SEABORN

The seaborn library is a python data visualization library based on matplotlib used for making statistical graphics in python also integrates closely with pandas data structures [Fig: 2].

# DESIGNING A NEW CLASSIFICATION SYSTEM FOR ANALYZING AND DETECTING OF THE PERNICIOUS URLs USING A RANDOM FOREST ALGORITHM

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**ABSTRACT** -Any malicious intent user can hack the identity of the legal person if they send a malicious URL. Criminals use malicious URLs to carry out their activities on the internet [1][13]. Safeguards want to protect the dangerous sites created by the attackers before they visit [9]. This paper uses an enhanced learning-based approach to classify the blacklisted websites into 2 classes: safe, malicious and these are analyzed by the Uniform Resource Locator. The run-time delay and the probability of the user's activities will be deleted if the content of websites is not accessed. The performance shows better results.

**KEYWORDS:** Uniform Resource Locator (URL), Culpit, Benign, Malware, Spam.

## 1. INTRODUCTION:

Random forest is a machine learning algorithm that is composed of different trees. Machine learning allows the machine to learn without being programmed. We have to make a new observation from our experience which modifies the rules manually and we need to understand the details of the problem. We have to make it accurate if it gets complicated [2]. There are methods used. Machine learning is a part of the regular algorithm. It allows them to learn from the data we give. The training phase is where we send data to the machine learning algorithm and the testing phase takes place after training the model, then we assess its performance by evaluating the power.

### 1.1. Machine Learning:

Supervised Learning, Unsupervised Learning, and Reinforcement are three types of machine learning [3]. The training dataset can be thought of as a teacher teaching his students because of supervised learning. Ex. Biometric attendance. A sampling of a training dataset does its job but is not expected when it comes to output. The best machine learning exercise is

clustering one. There is a connection between the environment and how difficult the problem you are attempting to solve is.

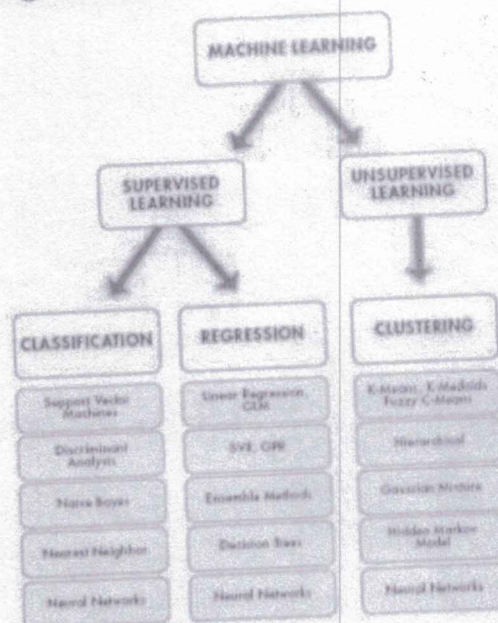


Fig. 1 Division of ML Algorithms

The agent is currently in development but is based on research and utilization.

1. It was in this research that a learning agent's potential was assessed as it was prepared to be used so as not to run out of mistakes.
2. We derive the action we are using based on the knowledge we have captured from the domain. There is an applied mathematical technique used to determine the true nature of harmful URLs.

### 1.2. Algorithm Used:

RFA is a machine learning algorithm used in our project. This is a supervised learning method that is used for Regression and Classification techniques [4].

## STOCK EXCHANGE FORECAST USING DECISION TREE

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**Abstract** - In financial and academic research, stock price forecasting is a popular and essential issue. Share market is an untidy place for predicting since there are no significant rules to estimate or predict the price of share in the share market. Many methods like technical analysis, fundamental analysis and statistical analysis, etc... are all used to attempt to predict the price in the share market. By establishing an automated stock data gathering and predictive analysis tool, we hope to adopt a predictive modeling and technical indicators analysis approach to anticipate stock prices in this project. Predictive modeling is very effectively implemented in forecasting stock price, returns, and stock modeling and the most frequent methodologies are the Decision Tree Algorithm. Predicting how the stock market will perform is one of the most difficult things to do. We will use a combination of machine learning algorithms to predict the company's future stock price, start with simple algorithms such as averaging and linear regression, and move on to advanced strategies such as LSTM. Stock trading forecasts are an important part of business investment plans. Customers prefer to invest in stocks instead of traditional investing because of the high profitability. Higher profits are often associated with greater risk due to the indirect nature of data and complex economic laws. Stock markets are subject to change and sudden changes due to economic conditions, political conditions, and major national events. Therefore, investigating the impact of certain major events especially international and regional events on top (through country) stock companies remains an open research space. Stock markets are considered highly volatile and largely unpredictable. It is very challenging to predict stock indicators in the short term, not to mention long-term forecasts. In this research project, the main objective is to find logical answers to the hypothetical research questions and to do so, a stock predictive model method is proposed to combine the assumptions of each machine with in-depth learning models to improve predictions. made, while, significantly reduced the error limit.

**Key Words:** Stock market, Prediction, Forecast, Decision Tree, Testing, Dataset, Abstraction, Test data, Supervised learning, Python, Design Goals, Preprocessing, Training Model, Object, Usecase, Class Diagram, Privilege Specifications, Testcase, Data Mining, Statistical Analysis, Machine Learning, Fuzzy sets, Pandas, Numpy, Matplotlib, Data Frame.

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**1. INTRODUCTION**

Stock is a place where we see so many people will buy/sell the shares of so many listed companies. In simple terms, if any person wants to sell shares of a particular industry, the stock market will help him to meet the seller who is willing to buy the shares of that particular industry. The stock costs of an organization don't just rely on the monetary status of the organization. It relies upon different factors, for example, the measures of stock purchased in one day, its development, its picture and numerous different elements. So we can't have consistent stock prices. The stock prices will change day by day. We can't even know which second will the price get high and in which second it gets low or fall down. So, here we are analyzing the past recorded stock price data. With the help of Decision Tree and Linear Regression algorithms we will predict the future stock price. We all have heard the word stock one way or the other. Particularly stock is related with the associates and companies which are commercialized and are to settling in the world of marketization. The other word used for stock is share which is prominently used in day to day life. People even term are as an investment plan and its something people see as a long term investment that secures and provides an abundant funds during the retirement age. Buying a company stock is purchasing a small share of it. People invest on the same to get a long term benefit which they think is less value for now but has to potential to grow with the time. Its an investment that provides the long time run and deals with long time goals with the fair objectives. The value of share you invest today has to give you an yield of best tomorrow but its not the same. Market is unpredictable so are the resources and the factors that are taken to drive it off or on on the set. Its never been on the same level and the pattern of the same is still unpredictable till the time. Some closeness and prediction method had been derived and approximates values and the rough figures are generated hoping for the best but all of the resource can't be trusted and are still unpredictable in nature. Knowing the market situation and researching on the

# An Analysis of Trusted Crowdfunding Using Blockchain Technology

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**ABSTRACT:** In the circumstance of the Covid-19 plague, numerous associations are raising assets to support neighborhood states with getting extra springs of assets that will be appropriated to those in need. Trust is a significant component for the gatherings associated with raising these assets, both as far as the funder, the help supplier of gathering pledges stage and, surprisingly, the pledge drive. On this event, the creator attempts to break down how to execute blockchain innovation and brilliant agreements in the predominant plans of crowdfunding process. the consequences of this review demonstrate that blockchain-based savvy agreements can be applied to the predominant plans of crowdfunding process.

**1.INTRODUCTION:** In this modern period 4.0, practically all modern areas apply innovation to help their business, from organizations that are for-profit to organizations that are non-benefit. Non-benefit associations (non-benefit) have attributes that are practically equivalent to benefit arranged associations (benefit) benefit arranged, however between these two associations have various issues.

Experiencing the same thing of the Covid-19 plague, pretty much every country has a similar issue in managing this issue, particularly as far as the assets required. Numerous systems done by the public authority how to oversee government assets in handling this Covid-19 plague flare-up. This circumstance additionally set off the local area to raise assets to help the public authority in handling this Covid-19 plague flare-up.

During the time spent raising assets, obviously it is difficult, since it requires trust between many gatherings, both the funders, mediators, and associations as a spot to store impermanent assets to the beneficiary of assets. That trust is the principle capital for gathering pledges associations to draw in funders to give their assets to

beneficiaries of assets. Bunches of non-benefit associations assume a part as pledge drives, particularly in the state of the Covid-19 plague. Trust is their test in drawing in contributors to give their cash to the association. Not a couple of likewise a non-benefit association

that utilizes innovation to make it simple for givers to give assets through them. So, from this it tends to be presumed that in expansion to believe which is the primary component to get as a large number of assets as could be expected, innovation likewise assumes a major part in this as well.

In light of this, the creator attempts to do an examination the cycles that are for the most part contained in this raising support association by applying blockchain innovation that can be another option answer for increment the trust of funders which will surely influence how much subsidizes will be acquired by the raising money association. these assets as well as brilliant agreement innovation that makes it simple for beneficiaries to get these reserves assuming every one of the circumstances are met.

In light of past research, this innovation can be utilized in the broadcast communications and clinical industries. The utilization of blockchain innovation not just increments trust in raising money associations, however, can likewise be utilized as approval from funders to guarantee that assets are acquired from solid sources and furthermore to approve beneficiaries of assets, regardless of whether the beneficiaries can be relied upon.

## 2. LITERATURE SURVEY:

### 2.1 Crowdfunding:

Crowdfunding is a technique for associating between business visionaries and financial backers to put resources into modest quantities with a web-based stage. Crowdfunding is isolated into three classifications as indicated by the subsidizing base



# "CRIME PREDICTION THROUGH MACHINE LEARNING"

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## Abstract

The criminal cases in India are increasing rapidly due to which number of cases pending are also piling up. This continuous increase in the criminal cases is proving to be difficult to be classified and to be solved. Recognizing the criminal activity patterns of a place is important in order to prevent it from happening. The crime solving agencies can do a better work if they have a good idea of the pattern of criminal activities that are happening in a particular area. This can be done by using machine learning by employing different algorithms to find the patterns of the criminal activities in a particular area. This paper uses crime data set and predicts the types of crimes in a particular area which helps in speeding up the classification of criminal cases and proceed accordingly.

This paper uses the data of past 18 years that is collected from various trusted sources. Data pre-processing is as important as final prediction, this paper used feature selection, removing null values and label encoding to clean and nourish the data. This research gives an efficient machine learning model for predicting the next criminal case.

**Key Words:** RANDOM FOREST, NUPPY.

## 1. INTRODUCTION

At present, the criminal cases that are pending in India are rapidly increasing with the number of crimes committed are increasing. To solve a case based upon a particular data there should be a thorough investigation and analysis that is to be done internally. With the amount of crime data that is present in India currently the analysis and decision making of these criminal cases is too difficult for the officials. Identifying this a major problem this paper concentrates on creating a solution for the decision making of crime that is committed. Machine Learning is the branch of science where computers decide without human intervention. In recent times Machine Learning is being used in various domains one of the examples of such cases is automated or self-driving cars. By Machine Learning algorithms there is a way where we can predict certain results based upon our inputs given and provide a solution

to solving crime cases in India. The two common types of prediction techniques are classification and regression. This crime data prediction is a domain where classification is applied. Classification is a supervised prediction technique and it has been used in various domains like forecasting stock, medicinal area, etc. The main aim of this paper is to consider some algorithms which can be used to predict and analyse the crime data and improve the accuracy of those models by data processing in order to obtain better results. The purpose is to train the required model to predict the data using the training data set by validation of the test data set. The models which are being used here are Logistic Regression, Decision Tree classification, Random Forest classification.

## 2. LITERATURE SURVEY

McClendon, Lawrence, and Natarajan Meghanathan. "Using machine learning algorithms to analyze crime data." Machine Learning and Applications: An International Journal (MLAI)

Data mining and machine learning have become a vital part of crime detection and prevention. In this research, we use WEKA, an open source data mining software, to conduct a comparative study between the violent crime patterns from the Communities and Crime Un Normalized Dataset provided by the University of California-Irvine repository and actual crime statistical data for the state of Mississippi that has been provided by neighborhoodscout.com. We implemented the Linear Regression, Additive Regression, and Decision Stump algorithms using the same finite set of features, on the Communities and Crime Dataset. Overall, the linear regression algorithm performed the best among the three selected algorithms. The scope of this project is to prove how effective and accurate the machine learning algorithms used in data mining analysis can be at predicting violent crime patterns.

Alkesh Bharati, Dr Sarvanaguru RA. K," Crime Prediction and Analysis Using Machine Learning" in International Research Journal of Engineering and Technology (IRJET), Volume: 05 Issue: 09 | September 2018.

# Implementation of Face Mask Detection to Fence the Widespread using Machine Learning

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**ABSTRACT** - In this Pandemic situation, the spread of covid-19 has become very common, contagious and dangerous to the whole human kind. It spreads human to human by exhaling the infection breath, which leaves droplets of the virus on different surfaces which are then inhaled by another person and catches the infection. The World Health Organization recommends wearing a face mask and maintaining physical distance to migrate the virus's spread. It is very difficult to manually check each person who is entering into a public place or office and also the number of institutions is wearing a mask or not. To solve this problem, with the help of a machine learning algorithm that can detect whether a person is wearing a mask or not. A Webcam or CCTV camera surveillance will record all the time and it checks whether the person is wearing a mask, if the person doesn't wear a mask, then the system gives a security alert.

**KEYWORDS:** CNN, Tensor flow, Machine Learning, Face masks, OpenCV, Keras, NumPy, SciPy.

## 1. INTRODUCTION

Due of the worldwide COVID-19 corona virus outbreak, wearing face masks in public is becoming increasingly popular. People used to wear masks to protect their health from air pollution before to the invention of Covid-19. Others hide their feelings in public to hide their faces, while others are self-conscious about their appearance.

COVID- 19 infected more than 5 million people in 188 countries in less than six months. The virus spreads by close contact and overcrowding. New technologies like Artificial intelligence, IoT, Big data, and Machine learning can help us combat and anticipate new diseases.

To gain a better understanding of how our technique might help to reduce infection rates. Many countries have regulations that require people to wear face masks in public. These guidelines and legislation were created in response to the exponential increase in instances and deaths in a variety of domains. In public spaces, however,

keeping track of big groups of individuals is becoming more challenging.

As a result, we'll develop an automated face detection procedure. In this paper, we provide a deep learning-based facemask detection technique. The proposed model can be used in conjunction to control the COVID-19 transmission by detecting people who aren't wearing face masks. With Tensor flow and Kera's, the model combines deep learning and traditional machine learning techniques. In the process of training and detection, we will attain the best accuracy while using the least amount of time.

## 2. TECHNOLOGIES USED

### 2.1 TENSOR FLOW

TensorFlow is a well-known deep learning framework created by the Google Team. This tutorial is intended in such a manner that we can quickly implement deep learning projects using TensorFlow in an easy and efficient method. It is a free and open-source software library written in the Python programming language. [Fig: 1].

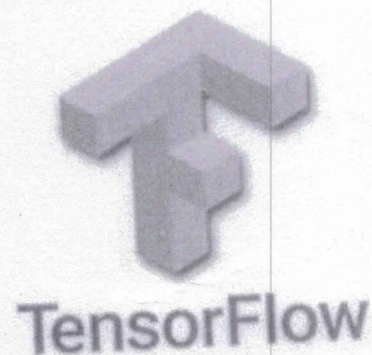


Fig: 1. Tensor Flow



## CREDIT CARD FRAUD DETECTION USING MACHINE LEARNING ALGORITHM

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**Abstract** - Credit card fraud is a field with perpetrators performing illegal actions that may affect other individuals or companies negatively. For instance, a criminal can steal credit card information from an account holder and then conduct fraudulent transactions. The activities are a potential contributory factor to how illegal organizations such as terrorists and drug traffickers support themselves financially. Within the machine learning area, there are several methods that possess the ability to detect credit card fraud transactions; supervised learning and unsupervised learning algorithms. This essay investigates the supervised approach (Random Forest) is evaluated on a real-life dataset of 284,807 transactions. Under those circumstances, the main purpose is to develop a "well-functioning" model with a reasonable capacity to categorize transactions as fraudulent or legit. As the data is heavily unbalanced, reducing the false-positive rate is also an important part when conducting research in the chosen area.

**KEY WORDS:** Credit card, Fraud, Transaction, Machine learning, Feature extraction.

**1.INTRODUCTION:** Credit card is a small thin plastic or fiber card that contains information about the person such as picture or signature and person named on it to charge purchases and service to his linked account charges for which will be debited regularly. Now a day's card information is read by ATM's, swiping machines, store readers, bank and online transaction. Each card as a unique card number which is very important, its security is mainly

relies on physical security of the card and also privacy of the credit card number. There is rapid increase in the credit card transaction which as led to substantial growth in fraudulent cases. Many datamining and statistical methods are used to detect fraud. Many fraud detection techniques are implemented using artificial intelligence, pattern matching. Detection of fraud using efficient and secure methods are very important. Credit card is a small thin plastic or fiber card that contains information about the person such as picture or signature and person named on it to charge purchases and service to his linked account charges for which will be debited regularly. Now a day's card information is read by ATM's, swiping machines, store readers, bank and online transaction. Each card as a unique card number which is very important, its security is mainly relies on physical security of the card and also privacy of the credit card number. There is rapid increase in the credit card transaction which as led to substantial growth in fraudulent cases. Many data mining and statistical methods are used to detect fraud. Many fraud detection techniques are implemented using artificial intelligence, pattern matching. Detection of fraud using efficient and secure methods are very important. Million and billions of people use the credit card for payment in both online and offline transaction, due to existence of widespread point of sale (POS). countless transaction occurred per minute everywhere in the planet. The reason behind fraud is negligence of user. when third person steal the most important information about credit card and user details easily fraud can be achieved. To detect what type of fraud,

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# Solar Based Multipurpose Agriculture Robot

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**ABSTRACT:** This paper represents the design, fabrication, and development of solar operated agriculture robot. The robot can dig the soil, feed the seed, leveler to close the soil, and pump to spray the fertilizer. These all system works on battery and solar power. Vehicle is to be controlled with help of remote. Approximately 50% of people in India work in agriculture sector. In this agriculture sector there is a lot of field work such as digging, harvesting, sowing, weeding, etc. And spraying is also an important operation in agriculture. Which to be perform by the farmer, to protect the crop form the pest, funguses and any other diseases. It is concept of investigating multi-purpose small machine which is more efficient than the large tractors and human forces. Due to this purpose, we design and developing such a system with the following feature. Harvesting is the first step in farming after the completion of this step land is ready for the seed sowing, spray pump is used to spray the fertilizer.

**KEYWORDS:** Solar panel, Battery, DC motor, Digger, Lead screw

## I. INTRODUCTION

Indian economics base on agriculture field development in agriculture lead to raise to economic status of country. In India farmer are facing problem due to unavailability of labor. Also, traditional way of farming equipment which takes lots of time and it also increases labor cost. The idea of applying robotic technology in agriculture is very new. In agriculture the opportunities for robot enhanced productivity are immense and the robot is appearing on the farm in increasing number. We can expect the robot performing agriculture operation autonomously such as mechanical weed control, digging, weeding, seed sowing, and spraying.

The automation in agriculture could help to framers to reduce their effort and their working time the automation in agriculture filed could be more effective and efficient as compare to tradition methods of framing. So,our focus will be on reduce labor cost, daily working hours, environmental all impact and safety issues and most important is to reduce framer effort.

## II. METHODOLOGY

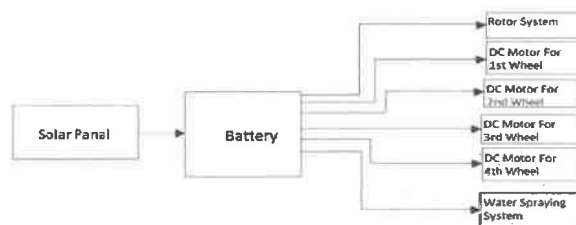


Fig 1. Block Diagram of system

The aim of our project is design and develops a multipurpose robot, which is used to reduce time and human effort. The operations are carried by a robot are harvesting, digging, seed sowing and leveling to close the soil and also sprayer to spray a fertilizer. These all operations are performed by using the battery and solar power.

- The frame of robot is made of Mild Steel (MS). The four wheels are connected to the frame, which are driven by using a DC motor.



# Modernization of Solar Power Analyzer by Implementing IOT

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**ABSTRACT:** Power crisis is a major up coming issue in the society. Some of the non-renewable energy sources like thermal, nuclear energy are expensive and hazardous to the mankind. The conventional energy sources are limited and causes pollution to the environment.

To overcome these problems, eco-friendly system will be a better solution. Our project deals with monitoring and controlling the voltage output of a solar panel kept at distant location and observing the output in the server using Internet of Things (IOT). Each server page consists of a unique IP address that allows the user to access the output page.

Further controlling of solar panel outputs are enabled using relay boards and circuits.

**KEYWORDS:** Generation of Electricity, Photovoltaic Cell, Solar Power Analyzer, Power Using Regulators.

## I. INTRODUCTION

This chapter begins with a brief introduction to the Sun. Our solar system's primary star is the Sun. It is primarily made up of hydrogen and helium. The Sun's mass is so great that it accounts for 99.68 percent of the solar system's total mass. Nuclear fusion can occur in the Sun's core because of the pressure and temperature conditions.

Solar energy is the radiant light and heat from the Sun that can be captured using a variety of ever-evolving technologies like solar heating, photovoltaic, solar thermal energy, solar architecture, molten salt power plants, and artificial photosynthesis.

## II. GENERATION OF ELECTRICITY

Solar power is the conversion of sun radiation into electricity through the use of solar photovoltaic cells. This conversion takes place in the solar cell by photo voltaic effect. As said by many experts that the amount of solar energy reaching the earth is more than 10000 times the current energy consumption by man. Also, the power created by solar is sufficient for one year for the entire planet, if we could convert the 100 percent of the solar energy into electricity in one hour.

There are several applications that use solar power, here is the information on the generation of electricity through PV cells. The solar power generation is the most efficient route for power generation because it takes a minimum number of steps (for producing electricity) than that of other generation methods.

There are two ways of converting sunlight into electricity. In one method, solar energy is used simply as a source of heat. This heat is further used to produce the steam, which drives the steam turbine. This method of power generation is called solar thermal power generation.



# Modelling of Linear Synchronous Motor in Nonlinear Applications

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**ABSTRACT:** This paper presents a nonlinear model of the Permanent Magnet Linear Synchronous Motor and an comparison between the rotary motor and the linear motor. Manufacturing details of various sub-models for the permanent magnet linear synchronous motor are provided ,as well as their SIMULINK implementation. The system nonlinearity is Neutralized using a novel PMSM control. Along with , to improve the dynamic response, a linear state feedback control law based on pole placement approach to reach the zero steady state error with respect to reference current condition is taken into consideration. MATLAB SIMULINK is used to perform the substantial simulation.

**KEYWORDS:** Dynamic Modelling; Permanent magnet linear synchronous motor

## I.INTRODUCTION

In these days industries growing need for faster development times and more accurate manufacturing is placing new demands on the technology used in machine auto machine, tools and the systems used in machine handling. Linear motors can provide linear motion to machine tools without the use of indirect coupling mechanisms like gear boxes, chains and screws. Permanent magnet direct drive motors are becoming increasingly used in machine automation. Permanent magnet motor drives provide several advantages, including a gearless structure, outstanding control Characteristics such as high speed , acceleration and most importantly, great motion precision and efficiency. PMLSMs are utilized in lifts, paper machines, ship propulsion units windmills and other applications.

The moving part (mover) of PMLSM is made up of a slotted armature and three-phase windings, with the surface permanent magnets (SPMs) installed along the entire path (stator).



# Fuzzy Logic Based Luo Converter for PV Application

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**ABSTRACT:** The necessity to build alternative energy conditioners to harvest renewable energy rather than using conventional energy sources has intensified in recent years. This type of energy can be employed on a small scale to power low-power systems. The goal of this study is to investigate another efficient technique to increase energy harvesting by presenting a different alternative to power-conditioning environmental sources of energy using an upgraded dc-dc converter. Voltage regulation at the output, as well as power coordination between two input sources, can be accomplished by altering the duty-ratio of the active power switch. To improve the system's stability, the proposed circuit is enhanced using a fuzzy logic controller. Theoretical analysis and computer simulation are used to describe the circuit's operation in detail. To confirm the analyzed and simulated results, an experimental circuit has been created and tested.

**KEYWORDS:** Solar Energy, MPPT Controller, Matlab/Simulink, Fuzzy Logic, Luo converter.

## I. INTRODUCTION

With increasing concern of global warming and the depletion of fossil fuel reserves, many are looking at sustainable energy solutions to preserve the earth for the future generations. Other than hydro power, wind and photovoltaic energy holds the most potential to meet our energy demands. Alone, wind energy is capable of supplying large amounts of power but its presence is highly unpredictable as it can be here one moment and gone in another. Similarly, solar energy is present throughout the day but the solar irradiation levels vary due to sun intensity and unpredictable shadows cast by clouds, birds, trees, etc.

Most applications are for stand-alone operation, where the main control target is to balance local loads. A few grid-connected systems consider the grid as just a back-up means to use when there is insufficient supply from renewable sources.

A traditional power electronic converter receives its power from a single source but can output to several destinations. A transformer with multiple output windings is used when two or more voltage or current levels are required by the loads. In other applications, however, the loads may be driven by two or more input sources with differing voltage, current, and power ratings. A solar street lamp, for example, is powered mostly by solar cells but also requires battery backup.



# Analysis of Hybrid Electric Vehicle Based on Step-Up Multi-input DC-DC Converter and Renewable Energy Source

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## ABSTRACT

A multi-input direct current–direct current converter is suggested and investigated for use in hybrid electric cars. It is more productive than traditional works when compared to conventional works. This converter's input sources include the fuel cell (FC), solar panel, and energy storage system, all of which are currently on the market. The FC is regarded as the primary source of power, with roof-top PV being used to charge the battery, boost efficiency, and minimise fuel use and emissions, respectively. Even if one or two resources are unavailable, the converter has the potential of supplying the necessary power to the load. Furthermore, the power management approach is discussed and shown in the context of a control methodology. Furthermore, the suggested approach is not just applicable to HEVs, but we can also utilise these types of systems for grid-connected systems by utilising a separate converter. The complete system is created and simulated with the help of the MATLAB/SIMULINK programming language.

**KEYWORDS:** Hybrid electric vehicles(HEV), Multi input converter, power management

## 1. INTRODUCTION

Hybrid electric vehicles (HEVs) have garnered a great deal of attention in recent years, mostly as a result of increased awareness of the energy issue and environmental conservation. Because of the increased need for transportation, petroleum is being consumed at a greater rate over the world. It plays a crucial part in the design of cars that use the least amount of fuel and are completely fuel-free. So the car industries have been

more interested in alternative propulsion technologies, which has resulted in an increase in the utilisation rate of hybrid electric vehicles (HEV). One of the most significant advantages of using a HEV drive is that it increases the efficiency of the motor drive. The bidirectional DC-DC converters with many inputs and outputs used in hybrid electric cars are critical components of the traction systems. A variety of various energy sources, such as batteries,





# Analysis of Cascaded H-Bridge 11-level Multilevel Inverter

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## ABSTRACT

*This study primarily focuses on the design and implementation of a topology for a three phase eleven level cascaded H-bridge multilevel inverter using a variety of switching mechanisms, with the goal of achieving higher efficiency. The primary goal of this effort is to increase the number of voltage levels available at the output while simultaneously reducing the complexity of the power circuit. With this suggested architecture, the Total Harmonic Distortion is reduced, as is electromagnetic interface EMI production, and high voltage is generated with a sine waveform that is extremely close to it. A number of different types of carrier pulse width modulation techniques are described in this paper, each of which reduces total harmonic distortion and improves the output voltage from the proposed architecture. POD modulation approaches also lower Total Harmonic Distortion. A number of H-bridges are stacked in a cascade configuration in order to raise the voltage level using various switching strategies. It has been discovered that this novel topology may be applied to three phase eleven level cascaded H-bridge inverters in order to get the best possible performance above the standard techniques. The eleventh level of the inverter is responsible for optimising this performance. A topology in cascaded form is used to improve the fundamental waveforms while simultaneously minimising the overall harmonic distortion. This is accomplished by utilising 60 IGBTs and switching is structured in a cascaded form. Modeling and simulation are carried out using the MATLAB 2018 software version.*

**KEYWORDS:** Cascaded H-bridge multilevel inverter, total harmonic distortion THD, Electromagnetic Interface, different phase pulse width modulation,

## 1. INTRODUCTION

The most frequently encountered issue with dc to ac conversion is the quality of the waveform, which includes the presence of harmonics. All traditional inverters create a two-level output voltage (square wave), with more harmonic [1-3] components present

than in the input voltage (square wave). In the case of rotating machines, the heat losses would be increased, and the parasitic torque would be created as a result of the harmonics. As a result, research has been initiated to find a solution to this problem, with the multilevel inverter architecture being one of the potential options.



# Neuro Fuzzy Controller for SVC to Improve the Stability of Power System

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**ABSTRACT:** In this paper steady-state modelling of Static VAR Compensator (SVC) for power flow studies has been expressed and discussed in details. Firing angle model for SVC was suggested to control the voltage at which it is connected. In same aspect firing angle model for SVC is advised with Fuzzy controller to control active power flow of the line to which TCSC is installed. The advised models take firing angle as state variable in power flow formulation. To validate the effectiveness of the advised models ANN algorithm was refined to solve power equations in presence of SVC. The Case studies are carried out on 9-bus test system to illustrate the performance of the advised models.

**KEYWORDS:** SVC, TCSC, Fuzzy Logic, Transient stability.

## I.INTRODUCTION

With the rapid improvement of power system, especially the enlarged use of transmission facilities due to higher industrial output and deregulation, it becomes essential to explore new ways of increasing power transfer in existing transmission facilities, while at the same time maintaining the acceptable levels of the network reliability and stability. On the other hand, the fast enhancement of power electronic technology has made FACTS (flexible AC Transmission System) promising solution of future power system. FACTS controllers such as Static Synchronous Compensator (STATCOM), Static VAR Compensator (SVC), Thyristor Controlled Series Compensator (TCSC), Static Synchronous Series Compensator (SSSC) and Unified Power Flow controller (UPFC) are able to change the network parameters in a fast and effective way in order to achieve improved system performance.

These controllers are used for enhancing dynamic performance of power systems in terms of voltage/angle stability while improving the power transfer potentiality and voltage profile in steady-state conditions. Static VAR Compensator (SVC) and Thyristor Controlled Series Compensator (TCSC) are FACTS controllers based on thyristor-controlled reactor (TCRs), the first is a shunt compensator used for voltage regulation which is attained by controlling the production, absorption and flow of reactive power through the network. The latter is a series compensator, which

# A Closed Loop Control Method for Renewable Energy Applications Using a New Hybrid Boosting Converter

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**Abstract**— Conventional sources like fossil fuels were used earlier to satisfy the energy demands. Nowadays these are being replaced by renewable sources like photovoltaic sources. In this paper, a hybrid boosting converter using photovoltaic system with closed loop Control is analyzed and simulated. A new hybrid boosting converter is used to increase the input dc voltage. In Existing method hybrid boosting converter used with one switch in the converter and produce pulses for that switch in open loop. By using the open loop method we get only output as produced amount of input which is given. Then we propose a closed loop method for HBC. By using this closed loop control technique we achieve required output voltage.

**Keywords**— Bipolar voltage multiplier (BVM), hybrid boosting converter (HBC), nature interleaving, renewable energy, single switch single inductor, Induction motor drive.

## I. INTRODUCTION

As of late, the brisk change of sustainable power source system calls for new generation of high gain dc/dc converters with high productivity and minimal effort. The front end of "attachment and Play" PV system normally asks for wander up converter which is fit for boosting the voltage from 35 to 380V with control ability because of the low terminal voltage and the essential of MPPT following limit with respect to single PV board. Considering a breeze develop with inward mediumvoltage dc (MVDC)- system, a MVDC converter prepared to help the voltage from 1– 6 to 15– 60 kV is required to associate the output of generator-facing rectifier to the MVDC line. Some other vitality stockpiling systems, for instance, power module filled system moreover require high-gain dc/dc converter because of their low voltage level at limit side. Remembering the ultimate objective to accomplish high voltage change extent with high capability, various high gain upgrade methodology were researched in the past distributions. Among them, switched capacitor structure, tapped/coupled inductorbased method, transformer-based strategy voltage multiplier structure or blends of them pulled in huge considerations. Each technology has its one of a kind favorable circumstances and confinements. The switched capacitor dc– dc converter can achieve high adequacy however has throbbing present and poor control limit. Introduction of thunderous switched capacitor converter can relieve the throbbing current however does not comprehend the control issue.

# Simulation of Multilevel Inverter Fed Induction Motor Drive

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## Abstract:

The ruggedness, dependability, and economy of induction motors make them a popular choice in the industrial sector. Induction motor drive necessitates the use of appropriate converters in order to achieve the required speed and torque with minimal or no ripples. Multilevel inverter technology has recently emerged as a very important alternative in the areas of high power medium-voltage control as well as for improving total harmonic distortion by reducing the harmonics, both of which are important considerations. Most of the time, the poor quality of voltage and current produced by a conventional inverter fed induction machine is due to the presence of harmonics, which results in a significant amount of energy being wasted. In MATLAB, the simulation results of the proposed topology three phase 33-level multilevel inverter fed induction motor drive are verified against the real-world results.

## Introduction :

DC motors have been used during the last century in industries for variable speed control applications, because its flux and torque can be controlled easily changing the field and armature currents respectively. Furthermore, four quadrant operation of induction motor was also achieved. Induction motor is popularly used in industries due to ruggedness and robustness. The induction motors were mainly used for essentially constant speed applications because of the unavailability of the variable-frequency voltage supply. The advancement of power electronics has made it possible to vary the frequency of the voltage. Thus, it has extended the use of induction motor in variable speed drive applications. The concept of multilevel inverter control

# A Novel 31 Level Inverter with Level Boosting Network to Improve Power Quality in Distribution Network

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**Abstract**— In this project, a new general cascaded multilevel inverter using developed H-bridges is proposed. The proposed topology requires a lesser number of dc voltage sources and power switches and consists of lower blocking voltage on switches, which results in decreased complexity and total cost of the inverter. These abilities obtained within comparing the proposed topology with the conventional topologies from aforementioned points of view. Moreover, a new algorithm to determine the magnitude of dc voltage sources is proposed. The performance and functional accuracy of the proposed topology using the new algorithm in generating all voltage levels for a 31-level inverter are confirmed by simulation and experimental results

**Keywords**— H-Bridge, MLI, 31 Level, Distribution System

## I. INTRODUCTION

Multilevel-inverters (MLI) are designed for processes that require high Volt-Ampere rating and for applications which desire high power-quality waveforms [1]. Large instantaneous common-mode voltage appears across motor terminals in Pulse Width Modulation (PWM) controlled inverter. Multilevel inverters can overcome this problem as each switching device has low  $dV/dt$  per cycle. Also, the efficiency is high as they operate at much lower frequencies than PWM-controlled inverters resulting in lower switching losses. Voltage source inverters like MLI can achieve high voltage with low harmonics.

Different levels of voltage sources are used based on the configuration. Symmetric structure uses all voltage sources of same level, whereas asymmetric structure can use one of the following configurations

Unary configuration

- Binary configuration
- Ternary configuration

Selection of source configuration depends on the topology used and the desired voltage levels. By using Unary configuration we can build a fault tolerant system. On the other hand, by using Binary or Ternary configuration we can achieve higher output levels with optimal number of switching components. When the number of output level rises, the output voltage and current waveform resembles the sinusoidal waveform. Due to high number of levels, the harmonics distortion of output voltage waveform decreases. Lower  $dV/dt$  is observed in multilevel inverter as the switching occurs between lower voltage levels when matched to two-level inverter.



# Modeling and Simulation of Cost-Effective and Reliable Hybrid Renewable Energy System with Nine Level Inverter

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**ABSTRACT:** The use of non-conventional energy sources to meet today's energy needs has become critical in the face of fossil fuel shortages. The project's major goal is to electrify rural areas and distant areas. A cost-effective and dependable hybrid renewable energy system for remote places has been implemented in this research. The hybrid system combines solar and wind energy systems because they complement each other and are abundant in nature. Depending on the availability of the sources, it can work in standalone or hybrid mode. A redesigned inverter with minimal components is utilized to obtain high quality output ac power that can feed straight to loads in remote places, allowing for more efficient use of solar and wind energy. The hybrid energy system is modelled and simulated using MATLAB/Simulink software. For improved performance, the proposed concept is executed with a nine-level inverter rather than a seven-level inverter.

**KEYWORDS:** Photo Voltaic Systems, Wind Energy, DC-DC Converters, MATLAB/Simulink.

## I. INTRODUCTION

Because of the global energy crisis and environmental pollution, renewable energy sources are becoming increasingly valuable. Due to the low voltage output of renewable energy systems, high step-up dc/dc converters are commonly used in many renewable energy applications, such as fuel cells, wind power, and solar systems. Photovoltaic systems are predicted to play a significant part in future energy production among renewable energy systems.

### PHOTOVOLTAIC SYSTEMS:

#### A) PV CELL:

Photovoltaic cell is the structure square of the PV framework and semiconductor material for example, silicon and germanium are the structure square of PV cell. Silicon is utilized for photovoltaic cell because of its benefits over germanium.



# Design of Power factor Correction Based Bridge-less Converter for Different Loads of SMPS

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**ABSTRACT:** This project proposes a power-factor-corrected canonical switching cell (CSC) converter based switched-mode power supply for arc-welding applications. In the proposed system, CSC converter operating in discontinuous inductor current mode (DICM) is used to attain inherent power factor correction. The DICM operation substantially reduces the complexity of the control and effectively regulates the dc-link voltage. At the back end, a pulse width-modulated (PWM) isolated full bridge dc–dc converter is used to provide a high-frequency isolation, which is mandatory for the arc-welding process. A dual-loop control scheme is utilized to incorporate over current protection and to regulate dc voltage at the output making it suitable for arc-welding applications. Later the proposed converter is re modelled as bridgeless converter for better efficiency, less total harmonic distortion and multiple functionalities of the system. The performance of the proposed AWPS is examined in terms of power factor, total harmonic distortion of the supply current, efficiency, and output current limit over a wide range of line/load variations.

## I. INTRODUCTION

A RC-welding is considered as one of the most principal ways of welding. However, the weld quality, technical and economic characteristics of arc-welding machine are mainly dependent on its power supply [1], [2]. There are two types of power supplies for arc-welding: arc-welding power supply (AWPSs) with dc output; AWPS with ac output. The first type provides constant polarity current and voltage, leading to high arc stability and a smoother welding output as compared to the second one. Conversely, arc welding power supply yields a combination of negative and positive current, which works satisfactorily mainly for welding aluminum or its alloy only [3]. For decades, conventional dc AWPS employed an uncontrolled diode bridge rectifier (DBR) followed by a bulky dc-link capacitor at the front end and an inverter along with the rectifier for ac–dc conversion at the load end. Fig. 1 presents the measured power quality (PQ) indices for the conventional dc AWPS including parameters like total harmonic distortion (THD) of current, power factor (PF), displacement power factor (DPF) at the input ac mains. As depicted from the obtained results, extremely low PF and large harmonic currents generated by the conventional AWPS are prime issues as they can lead to increased losses in the utility systems.

## II. PROPOSED CONCEPT

In this project, a CSC converter is proposed as a front converter to deal with the PQ issues associated with an AWPS. Moreover, an effort has been put forward to incorporate overcurrent withstand capability in the proposed AWPS, which is very important for achieving high-quality weld. CSC converter allows one to overcome the shortcomings of aforementioned buck–boost converters by having a smaller number of input devices, non-pulsating input current, etc.

# Deep Learning Algorithms in EEG Signal Decoding Application: A Review

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**ABSTRACT** In recent years, deep learning algorithms have been developed rapidly, and they are becoming a powerful tool in biomedical engineering. Especially, there has been an increasing focus on the use of deep learning algorithms for decoding physiological or pathological status of the brain from electroencephalographic (EEG). This paper overviews current application of deep learning algorithms in various EEG decoding tasks, and introduces commonly used algorithms; typical application scenarios, important progresses and existing problems. Firstly, the basic principles of deep learning algorithms used in EEG decoding is briefly described, including convolutional neural network, deep belief network, auto-encoder and recurrent neural network. In this paper, existing applications of deep learning on EEG is discussed, including brain-computer interfaces, cognitive neuroscience and diagnosis of brain disorders. Finally, this paper outlines some key problems that will be addressed in future applications of deep learning for EEG decoding, such as parameter selection, computational complexity, and the capability of generalization.

**INDEX TERMS** Brain-computer interface, decoding, deep learning, electroencephalographic, neural networks.

## I. INTRODUCTION

Electroencephalogram (EEG) is a spontaneous and rhythmic electrical activity of the brain [1], [2]. Due to the simplicity, ease of operation and high time resolution of signals, EEG technology has played a great role in clinical and basic scientific research. For example, EEG is used as an indicator for the detection and monitoring of diseases such as epilepsy [3], [4] and sleep disorders [5], [6] in clinical practice. EEG is a brain imaging method that uses electrodes attached to surface of scalp to identify and record electrical activity signals of neuronal clusters in the cerebral cortex through precise electronic measurement technology, which can obtain brain idea and cognition. Neural electrophysiological information related to thinking and decision-making is one of the widely used brain function research methods. Compared

with other brain imaging functions, such as intra cortical neural recording, functional near-infrared spectroscopy and magnetic resonance imaging, the EEG is used in the research and development of rehabilitation equipment, such as the development of brain-computer interface (BCI) and neuro feedback technologies to achieve the recovery of patients' motor cognition and other functions [7]. In the above clinical application and scientific research of EEG, the machine learning algorithms are often used to decode EEG signals to accurately identify physiological or pathological conditions. However, shortcomings of less spatial resolution and signal-to-noise ratio (SNR) of EEG signals [8], the accuracy of machine learning decoding has greater limitations, causing many difficulties in practical applications. In, recent years rapid evolution in learning, researchers has gradually applied new and efficient machine learning algorithms to EEG decoding, and initially demonstrated its advantages over traditional machine learning. The following first introduces the

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## A Feature Extraction Approach for Multi-Object Detection Using HoG and LTP

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**Abstract:** In the field of computer vision, object detection is getting more attention due to its huge applications in visual monitoring. Multiple object detection identifies the position of objects or regions of objects in the image or videos. Many methods were developed for detecting multiple objects, but the overall detection accuracy of those methods was limited due to the congested environment, complex background, and similarities between the objects. To solve such an issue, this research study proposed the feature extraction method for multiple object detection using Histogram of Oriented Gradient (HOG) with Local Ternary Pattern (LTP). The Caltech 101 dataset is used in the proposed method where the images are converted to LAB. The process of feature extraction takes place by using the proposed HoG and LTP to detect prominent regions from the image. Further, the obtained features are fused by using Deep Convolutional Neural Network (D-CNN) and then forwarded to Region-based Convolutional Neural Network (R-CNN) to detect the multiple objects. The proposed HoG and LTP feature extraction method has the advantages of improving the classification accuracy by effectively extracting the oriented features and texture features. The proposed method achieved better accuracy of 92.48%, whereas the existing Multi-Object Detection and Tracking (MODT) method achieved an accuracy of 76.23% for the detection of multiple objects.

**Keywords:** Computer vision, Deep convolutional neural network, Local ternary pattern, Object detection, Region-based convolutional neural network.

### 1. Introduction

Object detection is an important extensive research issue in the field of computer vision with an enormous range of applications like autonomous driving, advanced driving assistant system, robotic visions, augmented reality, etc. [1]. The main task of object detection is to identify the category and position or regions of specific objects in images and videos. Generally, it is considered as a necessary step to narrow down the object related to the vision process like visual tracking, re-identification of person, and segmentation of semantics [2]. The object detection method utilizes different types of shape patterns for the evidence to identify interesting objects in images or videos. The object identification models are trained with the patterns of shapes which present a similar category of objects to differentiate among various categories. But, it is difficult for a

system to identify every appearance of an object accurately, because the features of fundamental object shapes, object poses, and angles of view vary greatly [3]. Multiple object detection aims to identify the trajectory of objects based on similarities between the sequence of images or videos. Initially, target objects are detected in multiple object detection and track the algorithm to evaluate the trajectory of objects by utilizing the outcome of detection [4]. The multiple object detection with tracking makes use of associated data of existing track and new identification from each frame, which forms the trajectory of multiple objects. So, the outcome of data association produces series of detection with unique identities [5].

Multiple object identification is a challenging process of objects that include similar appearances. In this scenario, the objects in motion are the cue for discriminating and tracking the various objects. When single moving cameras are utilized, the



# EEHC Approach for Latency Minimization in 3D Network Architecture Using 5G+ with UAVs

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## Abstract

The importance of 5G communication in today's world is requisite. The communication over 4G communications has led to congestion and will not meet the demands of the growing needs. Since the number of connected devices has been on the rise, optimization and improvement are the keys to further innovation. The hexagonal architecture of the octahedron was used to construct a 3D cellular network architecture. This octahedron cell architecture in the combination of Unmanned Aerial Vehicles (UAV—mostly known as DRONES in many parts of the world) helps develop 5G networks with the instance of Millimeter Wave (mm-Wave) approach in communication systems. In this paper, the proposed method is the Energy Efficient Hierarchical Clustering Approach formulated to minimize the power usage of users (UE of the drone) and trace latency for different conditions during transmission. This approach helps in optimizing the latency of the system, Signal-Interference Noise Ratio (SINR) based communication spectral efficiency, and cumulative distribution function concerning SINR results in communication channel strength in sharing the information without dropping. The proposed approach initially develops energy infliction-based clusters and decides the optimal routing path for communication that allows 50% minimization in average latency compared with existing schemes.

**Keywords** EECHA · SINR · Drones · UAV · Cumulative distribution function (CDF) · 5G networks

## 1 Introduction

UAV's are no human-operated aerial vehicles, primarily used in Military applications and Civilian applications (Agricultural practices, cargo shipment, communications, and many more). Mainly this UAV approach aids during natural disasters, and even precedes in detecting false observation and can easily be explained with the help of the world trade center's collapse incidents.

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# Enhancement of Energy Efficiency and Network Lifetime Using Modified MPCT Algorithm in Wireless Sensor Networks

P. Satyanarayana , T. Mahalakshmi, P. Rama Koteswara Rao, Adlin Sheeba, Jampani Ravi and J. Nageswara Rao

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**Supplementary Issue 3 — Blockchain Technology for Critical Infrastructure Security**

**Guest Editors: Gunasekaran Manogaran, Hassan Qudrat-Ullah and Qin Xin**



Vol. 22, No. Supp03

**Metrics**

## AN IOT BASED AGRICULTURE MAINTENANCE USING PERVASIVE COMPUTING WITH MACHINE LEARNING TECHNIQUE

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### Abstract

#### Propose:

In cultivation earlier period of harvesting make available the great production and decreases the crop false production rate such that the economy has been balanced with respect to formation. The significant reason is to predict the disease in plants and distinguish the type of syndrome with the help of segmentation and random forest optimization classification. In this investigation the accurate prior phase of crop imagery has been collected from different datasets like cropsience, yesmodes, nelsonwisc data set. In the current study, the real-time earlier state of crop images has been gathered after numerous data sources similar to crop\_science, yes\_modes, nelson\_wisc data set.

Design/methodology/approach: In this research work Random Forest machine learning based Persuasive plants health care computing is provided. If proper ecological care is didn't apply to these harvesting causes diseases in plants, decreases the cropping rate, and less production. So, the detection of plant diseases with the help of threshold segmentation and random forest classification has been involved in this investigation. Until different methods have been developed for crops analysis at earlier stage but it is necessary to implement methods to advanced techniques. So, the detection of plant diseases with the help of threshold segmentation and random

## IOT Based Air and Sound Pollution Monitoring and Proactive System

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### Abstract

*In universe nature is God gift for all kinds of leaving creatures. Pollution makes nature spoil. Generally, we have different types of pollutions are there in the environment like air pollution, sound pollution, water pollution etc., but mainly measuring two types of pollution that is air and sound. Air and sound pollution are a growing issue these days. It is necessary to monitor air quality and keep it under control for a better future and healthy living for all. Here we propose an air quality as well as sound pollution monitoring system that allows us to monitor and check live air quality as well as sound pollution in a particular area through IOT. System uses air sensors to sense presence of harmful gases/compounds in the air and constantly transmit this data to microcontroller. Also, system keeps measuring sound level and reports it to the online server over IOT. The sensors interact with microcontroller which processes this data and transmits it over internet. This allows authorities to monitor air pollution in different areas and act against it. Also, authorities can keep a watch on the noise pollution near schools, hospitals, and no honking areas, and if system detects air quality and noise issues it alerts authorities so they can take measures to control the issue. Air sensor senses the presence of harmful gases in the air. To reduce the air level, we use Calcium chloride. If the air level exceeds its threshold value means led will glow to decrease that air level blower is used.*

**Keyword:** Microcontroller, IoT, Sensor, Pollution, Calcium chloride, Air level blower.

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### I. INTRODUCTION

The primary goal of IOT Air and Sound Monitoring System is that the Air and sound contamination is a developing issue these days. It is important to screen air quality and monitor it for a superior future and sound living for all. Here we propose an air quality as well as sound contamination observing framework that permits us to screen and really look at live air quality as well as sound contamination in a space through IOT. Framework utilizes air sensors to detect presence of destructive gases/compounds in the air and continually send this information. Likewise, framework continues to gauge sound level and reports it. The sensors communicate with raspberry pi which processes this information and sends it over the application. This permits specialists to screen air contamination in various regions and act against it. Additionally, specialists can keep a watch on the clam or contamination close to schools, emergency clinics and no blaring regions, and assuming framework distinguishes air quality and commotion issues it cautions specialists so they can go to lengths to control the issue. Some future purchaser applications imagined for IoT sound like sci-fi, however a portion of the more pragmatic and reasonable sounding opportunities for the innovation include Receiving admonitions on your telephone or wearable gadget when IoT networks recognize some actual peril is distinguished close by. Self-leaving autos. Programmed requesting of groceries and other home. Programmed following of activity propensities and other everyday individual action including objective following and customary advancement reports. Network Devices and the Internet of Things All sorts of standard family gadget scan be altered to work in an IoT framework. Wi-Fi network connectors, movement sensors, cameras, receivers, and other instrumentation can be inserted in these gadgets to empower them for work on the Internet of Things. Home mechanization frameworks as of now execute crude adaptations of this idea for things like lights, in addition to different gadgets like remote scales and remote circulatory strain screens that each address early instances of IoT devices.

## DESIGN OF CIRCULAR ARRAY ANTENNA FOR MULTI-BAND RADAR APPLICATIONS

Abdul Rahiman Sk<sup>1</sup> K. Prathyusha<sup>2</sup> A. Jagannadhara-rao<sup>3</sup> V. Nihitha<sup>4</sup> T. Vanaja<sup>5</sup>

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### Abstract:

A Circularly phased array radar has been developed for integrating multiple functionalities into one radar platform. The radar system should have the facility to operate at multiple frequencies simultaneously. In this project, a triple-band uniform radial sub-array using a shared aperture antenna is proposed for a multi-functional radar system. A structured placement of different radiating elements is realized based on the radial displacement of the circular array. As well as multi-layer feed networks are used to reduce the complexity of integrating several feed networks into one antenna. The acceptable matching characteristics like low sidelobes and high far-field gain are acquired at the different operating bands C-band, X-band, and Ku-band. The experimental results validate the simulation design process conducted with High Frequency Structure Simulator (HFSS).

**Keywords:** *Far-field; multi-functional radar system; shared aperture antenna; radial array antenna; triple-band array antenna.*

### I. INTRODUCTION

Radar system is for detection that uses radio waves to determine the distance, angle, or velocity of objects. A radar system consists of a transmitter and receiver antennas for radiating and for receiving waves. This transmitting antenna radiation should be effective with minimum losses. It should possess high directivity and high gain. Radar is utilized in civilian applications particularly in controlling air traffics, observing weather, navigation of ship, environment, sensing from remote areas, etc.,

In present days radar systems, the need for antennas of high efficiency has created much attention in the study of phased array antennas. A multi-band array antenna creates diverse beam configurations and can operate at multiple frequencies in one radar platform. To realize different groups of array antennas in a limited space a shared aperture antenna is used. Many research had done on shared aperture and on the layout of multi-band array antenna. The effective placement of antenna elements for different frequencies has been investigated based on the Genetic algorithm. Array configurations based on element antennas operating at different narrow bands have been studied to realize a wide frequency bandwidth. Diverse optimization algorithms have been applied to design the multi-band patch antenna. Even though having lot of studies of shared aperture and multi-band array antennas, still it is challenging to reduce the size and restriction to achieve the desired radiation characteristics for all radiating elements in multi-layer design. Multi-layered design is the complex design which increases the mass of the structure. As well as it is complicated to achieve the best layout of the array antenna while it satisfies the optimum spacing at its operating frequency.

In this project, three different uniform radial arrays are proposed as a triple-band array antenna for radar system. The radial array antenna is effective layout of multiple array antennas. This triple-band array antenna consists of radiating elements that placed on the top layer for effective radiation characteristics. These radiating elements are microstrip antennas which are available at low cost and having high radiation pattern. For every frequency band the feed lines are arranged in the top and bottom layers to avoid the ambiguity while analyzing. Mainly antenna is designed for operating in multiple frequencies like C-band, X-band, Ku-band.

## DESIGN OF CIRCULAR ARRAY ANTENNA FOR MULTI-BAND RADAR APPLICATIONS

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**Keywords:** *Far-field; multi-functional radar system; shared aperture antenna; radial array antenna; triple-band array antenna.*

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In present days radar systems, the need for antennas of high efficiency has created much attention in the study of phased array antennas. A multi-band array antenna creates diverse beam configurations and can operate at multiple frequencies in one radar platform. To realize different groups of array antennas in a limited space a shared aperture antenna is used. Many research had done on shared aperture and on the layout of multi-band array antenna. The effective placement of antenna elements for different frequencies has been investigated based on the Genetic algorithm. Array configurations based on element antennas operating at different narrow bands have been studied to realize a wide frequency bandwidth. Diverse optimization algorithms have been applied to design the multi-band patch antenna. Even though having lot of studies of shared aperture and multi-band array antennas, still it is challenging to reduce the size and restriction to achieve the desired radiation characteristics for all radiating elements in multi-layer design. Multi-layered design is the complex design which increases the mass of the structure. As well as it is complicated to achieve the best layout of the array antenna while it satisfies the optimum spacing at its operating frequency.

In this project, three different uniform radial arrays are proposed as a triple-band array antenna for radar system. The radial array antenna is effective layout of multiple array antennas. This triple-band array antenna consists of radiating elements that placed on the top layer for effective radiation characteristics. These radiating elements are microstrip antennas which are available at low cost and having high radiation pattern. For every frequency band the feed lines are arranged in the top and bottom layers to avoid the ambiguity while analyzing. Mainly antenna is designed for operating in multiple frequencies like C-band, X-band, Ku-band.

# DETECTION AND ANALYSIS OF SOCIAL DISTANCING VIOLATION USING DEEP LEARNING

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## ABSTRACT:

Distancing oneself socially has proven to be a highly successful strategy in the fight against COVID-19 transmission chains. In order to develop a platform for deep learning-based social distance tracking, this project was undertaken. As an input, this deep learning technique uses a video frame captured by a camera that has been mounted to provide coverage within a certain radius. Based on the COCO dataset, the YOLOv3 algorithm is employed for pedestrian detection. From this bird's-eye view, distance measurements can be made from a 2D plane. The Euclidean distance is used to estimate the separation between two pedestrians, and the resulting value is shown. The developed method can be used in real-time applications as a detecting tool.

*Keywords: Social distancing, deep learning, pedestrian detection, YOLOv3 algorithm and Euclidean distance.*

## INTRODUCTION

Coronavirus has now been declared a global pandemic by WHO, based on an increase in the number of coronavirus patients being reported around the world. Many countries have implemented stringent curfews and lockdowns to slow the spread of the epidemic, allowing citizens to remain in their own homes for the duration of the outbreak. The best way to stop the transmission of the virus is to avoid intimate contact with others and to keep your distance from them, according to a number of healthcare groups. In order to help the healthcare system deal with this pandemic and to make the curve flatten. Practicing social distance and



# Smart Protection for Panic alert using GPS and GSM Technology

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**Abstract:** As we know the present era is with equal rights, where in both men and women are taking equal responsibility in their respective works. Hence women are giving equal competition next to men in all fields, they are assigned works in both the even and odd shift. Every single day women and young girls from all walks of life are being assaulted, molested, and raped. The streets, public transport, public spaces in particular have become the territory of the hunters. Because of these reasons women can't step out of their house. The only thought haunting in every woman's mind is when they will be able to move freely on the streets even in odd hours without worrying about their security. In critical situations the women will not feel insecure or helpless if they have some kind of safety device with them. We propose to have a device which is the integration of multiple devices, hardware comprises of a wearable "Smart gadget" which continuously communicates with Smart phone that has access to the internet. The complete gadget also ensures to provide self-defense application which helps her to escape critical situations. This system can be used at places like bus stops, railway stations, offices, footpaths, shopping malls, markets, etc.

**Keyword:** Raspberry Pi3, IoT, GPS, GSM, E-mail alert.

## I. INTRODUCTION

Women are the backbone of any economy, primarily shaping future of the country. She who earlier stayed at home to attend her domestic duties is now maintaining work and home simultaneously, participating in the process of economic development on an equal footing with men. The Government of India, meeting a longstanding demand for gender parity in the workforce, has approved an amendment in The Factories Act 1948 to allow women employees to work in nightshifts. The amendment suggests that nightshift for women shall be allowed only if the employer ensures safety, adequate safeguards in the factory as regards occupational safety and health, equal opportunity for women workers, adequate protection of their dignity, honor and transportation from the factory premises to the nearest point of their residence are met.

Nightshifts have been in existence for a long time, however for India it was only recently through an amendment to the Factories Act 1948 that it was allowed under the law for women to work nightshifts. Women are participating in almost all the spheres of economic activity. From village to city, we can see number of women workers and entrepreneurs

contributing towards the national income of the country. Garment units already employ 60% of women workforce; and with growth in this industry the number this will go up tremendously. So far, the IT sector were employing women for late-night work hours but had no legal obligation to provide the above safety measures. There is no denying the fact that women in India have made a considerable progress in almost seven decades of Independence, but they still have to struggle against many handicaps and social evils in the male-dominated society. Many evil and masculine forces still prevail in the modern Indian society that resists the forward march of its women folk. The present generation is striving for equal rights, where men, women and every person is getting equal rights, responsibilities and work load is shared equally too. With this, the working schedule for women are also changing and they are being allocated with different working shifts, in the daytime or even in the nighttime. So, improving the security of women and children is very important, especially during the night times. Women may have to use various available means of transport to reach their offices or home during late night. The smart wearable device system presented here consists of a push button switch used as a panic button. Whenever the person wearing the device gets into trouble, he or she pushes the button. Soon after pushing the panic button, GPS module interfaced with the system locates the user and sends the location of the user (person wearing the device) to the emergency contact and police using the GSM module.

The USB camera captures the image of the surroundings of the user and Pi sends an E-mail with the captured image and alert message to the emergency contact. The main theme of our project is to get quick help from their dear ones & rescue team, whenever they are in a bad state. The design is having some components when the user/victim needs help to defend his/herself. When the victim initiated the device, it sends SMS to the custom numbers that he is seeking for some help. The SMS contains information of the victim and his location. So, with the help of SMS sent by the user, the cops can approach the victim in a shortest span. Meanwhile the camera captures the offender and sends the captured images to the e-mail of the concerned people. The device is having a pulse rate sensor which is continuously monitors the health status of the sufferer. If the pulse is gone below the required rate, then a SMS alert will be sent to the emergency services with the location coordinates of the sufferer.

# Detection and Classification of Brain Tumor in MRI Images Using Deep Convolutional Network

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**Abstract** - The detection, segmentation, and extraction from Magnetic Resonance Imaging (MRI) images of contaminated Tumor areas are important concerns; however, a repetitive and extensive task executed by radiologists or clinical experts depend on their expertise. Image processing concepts can visualize the various anatomical structure of the human organ. Recognition of human brain abnormal structures by basic imaging techniques is challenging. To overcome this issue, in this paper, CNN deep learning algorithm was proposed for detecting the Tumor and marking the area of their occurrence with Regional morphological convex hull algorithm. The selected MR image dataset consists of two primary brain Tumors namely malignant and Benign. The proposed algorithm uses CNN architecture for both the region identifier and the classifier network. Here various Feature extraction methods are also extracted. Detection and classification results of the algorithm demonstrate that it is able to achieve a standard deviation 89.77% for meningioma and benign Tumor. As a performance measure, the algorithm achieved a Homogeneity of 92% for all the classes.

**Index Terms** - Brain Tumor detection, Malignant, Benign, CNN, Homogeneity, MRI.

## I.INTRODUCTION

Cerebrum growths are known as the majority shaped by the unusual multiplication of synapses by disposing of the mind's control components. Cancers that might shape in the skull can develop, put squeeze on the cerebrum and unfavorably influence body wellbeing. Early identification and grouping of cerebrum growths is a significant exploration space in the field of clinical imaging and as needs be helps in choosing the most advantageous treatment technique to save patients life. Cerebrum cancers can be grouped in more ways than one. For example, one of the famous grouping types is to arrange the cerebrum growths as harmless and threatening cancers. Cerebrum harmless growths are

typically cancers that create inside the skull however outside the mind tissue. Meningiomas structure a significant piece of this gathering. Dissimilar to harmless cancers in different organs, mind harmless growths can now and again cause perilous circumstances. Some (for instance, meningiomas) may seldom transform into harmful growths. Since they typically don't spread to the encompassing cerebrum tissue, they have a high possibility being taken out by a medical procedure. Growths that beginning in pituitary organs which control chemicals and direct capacities in the body are called pituitary cancers. Pituitary cancers are known as harmless growths and don't spread to different pieces of the body. Albeit the vast majority of the pituitary cancers are harmless, they seldom return to dangerous growths. The complexities of pituitary growths can cause super durable chemical lack and loss of vision. Cells in harmful growths are strange cells that imitate in an uncontrolled and sporadic way. These cancers can pack, invade or obliterate ordinary tissues. Metastatic mind growths are known as cerebrum cancers that rise out of one more piece of the body and spread to the cerebrum. They generally start from the lung, bosom, digestive organ, stomach, skin or prostate. Gliomas are the most widely recognized cerebrum dangerous growths. They are the reason for the greater part of the cerebrum tumors and contain cells with uncontrolled expansion. Despite the fact that they can seldom spread to the spinal rope or even to different organs of the body, they develop quickly and may stretch out into the encompassing sound tissues.

The unusual development of cells in human cerebrum is called as mind growth. A growth which happens in the cerebrum or spinal line is called as glioma and the cancer that emerges from the meninges is called as meningioma. The strange cell development in the pituitary organ is seen as pituitary cancer. The T1-

# IOT Based Smart Aquaculture Monitoring System

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**Abstract** - Internet of Things (IoT) is influencing our lifestyle from the way we react to the way we behave and is also a giant network with connected devices that gather and share data about how they are used. With the progression in computers like Arduino, the innovation is achieving the ground level with its application in farming and aquaculture. In this work, we have outlined and actualized monitoring of water quality of aquaculture utilizing Arduino, various Sensors and Wi-Fi module. We have also designed automatic feeding of an aquaculture environment utilizing servo motor. Sensor acquisition is conducted by Arduino and used as data processing device as well as server. A user can monitor the water condition using an android app through Wi-Fi via Internet from anywhere in the world. Some analysis is performed with the four parameters value to determine the overall approximate condition of the water and required action. Every feature in this gadget can work legitimately and easily. Also, in addition to these the Automation process will activate whenever the pH value changed.

**Index Terms** - IoT, sensors, Thingspeak cloud, Wi-Fi module, Arduino.

## I.INTRODUCTION

As the pattern of keeping pets' increments, individuals are keeping a wide range of creatures at home furthermore, it's anything but another idea in any capacity. The solid association among pets and their proprietors is apparent from a report by Michael Gross. These creatures require exceptional consideration, and, in some cases, people can't take care of their requirements and nowadays there are many individuals battling to safeguard the moral freedoms of creatures like PETA. Out of these creatures, fish require the most extreme care because their current circumstance is totally not the same as land creatures, so they need explicit conditions like a temperature range, pH, appropriate oxygen and CO2 levels. Ordinarily aquariums have oxygen siphons, warmers, and channels. This isn't sufficient or identical to the normal living space. Numerous

researchers have chipped away at the impacts of meteorological and hydrological variety with regard to the spatiotemporal scales. Keeping up with these circumstances is extremely hard physically, so robotizing this cycle will incredibly diminish the fish demise rate and will make extraordinary accommodation for the proprietors.

The primary driver of death for fish in aquariums and fish ranches is the failure to take care. This isn't just valid for this project yet as a matter-of-fact computerization is one of the most useful approach to getting things done easily. This task is intended to diminish the work time and can be controlled from anyplace, for example, a cell phone or PC and so forth IoT is the innovation that empowers correspondence between gadgets; this limits human collaboration with the machine, mechanizes typical or routine undertakings and even makes them quicker as the machine can likewise speak with different machines it is reliant upon. This makes a whole organization of brilliant machines that are autonomous of individuals, and this will likewise screen the breakdown of the item or mix-ups that occur as the IoT based machines are continually checking through sensors. Web of things is a mix of numerous ideas that are assembled to make an independent item that is not difficult to utilize and is sufficiently different to play out the end task. IoT is assisting makers with improving items and analyze issues significantly more without any problem. The producers might in fact close the machine or replaces a section before it fizzles. This will make extraordinary accommodation for the client also, on the grounds that he will advance beyond time furthermore, without agonizing over the things that are less significant.

## II.LITERATURE SURVEY

There is an application called Louis COETZEE et al. Presented the idea of Internet of Things. It is about the

# WASTE SEGREGATION SYSTEM USING ROBOTIC ARM

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## Abstract:

With the increase in waste creation rate, well-built waste management has become very essential. Dumped unmanaged wastes causes severe harm to humans and severely affects the environment. It additionally causes different climatic changes and obstructs the financial development of nation. Dynamic raise in the quantity of waste and contemptible dumping of waste has turn out to be a matter of worry, because of the threat it causes the big damage to environment. There comes the essential role of waste segregate system which avoids these troubles and reduces the complexity of recycling. The significance and the financial importance of waste is realized only when it is segregated. Currently there are no such systems for segregation. Our work proposes a smart waste sorting system which consists of hardware and a software system based on Raspberry Pi. It aims at efficiently sorting out wastes so that it would be easy for the group to segregate them on a huge scale basis. The hardware includes controller, dc motor, pick and place robotic arm, sensors such as IR, moisture, inductive proximity, wet sensor and perform object detection. The goal of the work is to automatic segregation of wastes into categories – dry, wet, and metals. This would help in easy recovery of useful and recyclable items.

*Keywords: Raspberry Pi, IR, inductive proximity, robotic arm*

## I.INTRODUCTION

Waste segregation and recycling are effective ways of reducing dumped trash. Unfortunately, these practices are not widely implemented in the country. People have been negligent when it comes to proper waste disposal, ignoring labels and throwing recyclables that can still be reused. Most of the people are unaware or ignore the fact the waste segregation and recycling can reduce cost, reduce drain in our resources, and lessen the waste being produced. Typical composition of garbage people throw in are 5.8% metals, 3.5% glass, 1.6% plastic, 12.9% papers, 1.8% textiles and 53.7% biodegradables which means only the remaining 20.7% of the wastes should really be going to our landfills. In our country, recycling centres do manual process of sorting wastes, so it increases human interface. For this we implement a system which minimizes human interference in the waste collecting and segregation process. Materials such as paper, glass and metals are the wastes that need to be segregated in this project. As the world is in a stage of up-gradation, there is one stinking problem that is to deal with Garbage. In today's life, the pictures of garbage bins being overfull, and the garbage spill outs are seen everywhere. This leads to several diseases as large number of insects and mosquitoes breed on it. A big challenge in the urban cities is solid waste management not only in India but for most of the countries in the world. Hence, such a system must be built which can eradicate this problem or at least reduce it to the minimum level. The project provides one of the most efficient ways to keep our environment clean and green. Based on estimates, the world cities generated 1.3 billion tons of waste annually with Asia accountable for 1 million tons per day. With current urbanization and population growth rate, the global waste generation is estimated to rise to 2.2 billion tons by 2025. More than half the world's population does not have access to regular trash collections which have caused troubles, are at a crisis level. The smart city

# SIGN LANGUAGE COMMUNICATION FOR DUMB AND DEAF PEOPLE USING RASPBERRY PI

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## Abstract:

An in-depth literature review has been carried out to look at the present state of data relating to Hand gesture recognition systems that explicitly focused on the vision-based technique for sign language detection. The problem existing at the moment is that most of the people are not able to comprehend hand gestures or convert them to the spoken language quickly enough for the listener to understand. In addition to this communication with sign language is not a very easy task. This problem demands a better solution which can assist speech impaired population converse without any difficulties. The authors propose a non-vision based extended idea that will assist in removing or at least reducing this gap between the speech impaired and the able-bodied people. The communication of speech-impaired people with others is only by using the motion of their hands and expressions. According to dumb people, every gesture is associated with a specific meaning and this is stored in a database. By frequently updating the database the dumb will communicate like a normal person using the artificial mouth.

*Keyword: Hand gestures, non-vision based, Sign language detection, Speech-impaired people, Data base, Artificial mouth.*

## I.INTRODUCTION

Correspondence among hard of hearing quiet individuals and typical individuals is more troublesome in light of the fact that ordinary individuals can't see the hypothesis and sensation of hard of hearing quiet individuals. Communication via gestures is the method of correspondence which utilizes visual ways like articulations, hand signals, and body developments to convey meaning. Gesture based communication is very useful for individuals who face trouble with hearing or talking. Gesture based communication acknowledgment alludes to the change of these motions into words or letters in order of existing officially communicated in dialects. In this way, change of gesture-based communication into words by a calculation or a model can assist with overcoming any issues between individuals with hearing or talking disability and the remainder of the world.

Vision-based hand signal acknowledgment is an area of dynamic momentum research in PC vision what's more, AI. Being a characteristic method of human connection, it is a region where numerous analysts are chipping away at, fully intent on making human PC communication (HCI) simpler what's more, normal, without the requirement for any additional gadgets. In this way, the essential objective of signal acknowledgment research is to make frameworks, which can distinguish explicit human signals and use them, for instance, to pass on data. For that, vision-based hand motion interfaces require quick and incredibly vigorous hand identification, and motion acknowledgment continuously. Hand motions are a strong human correspondence methodology with loads of likely applications what's more, in this unique situation, we have communication through signing acknowledgment, the specialized technique for hard of hearing individuals.

In non-vision-based approach, sensors, for example, Accelerometer, pressure sensor are utilized for sign acknowledgment which can't requires any legitimate lighting. Whenever a particular motion is made utilizing the Accelerometer, the Raspberry pi really looks at the signaled esteem with the appoint esteemed in the information base and afterward on the off chance that the motion is matches, the result is delivered through the LCD furthermore, the Speaker. One of its essential objectives is to make frameworks, which can distinguish explicit signals and use them to pass data or on to control a gadget. However, signals need to be displayed in the spatial and worldly areas, where a hand act is the static design of the hand and a signal is the unique development of the hand. This work primary spotlight is on making a non-vision-based framework ready to do continuous communication through signing acknowledgment.



# Design and Analysis of 4K Real Time Display System on FPGA Implementation

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## ABSTRACT

*An FPGA implementation to combine and analyse multi-channel independent films and rebuild a 4K real-time display. The video system can accept multi-channel FHD (1920 x 1080 pixels) films, process each channel, then rebuild and show the combined video up to 4K (3840 x 2160 pixels). We use parallel processing and a hardware-based framework to ensure great efficiency and low latency. To provide real-time display, each channel video may be processed independently and shown in 4K format. The Xilinx Spartan-6 FPGA module controls the input, video reconstruction, and output operations. High-speed memory chips and a ten-layer PCB enable effective video data caching and signal integrity. Real-time UHD implementation on FPGA can be utilised for contemporary surgery, patient monitoring, diagnostics, office meetings, video surveillance, etc.*

**KEYWORDS-** FPGA; multi-channel video; UHD video; real-time video

## 1. INTRODUCTION

Video is the next information carrier. Cameras, tablets, and even phones can record video. The several source videos necessitate too many monitors, making simultaneous analysis of all video data impossible. To solve the problems of multi-channel video data real-time processing. Moreover, with the advancement of hardware and video processing, the use of 4K (3840x2160) screens is expanding. In some applications, such as modern surgery, patient monitoring, and diagnostics, multi-channel video processing is required to maximise the 4K screen's efficiency.

As a result, most current multi-channel display devices are PC software-based; rendering them impotent to process the ever-increasing amounts of data and visual resolution. As a result, FPGA-based hardware with multi-thread and real-time processing capabilities may be a perfect answer to these issues. Parallel video processing is ideal for high-speed, multi-tasking applications.

Many researchers now focus on FPGA video processing. This is due to the FPGA's flexibility, efficiency and low power consumption. Weiguo Zhou and Yunhui Liu provide an FPGA-based picture mosaic algorithm for processing camera video. Peng Sun presented a video fusion using CPU + FPGA architecture that can efficiently

# Hybrid Beamforming with Large Antenna Arrays for 5G Systems

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## ***Abstract***

The ever-growing demand for a high data rate and more user capacity increases the need to use the spectrum more efficiently. As a result, the next generation, 5G, wireless systems will use a millimetre wave (mm-wave) band to take advantage of its wider bandwidth. In addition, 5G systems deploy large-scale antenna arrays to mitigate severe propagation loss in the mm-wave band. Large-scale antenna arrays are needed to fully exploit the performance gains of mm-wave communications, which brings formidable challenges to algorithm design and hardware implementation. Hybrid beamforming is a cost-effective alternative, which can significantly reduce the hardware cost and power consumption by employing a small number of Radio Frequency (RF) chains.

***Keywords:*** Hybrid beamforming, mm-wave, 5G systems, RF chains

## **I.INTRODUCTION**

With the serious range lack in ordinary cell groups, enormous scope receiving wire frameworks in the mm Wave groups might possibly serve to satisfy the expected needs of versatile traffic in the 5G period. There are many testing issues, nonetheless, in regards to the execution of advanced beamforming in huge scope radio wire frameworks: intricacy, energy utilization, and cost. In a pragmatic enormous scope radio wire organization, mixture simple and advanced beamforming constructions can be significant elective decisions. In this article, ideal plans of mixture beamforming structures are explored, with the emphasis on a N (the quantity of handsets) by M (the number of dynamic radio wires per handset) cross breed beamforming structure. Ideal simple and computerized beamforming plans in a multi-client it is examined to beamforming situation. Additionally, the energy productivity and range proficiency of the  $N \times M$  beamforming structure are dissected, including their relationship at the green point (i.e., the point with the most elevated energy effectiveness) on the energy effectiveness range productivity bend, the effect of N on the energy proficiency execution at a given range productivity esteem, and the effect of N on the green point energy effectiveness. These outcomes can be advantageously used to direct viable LSAS plan for ideal energy/range effectiveness compromise. At long last, a reference signal plan for the half and half beamform structure is

# INVESTIGATION OF PERFORMANCE ANALYSIS OF FLEXIBLE ANTENNAS FOR MODERN COMMERCIAL APPLICATIONS

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**Abstract:** Wireless Communication is becoming as a part of day-to-day life of human beings. In this rapid changing world in wireless communication, ultra-wideband antenna has been playing a key role for wireless service requirements. This work presents the design and analysis of ultra-wideband (UWB) rectangular conformal antenna with split ring resonators and complementary split ring resonators. Split ring resonators are placed on top of the antenna and complementary split ring resonators are placed at the bottom side of the antenna i.e., on dielectric substrate. Complementary split ring resonators and split ring resonators produces metamaterials which improves the performance of the antenna even though the size of the antenna is miniaturized. The radiation characteristics are observed at different bending angles from 30 deg to 120 deg. The analyzed conformal antenna supports excellent reflection coefficient at different bending angles. The radiation characteristics of the designed antenna are observed using ANSYS Electromagnetic desktop 18.2 (HFSS).

**Keywords** - Rectangular conformal antenna, HFSS, dielectric substrate, split ring resonators, radiation characteristics.

## I. INTRODUCTION

In communication systems antennas are very important components and they are defined as the devices which are used to send a signal i.e., RF signal whose path is a conductor to electromagnetic wave in free space. antennas work on a property called 'reciprocity' i.e, antennas work with the same characteristics irrespective of its function either as transmitter or receiver. Antennas which are used are commonly resonant antennas which means operates efficiently at specific frequency band. An antenna is generally fed with the signal and antenna emits radiations which are plotted graphically, and this plotting is called radiation pattern. The field of flexible antennas is witnessing an exponential growth due to the demand for wearable devices, Internet of Things (IoT) framework, point of care devices, personalized medicine platform, 5G technology, wireless sensor networks, and communication devices with a smaller form factor to name a few. The choice of non-rigid antennas is application specific and depends on the type of substrate, materials used, processing techniques, antenna performance, and the surrounding environment. There are numerous design innovations, new materials and material properties, intriguing fabrication methods, and niche applications. This review article focuses on the need for flexible antennas, materials, and processes used for fabricating the antennas, various material properties influencing antenna performance, and specific biomedical applications accompanied by the design considerations. After a comprehensive treatment of the above-mentioned topics, the article will focus on inherent challenges and prospects of flexible antennas. Finally, an insight into the application of flexible antenna on future wireless solutions is discussed [1].

For a flexible antenna, bending is a vital parameter as it could experience bending and crumpling during practical application. Additionally, a wearable dual-band antenna with an artificial magnetic conductor (AMC) structure on the back is proposed to alleviate body coupling [3]. It could be observed that the antenna reflection coefficient was conserved better during Y-axis bending compared with X-axis bending. Works in [4] showed an interesting finding on the bending effect of the antenna performance with different dielectric values for substrate, where the results showed that the substrate with dielectric constant close to air ( $\epsilon_r = 1$ ) has stable performance. Research on the impact of different substrate thicknesses (from 2 mm to 10 mm) towards bending conditions was explored in [11]. In addition, bending the antenna resulted in moving  $S_{11}$  to a higher frequency, where a thickness of 6 mm was less affected by the changes when the antenna was deformed. The antenna characteristic is preserved during 64 mm radius X-axis bending with the proposed metamaterial-inspired isolator that combines the defected ground structures (DGSs) and modified split-ring resonators (SRRs) [12]. A study on cylindrically bending hollow and solid effects on fabric-based antenna showed that gain and radiation patterns are almost identical for solid and hollow cylinders under bending, with slightly decreased bandwidth on solid cylinders [13].



## A HYBRID MESSAGE ENCRYPTION & DECRYPTION ALGORITHM BASED ON AES AND RSA

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### Abstract:

File encryption is a smooth approach of securing personal or enterprise facts safety. The RSA and AES consultant encryption algorithms can't satisfy the standards of record encryption reliability and safety while used separately. A hybrid encryption algorithm blending AES and RSA algorithms is recommended on this paper to overcome the above issues to resolve document encryption performance and safety problems. The experimental consequences endorse that the RSA and AES hybrid encryption algorithm cannot simply encrypt documents, however, additionally provide the blessings of performance and protection of the set of rules. The Hybrid encryption will be considered a highly secure type of encryption if the public and private keys will be fully secured. The hybrid encryption is achieved through data transfer using unique session keys along with symmetrical encryption. Public key encryption was implemented for random symmetric key encryption. The recipient can use the public key encryption method to decrypt the symmetric key. Once the symmetric key is recovered, it is then used to decrypt the message. The result shows a tremendous improvement on security of data and it gives overall improvement of the system performance in terms of security and efficiency.

**Keywords:** AES algorithms, RSA algorithms, Hybrid encryption algorithms, File encryption, File decryption.

### I.INTRODUCTION

Throughout history, people have needed to protect their secrets. For thousands of years, people have been using codes and ciphers to protect those secrets. Back then, cryptography started off as an art; it was only studied by writers and artists. It was used as early as 1900 BCE in Ancient Egypt. During these times the Egyptians would create a code using hieroglyphics by switching the order of them and only people who knew the order could translate the message. (Cryptography) As the years went on these methods become cleverer and more involved. The Greeks contributed a lot to cryptography, including two ciphers, the Spartan Scytale and the Polybius Square. The scytale was used by the Spartan army to send messages without being detected. Two people in the army would have two pieces of wood that were equal in diameter. The messages would be written on strips of leather wrapped around the wood. These messages could only be read if the strip was wrapped around a wood of the same size. The Polybius Square was another unique technique. The Greeks used a 5 by 5 square, with sides labelled 1 through 5 on the top and the side, while the squares would be filled with the alphabet (Cryptography).

The AES algorithm has impressive results, and it is relatively simple in terms of encryption speed. It inherits the value of the speed of DES encryption and has accelerated speed. It has good encryption efficiency and is ideal for vast volumes of data being encrypted and decrypted. Compared to the DES algorithm and the 3DES algorithm, the AES algorithm is enhanced in terms of security, and its security is comparatively high, but still much lower than the RSA algorithm; In terms of key length, the AES algorithm improves the issue of inadequate DES length, which is increased from 56 bits of the DES algorithm to 128/192/256 bits; In terms of resource consumption, the AES algorithm improves. However, AES algorithm still has some shortcomings in key management, which makes the security management and distribution of keys a little difficult, which makes it possible for AES algorithm to be

# Automatic covid chamber with gate and sanitization using contactless temperature sensor and mask detection

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## Abstract:

The basic aim of the project is to detect the presence of a face mask on human faces and body temperature of the person on live streaming video as well as on images. Artificial Intelligence has shown the promising results in health care through its decision-making process. We have used machine learning as well as deep learning to develop our face mask detection. To create a safe, COVID-19 healthy environment, we propose a dynamic Computer Vision based automated solution system focused on the real-time face monitoring of people to detect the face masks in public places by using Raspberry Pi to detect face mask protocol violations through an integrated Pi camera and to monitor body temperature with the help of contactless temperature sensor and automatic hand sanitization system. Thus, the above system will help the society by saving time and also helps in contaminating the spread of corona virus. This can be implemented in entrances, offices, colleges, schools etc.

**Keyword:** Raspberry Pi3, Pi camera, IR sensor.

## I.INTRODUCTION

After the breakdown of the worldwide pandemic COVID-19 situation, there arises a severe need of protection mechanisms like face masks, temperature being the primary one. For this purpose, we have to use face masks and sanitizers, to reduce the spread of disease. Due to this pandemic situation, we have to follow the safety measures taken by higher authorities for disease spread reduction, such as obligatory mask wearing, social distancing, quarantine, self- isolation within the country borders and abroad, often together with prohibition and cancellation of huge public events and gatherings. This is one of the worst and unsafe jobs that the person asking them to wear a facemask and checks their body temperature. It will lead to the transmission of COVID-19 from the normal people to the concerned person who is in charge of monitoring facemask and body temperature.

The outcome for this issue is to foster a programmed facemask locator and internal temperature level discovery framework by utilizing Raspberry Pi microcontroller. This course of action has its own 5MP camera module through which screens facemask and it has a non-contactless temperature sensor to peruse the internal heat level and permits the individual on the off chance that they follow the COVID-19 measures or it will give an alarm to the regarded specialists. They imagine and blast in the utilization of cell phones and brilliant machines in the wellbeing and government assistance area has cleared way for the information about everybody to be surveyed and assessed on a mass scale. By the current COVID-19 situation, IoT offers numerous applications, for example, the shrewd ventilators and covers or the arrangements offered for the leniency of self-disconnection at home while being checked by the clinical offices. A few current necessities like got information capacity frameworks, cloud and edge processing, insightful information the board, sensors for brilliant wellbeing gadgets. Which began as a nation level alarm in China with a few theories raised about its starting point has now appeared into a worldwide pandemic with a huge number of examinations completed to decide a fix. As a worldwide pandemic, COVID-19 has been causing significant setbacks and misfortunes to the human populace across the world from varying backgrounds. Around, 31.9 million individuals have been impacted by the SARS-CoV-2 infection with near 977K passings revealed inconspicuous. The table is topped by nations in particular the US, India, Brazil, and Russia representing the greatest number of tainted people. In India alone, 5.73 million individuals were and are impacted by COVID of which near a huge number of individuals have capitulated to the infection. Hence it has turned into the need of great importance, essentially for the functioning populace to get out of the solace of their homes to support their residing and as well as to determine the affordable irregularity. With these reasons on the front, the proposed model will surely assist with guaranteeing the Therefore it has become the need of the hour, at least for the working population to step out of the comfort of their homes to sustain their living and as well as to resolve the economical imbalance. With these reasons on the front, the proposed model will certainly help to ensure the safety and health wellness of all the employees when administered in their organizations.

# DESIGN OF TRIANGLE FRACTAL ANTENNA WITH DEFECTED GROUND STRUCTURE

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## **Abstract**

In recently years, the interest in multiband antenna is increasing, especially for the purpose to reduce the number of embedded antennas by associating several applications on the same antenna. A novel design of Sierpinski Gasket with triangular form is presented. The structure under study generates three frequency bands corresponding to the lower, middle, and upper bands including, upto 3.47 GHz (L-band), up to 4.8 GHz (Wireless Local Area Networks (WLAN)) and 8.56 GHz (X-band applications). The realized gains of the antenna system, in these frequency bands. This antenna is suitable for multiband applications. Using Defected Ground Structure in this type of antenna we can enhance gain due to its simple structural design. Also this paper brings out the fractal concept for developing new types of antennas with remarkable characteristics.

**Keywords:** *Sierpinski Gasket, Fractal Antenna, Defected Ground Structure, Multiband Antenna*

## **I.INTRODUCTION**

With development in conversation technology over the last decade, there is an increasing demand for miniaturization, value effective, multiband, and wideband antennas. Fractal antenna designs can aid in meeting those requirements. This paper affords a unique design of Modified Sierpinski Gasket Fractal Antenna (MSGFA). Sierpinski Gasket is a Sierpinski Triangle having triangular slots the usage of mid-factor geometry of triangle. Sierpinski Gasket Geometry is modified the use of round form. In this mission, Sierpinski Gasket Fractal Antenna geometry is changed in its 1st and 2nd generation using circular part and 3rd generation manner implemented. Equilateral triangular form slots are cut on the patch to enhance the return loss and advantage of antenna. The proposed antenna reveals its software in Satellite navigation,

# SMART SYSTEM FOR RIDER SAFETY USING GSM AND GPS

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**Abstract:** The foremost goal of this paperwork is to keep away from accidents which occur because of negligence of no longer sporting the helmet, drunk and drive and so on., This might motive extreme fundamental accidents regularly consequences in death. In this paper, we advocate a smart helmet that incorporates of numerous sensors to prevent under the influence of alcohol and power, injuries. The clever gadget for rider protection works only while helmet is worn by the rider. It consists of alcoholic sensor, RF transceiver, Vibration sensor and Arduino. The alcohol sensor is hired to save you drunk and power situation by way of checking the breath of rider and prevents the motor if they're drunken. The vibration sensor is in the helmet for accident detection. It senses vibrations every time the helmet moves the ground or motorcycle tilts abruptly by using 90 levels and forestalls the ignition automatically. Then a message is sent to the registered emergency cell number together with region the usage of GSM module and GPS tracking.

**Keywords -** Arduino, sensors, GPS, GSM, message alert.

## I. INTRODUCTION

Nowadays, the wide variety of injuries has multiplied unexpectedly. About 17 injuries take place each hour. Bike injuries constitute a prime bite of all accidents; that is because two-wheelers do not have as many protection parameters which can be covered in four-wheelers. Reasons causing it may be due to no longer sporting a helmet, feeling drowsy even as riding, alcohol consumption, two automobiles coming into nearer proximity without each drivers' observe, breaking of traffic signals, driving without a valid or no riding license, careless driving, unintentional triggering of the acceleration pedal, etc. The important goal of this paper is to advocate a system which could efficaciously assist in stopping any kind of mishaps and if such conditions arise then the way it detects and informs the concerned authorities and people, so that the situation can be taken care of at once. This system detects injuries by using vibration sensors, accelerometers. For detection, we use GPS and GSM module which locates the site of the twist of fate and correspondingly informs the individual's close to ones and close by hospitals via a text message. Only sending a text message to nearby hospitals might not be sufficient as it cannot keep away from secondary injuries and therefore, this gadget caters this requirement too. The device offers an idiosyncratic prevention and detection device that dispenses the final panacea for drivers which ensures safety and forestalls loss of lifestyles by using taking suitable measures in proper time. It also exams whether the driving force is drowsy or in an unstable state that can result in pedal blend-up and in some instances unintentional acceleration or turning of the steering wheel to the incorrect route that may cause crashing of the automobile with other cars or concrete street barrier.

The maximum commonplace cause is not carrying helmet due to inconvenience created they purposely avoid helmet. It is the most important motive of brain injuries what leads to loss of life. Moreover, drink and driving, over spreading are end up other commonplace troubles for accidents. Now a days, technology is employed for fixing all the contemporary age troubles. So, the problems which are mentioned above are averted and deaths are decreased with the help of era. Many humans die at the roads every year that arise because of bike injuries almost half of them in among 18-35 age group. This motivates to broaden a clever system. The principal intention of this mission is to make certain that rider is carrying his helmet before ride and not driving the car whilst rider is alcohol fed on and to save you the rash riding. All those proposed helmets delivered to the functionality of the simple helmet however did no longer address the trouble of relaying statistics to the approaching vehicle. In this newsletter, we recommend a modular smart helmet with a motorbike facet based on an RF transmitter and a helmet aspect primarily based on Arduino Uno, an accelerometer and an LED array in order to serve as a records-relaying machine which can communicate with an drawing near automobile. Therefore, it's miles vital that there should be a facility to reduce the aftereffects of these accidents, so accident detection is critical characteristic of our

# LINEAR ANTENNA ARRAY DESIGN FOR 5G AND LTE APPLICATION

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## Abstract:

A Linear antenna array, the radar antenna must have a high gain for the desired range. The antenna uses an array method to increase the gain. The antenna operates at 28 GHz and it is formed of 16 elements of rectangular patches arranged in a linear configuration. It has a unidirectional and bidirectional radiation pattern to meet the X-band, C-band and Ku-band radar implementation as a ship navigation tool. This method spreads the bandwidth of the antenna. The antenna is designed and fabricated into a linear array of 16 elements, using the R04003C Rogers substrate with a micro-strip line supply. This study limits up to 16 elements of radiation, followed by the addition of a method to expand the bandwidth of antennas.

**Keywords:** Linear antenna, Micro-strip line, Radiation pattern

## I. INTRODUCTION

Smart receiving wire frameworks require different bar examples of various radio wires. Albeit movable stage shifters are generally utilized in constant pillar frameworks, the Butler lattice is utilized in changing shaft frameworks because of its minimal expense and simple manufacture. In this review, a receiving wire cluster taking care of circuit in view of the Butler grid that can be utilized for quite a long time Multiple Output applications is intended for 5G new radio. With the proposed exchanging framework, the control of four bars can be accomplished. The Butler circuit, intended to cover the 3.5-4.2 GHz 5G band, has a low intricacy and is fit for addressing the requirement for high information throughput. A recreation of the endlessly circuit sub-components planned utilizing a 0.508-mm-thick substrate material is performed utilizing the Computer Simulation Technology Microwave Studio PC helped plan instrument. Moreover, a model of the Butler circuit is created, and the sufficiency and stage varieties at the result ports are estimated. A normal transmission loss of the feed circuit is estimated as 1.5 dB, and when the length of the Phase Shifter in the circuit is set to  $\lambda/8$ , with a four-component direct cluster added to the result of the Butler circuit, the primary bar is guided to  $\pm 15^\circ$  and  $\pm 35^\circ$  having most extreme addition in the 6.39-8.77 dB in range.

This method spreads the bandwidth of the antenna. The antenna is designed and fabricated into a linear array of 16 elements, using the R04003C Rogers substrate with a micro strip line supply. This study limits up to 16 elements of radiation, followed by the addition of a method to expand the bandwidth of antennas. Considering material limitation and duration of antenna design. The final antenna dimensions are 142.40 mm  $\times$  42.8 mm.

The measuring results show  $f_c = 9.496$  GHz,  $S_{11} = -32.64$  dB, VSWR 1.05, bandwidth = 41.9 MHz (9.5159 GHz - 9.4740 GHz), and gain 8.8 dB as well as a linear polarized antenna with both unidirectional and bidirectional pattern direction. The radar antenna tends to have a narrow beam width and high gain in telecommunication field, especially in the radar communication system and navigation, are required an accurate radar system to detect an object movement, the radar works in a similar way to echo-signal. The X-band radar working on the electromagnetic spectrum with a frequency range of 8 GHz - 12 GHz. This radar is quite sensitive for detecting small particles. X-band display radar produces



# An IoT-Based Parking System to Prevent Unauthorized Vehicles

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**Abstract:** In India, a family needs at least two cars since traffic congestion has become a serious problem, therefore parking space is at a premium, which means the emptor is less of a need. Because all work nowadays has been done online, an IoT-based smart parking system is the only viable option. By utilizing IoT sensors to detect and monitor security, locate parking lots, and reserve spaces, the smart parking system can make parking easier and more convenient for all users, thereby showing how the IoT can be widely used by a wide range of people in their everyday lives to make life easier and more convenient. To lessen traffic and make parking simpler, low-cost technology is being used. By minimizing traffic congestion and requiring less time for parking. The smart parking system gathers information about the parking area through a website, and parking spaces may be reserved and tagged. RFID Tag reader reads the tags on the cars in the parking lot's designated area, which are subsequently displayed on the LCD screen and the main gate. A specific parking lot has been reserved for the automobile. Programming an IoT product using the Arduino IDE software on an Arduino Nano based on automated parking system control using codes is made simple and powerful using the ESP8266. The most important benefit is that it saves time and money, and provides security control.

**Index Terms** - Parking System, RFID Tag & Reader, IoT, UBIDOTS, Cloud Webpage.

## I. INTRODUCTION

The 'Rules of the Road Regulation,' as the Indian Road Rules are sometimes called, went into force in July 1989 and continues in operation to this day. Under the Indian Motor Vehicle Act, there are several specific offenses, as well as associated punishments, listed below. Drivers in India should abide by these guidelines while on the road to ensure a safe and orderly traffic flow. As per city-specific traffic, any violation, transgression, or disrespect of any of these regulations is considered a severe offense. Using Radio Frequency Identification (RFID) for vehicle tracking has grown in popularity in recent years owing to its widespread availability and inexpensive cost. It is common for the RFID tags to be put inside the vehicle, and RFID readers to be installed on the road. RFID tags may be used to gather traffic information. Criminals who break the law may be held accountable using this information. This paper's approach may be used in a city that is trying to implement RFID-based traffic and vehicle monitoring systems. Traffic police guidelines and the Indian Motor Vehicle Act may be automatically identified by radio waves using RFID, a contactless and wireless technology.

## II. LITERATURE SURVEY

The idea of "smart cities" has grown in popularity in recent years. The concept of a "smart city" is becoming a reality because of the advancement of the Internet of Things. There is a constant attempt to improve the efficiency and dependability of urban infrastructure with IoT. New potential for smart cities has emerged as a result of the rapid development of the Internet of Things and Cloud technology. Building smart cities have always been at the heart of developing smart parking facilities and traffic management systems. A smart parking system based on the Internet of Things (IoT) and the cloud is presented in this study. Parking space availability in a parking lot may be monitored in real-time using the technology we suggest. Our smartphone app allowed users to reserve a parking space for themselves from any place. The goal of the work presented in this article is to increase the quality of life for residents by making improvements to the city's parking infrastructure.

Shikha Bathla, Nidhi Gaur, and Anupama Mehra claimed that an increase in the number of cars on the road is a direct result of the rise in parking troubles, as did Archika Singh and Mumin Sajad Shawl. As the number of vehicles on the road has grown, congestion and a lack of parking spaces have developed, threatening the safety of vehicles via unlawful parking. The primary goal of this article is to examine several types of parking systems and develop an Intelligent Prepaid Car Parking system that handles parking space concerns, vacancy issues, and vehicle safety. VHDL is used to make use of the advantages of RFID (Radio Frequency Identification). It reduces the amount of manual effort and improves the efficiency of the system.

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# SMART SYSTEM FOR RIDER SAFETY USING GSM AND GPS

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**Abstract:** The foremost goal of this paperwork is to keep away from accidents which occur because of negligence of no longer sporting the helmet, drunk and drive and so on., This might motive extreme fundamental accidents regularly consequences in death. In this paper, we advocate a smart helmet that incorporates of numerous sensors to prevent under the influence of alcohol and power, injuries. The clever gadget for rider protection works only while helmet is worn by the rider. It consists of alcoholic sensor, RF transceiver, Vibration sensor and Arduino. The alcohol sensor is hired to save you drunk and power situation by way of checking the breath of rider and prevents the motor if they're drunken. The vibration sensor is in the helmet for accident detection. It senses vibrations every time the helmet moves the ground or motorcycle tilts abruptly by using 90 levels and forestalls the ignition automatically. Then a message is sent to the registered emergency cell number together with region the usage of GSM module and GPS tracking.

**Keywords -** Arduino, sensors, GPS, GSM, message alert.

## I. INTRODUCTION

Nowadays, the wide variety of injuries has multiplied unexpectedly. About 17 injuries take place each hour. Bike injuries constitute a prime bite of all accidents; that is because two-wheelers do not have as many protection parameters which can be covered in four-wheelers. Reasons causing it may be due to no longer sporting a helmet, feeling drowsy even as riding, alcohol consumption, two automobiles coming into nearer proximity without each drivers' observe, breaking of traffic signals, driving without a valid or no riding license, careless driving, unintentional triggering of the acceleration pedal, etc. The important goal of this paper is to advocate a system which could efficaciously assist in stopping any kind of mishaps and if such conditions arise then the way it detects and informs the concerned authorities and people, so that the situation can be taken care of at once. This system detects injuries by using vibration sensors, accelerometers. For detection, we use GPS and GSM module which locates the site of the twist of fate and correspondingly informs the individual's close to ones and close by hospitals via a text message. Only sending a text message to nearby hospitals might not be sufficient as it cannot keep away from secondary injuries and therefore, this gadget caters this requirement too. The device offers an idiosyncratic prevention and detection device that dispenses the final panacea for drivers which ensures safety and forestalls loss of lifestyles by using taking suitable measures in proper time. It also exams whether the driving force is drowsy or in an unstable state that can result in pedal blend-up and in some instances unintentional acceleration or turning of the steering wheel to the incorrect route that may cause crashing of the automobile with other cars or concrete street barrier.

The maximum commonplace cause is not carrying helmet due to inconvenience created they purposely avoid helmet. It is the most important motive of brain injuries what leads to loss of life. Moreover, drink and driving, over spreading are end up other commonplace troubles for accidents. Now a days, technology is employed for fixing all the contemporary age troubles. So, the problems which are mentioned above are averted and deaths are decreased with the help of era. Many humans die at the roads every year that arise because of bike injuries almost half of them in among 18-35 age group. This motivates to broaden a clever system. The principal intention of this mission is to make certain that rider is carrying his helmet before ride and not driving the car whilst rider is alcohol fed on and to save you the rash riding. All those proposed helmets delivered to the functionality of the simple helmet however did no longer address the trouble of relaying statistics to the approaching vehicle. In this newsletter, we recommend a modular smart helmet with a motorbike facet based on an RF transmitter and a helmet aspect primarily based on Arduino Uno, an accelerometer and an LED array in order to serve as a records-relaying machine which can communicate with an drawing near automobile. Therefore, it's miles vital that there should be a facility to reduce the aftereffects of these accidents, so accident detection is critical characteristic of our

# LI-FI BASED SMART INFORMATION TRANSMISSION SYSTEM FOR VEHICLES

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## Abstract:

Li-Fi technology is one of the emerging fields in the field of communication. When information is transmitted through an LED lamp, blinking is faster than the human eye can detect. Information is distributed faster using Li-Fi compared to Wi-Fi. The proposed project introduces a car connection based on light reliability (Li-Fi). Car networks are an important technology for effective communication with both device and automotive users with timely information about safe driving conditions and entertainment applications such as noise and signature board system. Many dangers will be avoided by using this technology. The reason for this may be due to the sudden loss of focus for drivers. A systematic system of road accident control is used and traffic-related data is transmitted via Li-Fi. Communication occurs through LEDs. The proposed approach saves and avoids car crashes with high-level data capabilities

## Keywords:

LED, Li-Fi, Vehicular Networks, Visible Light Communication (VLC), Wireless Fidelity

## Introduction:

Li-Fi technology uses ledges to transfer data. It comes from wireless communication technology that uses light from Led to deliver high-speed communication. Visual light communication works by turning off the Led and illuminating at very high speeds, which cannot be seen with the human eye. The durability of the Li-Fi LED emitter is kept low enough to be invisible to the human eye but high enough to make communication easier. It is also very protective of digging as light can penetrate the walls. However, this also limits the scope. This is beneficial for sensitive magnetic fields where magnetic disturbances are avoided especially in hospitals, nuclear power and aviation industries. While Wi-Fi and Li-Fi both use an electromagnetic spectrum to transmit information, Wi-Fi uses radio waves and Li-Fi uses visible light. Li-Fi has almost no capacity limit. The visible light spectrum is 10,000 times greater than the spectrum of the entire radio. Light signals are transmitted to wireless channels. The detector on the receiver converts visual signals to retrieve the message. Since light cannot travel through walls, this is why Li-Fi signals can be protected in a visible place

## Motivation and Objective of The Project:

This section explores various kind of vehicle communication system proposed already by using Bluetooth, Wi-Fi and Li-Fi technology. The intelligent system based on Bluetooth technology was proposed to transmit the necessary information to the nearby roadside transmission station through Bluetooth medium and then the roadside station forwards the received to the intelligent base station for collecting the data through wired and Wi-Fi network. The system has a cooperative structure of several medium of communication for data transmission. The roadside stations which are connected to the base station receives the same information forwarded by the Bluetooth medium for managing the transport



# CHANNEL STATE INFORMATION ESTIMATION FOR 5G WIRELESS COMMUNICATION SYSTEMS: RECURRENT NEURAL NETWORKS APPROACH

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Indrani.B, Pravallika.B, Divya.B, Jedidiah.B

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## Abstract:

In this study, Deep Learning (DL) for Bidirectional Long-Term Memory Memory (Bi-LSTM) The Recurrent Neural Network (RNN) based on the Channel State Information Estimator (CSIE) is proposed for 5G Orthogonal Frequency Division Multiplexing (OFDM) systems. The proposed rating is a driver-dependent rating and follows an online learning method in the training phase and offline method in the implementation phase. The moderator does not deal with the absolute important certainty of the channels' statistics and achievements high performance in front of a limited number of pilots. Comparative research made using three layers of separation using loss functions: means total error, cross entropy function for  $k$ th special classes and total square errors. The algorithms for making Adam, RMMSrop, SGdm and Adadelat are used for testing the performance of the proposed scale using each subdivision layer. About signal error rate and accuracy metrics, the proposed scale works much better than the short term memory (LSTM) neural network-based network data state channel, at least one square minimum square error rate measured under different simulation conditions. I Computer and training time statistics for in-depth Bi-LSTM learning and LSTM-based ratings are provided. Given that the proposed estimates are based on in-depth study neural network pathway, in which it can analyze big data, see statistics dependence on features, improve the relationship between features and overall performance information collected for new data that you have never seen before, how to deal with it promising any 5G and above communication system.

## Keywords:

BiLSTM, Channel state information estimator, Deep learning neural networks, Loss functions, OFDM, RNN.

## Introduction:

Modern communication systems have operational requirements such as big data volumes, high transfer rates, and fast response speed, which poses challenges existing communication technologies. Therefore, many researchers have turned to their own attention to in-depth learning technology, and in-depth learning-based communication technology has shown great power in end-to-end communication systems, the channel measurement, signal detection, variable detection. Standard communication system the framework is shown in fig 1. It consists of three basic components: transmitter, channel, and the recipient. From the source, the modules in the communication system appear in pairs, such as source code and source encoder, channel encoder and signal encoder, modulator and demodulator. To improve the performance of this modular design of communication system, a common way for researchers to design an algorithm for optimizing each module, but this approach does not guarantee the effectiveness of the entire communication system. Therefore, the end-to-end optimization system communication system has become a research hotspot, and in-depth study can provide a powerful solution for this end to end application requirement. In addition, in-depth reading can enhance effective use the efficiency of big data in communication systems using the default feature discharge. So, In order to meet the new requirements in future wireless communication scenarios, and provides references for the further

# Detection of undernutrition in progenies using CNN with MATLAB

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**ABSTRACT:** Many countries experience undernutrition-related deaths of progenies younger than 5 years. Initiating the measures or treating undernourished progenies will help reduce the chances of death, and help reduce physical and health issues. Deep learning algorithms such as Convolutional Neural Networks (CNNs) analyze input images and distinguished them based on the properties they possess. The training procedure is carried out using AlexNet. Based on the comparison with the trained model, the system uses the image of the progeny as input and classifies it as undernourished or normal. Automating the implementation of this system helps people and healthcare providers prevent the consequences of undernutrition instead of requiring them to perform a manual process.

**Keywords:** AlexNet, Convolutional Neural Network, Undernutrition.

## *1. Introduction*

Generally, good nutrition allows progenies to survive, grow, develop, learn, play, participate and contribute—while undernutrition robs progenies of their futures and leaves young lives hanging in the balance. Undernutrition is a condition that occurs because of fewer or over intake of nutrients. This can lead to health issues such as diabetes, heart disease, eye problems, and stunted growth. Undernutrition is extravagantly high and has affected many countries in the world in one or more forms. Undernutrition, in all its forms, includes undernutrition (wasting, stunting, underweight), inadequate vitamins or minerals, overweight, obesity, and resulting diet-related non-communicable diseases. 1.9 billion adults are overweight, while 462 million are underweight. Globally, in 2020, 149 million progenies under 5 were estimated to be stunted (too short for age), 45 million were estimated to be wasted (too thin for height), and 38.9 million

were overweight. Around 45% of deaths among progenies under 5 years of age are linked to undernutrition. These mostly occur in low- and middle-income countries. At the same time, in these same countries, rates of progeny-hood overweight and obesity are rising. The survey reported that more than half the progenies under four were underweight and stunted. One in every six progenies was excessively thin (wasted). All these conditions could be attributed to the prevalence of chronic undernutrition in progenies. Despite decades of investment to tackle this malaise, India's progeny undernutrition rates are still one of the most alarming in the world. The Global Hunger Index (2020) — which is calculated based on total undernourishment of the population, progeny stunting, wasting and progeny mortality — places India at the 94th spot among 107 countries. Countries such as Sri Lanka, Nepal, Bangladesh, Myanmar and Pakistan have been ranked higher than India on the Global Hunger Index at 64th, 73th, 75th, 78th and 88th spots respectively.

As reported in the WHO's 2020 edition, stunting has affected 21.3% or 144 million progenies under the age of 5 worldwide. The threat of waste has affected the lives of more than half a billion or 47 million progenies under the same age group. A staggering 38.3 million progenies under the age of 5 are overweight around the world or 5.6%. The effects of undernutrition on physical health and growth are significant. A recent UNICEF report titled The State of the World's Progenies shows that globally at least one in three progenies is undernourished, and one in two progenies suffers from hidden hunger. Our world still has a long way to go before all progenies will be undernourished, according to UNICEF, WHO.

## Design and analysis of approximate multipliers using novel dual-stage 4:2 compressors in MAC

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### Abstract:

A novel approximate computing scheme suitable for realizing the area-efficient multiply-accumulate (MAC) processing. In contrast to the prior works that suffer from limiting the approximate range, and also increases delay, and area consumption. It utilizes different approximate multipliers in an interleaved way to compensate in the opposite direction during accumulate operations. The approximate compressors are designing to reduce delay and area with comparable accuracy when compared with the existing architectures. Furthermore, such implementations reduce the complexity of the system architecture. First, design the approximate 4:2 compressors in the opposite direction while minimizing the computational costs. Based on the probabilistic analysis, positive and negative multipliers are then carefully developed to provide a similar distance. Simulation results reveal that the proposed processing offers an energy-efficient computing scenario. The analysis is further extending to project the application like image smoothing and multiplication.

### Keywords:

Approximate computing, Approximate 4:2 compressors, approximate multipliers, multiplier.

### Introduction:

Approximate computing has been highlighted as a promising way for saving the energy consumption of various signal processing algorithms such as machine learning and multimedia digital signal processing, which are

generally known to have error-tolerable characteristics. These multimedia-related algorithms mainly consist of intensive matrix multiplications, and thus it is required to develop the cost-effective approximate Multiply-Accumulate (MAC) operator that minimizes the energy consumption for the given number of computational errors. Studies of approximate adders have also been proposed, but considering the complexity for realizing each arithmetic unit, the prior works have focused on relaxing multiplier costs, dissipating much more energy than the addition operation. In general, a large portion of multiplier costs is typically from internal compressors that are inevitable for developing a fast multiplier by reducing the number of partial products (pps). Among various techniques to simplify the multiplication procedures, therefore, the approximate compressor design has been recently considered as a viable option. Without utilizing the conventional counter-based compressor architecture, the approximate compressor is designed by modifying some output equations along the critical paths, relaxing the logic-level costs. Then only experience wrong partial products for specific input configurations of the approximate compressors, leading to the simplified multiplier design with acceptable errors. In recent approaches, the 4:2 compressor design has been widely selected to make the approximate version as it is regarded as a basic building unit for the practical multipliers handling up to 64-bit inputs. Despite the reasonable trade-offs between the energy consumption and the generated errors, there is a potential limitation on the existing approaches, which develop only the approximate multiplier

# DEEP LEARNING BASED HUMAN ACTION RECOGNITION USING MATLAB

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## ABSTRACT:

Human action Recognition is a challenging problem, especially in the presence of multiple persons. Human pose recognition mainly aims to locate the human body parts and build a human body representation (i.e... Body skeleton) from input data such as images and videos. Over the past decades it's been utilized in a wide range of applications including human-computer interaction, motion analysis, Augmented reality (AR), and Virtual reality (VR). Although the recently developed deep learning-based solutions have achieved high performance in human pose estimation. This will provide a comprehensive review of recent deep-learning based solutions for 2D pose estimation via a systematic analysis and comparison of these solutions based on their input data and interface procedures. 2D human pose estimation datasets and evaluation metrics are included. Quantitative performance comparisons of the proposed methods on popular datasets of different models (kinetic, planar) are performed. Finally, the challenges involved, applications, and future research directions are concluded.

**Keywords:** *Deep learning-based pose estimation, 2D pose estimation, pose estimation datasets, pose estimation metrics, Human Action Recognition.*

## INTRODUCTION:

Human action recognition is one of the difficult areas to study in computer vision in order to determine the position or spatial location of key points on the body (parts/joints) of a person from a given image or video. So, action recognition obtains the particular action of a human body with joints and rigid parts using image-based observations. Human Action Recognition, it includes predicting the configuration of human body parts from input data captured by sensors, such as images and videos, which has been extensively studied in computer vision literature. Deep learning solutions have been shown to outperform traditional computer vision methods in a variety of tasks, including image classification, semantic segmentation, and object detection, thanks to the rapid development of deep learning solutions in recent years. However, issues including occlusion, insufficient training data, and depth ambiguity remain obstacles to overcome. 2D HPE from images and videos with 2D pose annotations is simple to achieve, and great performance has been achieved utilizing deep learning approaches for human pose estimate of a single person. 2D human action recognition is used to estimate the 2D position or spatial location of human body key points from visuals such as images and videos. Traditional 2D human pose estimation methods use different hand-crafted feature extraction techniques for the individual body parts. Human action recognition can be used in surveillance systems to detect suspicious or abnormal human behaviour, clinical diagnostics to assess human movement, sportsman training to maintain proper posture, and the creation of naturalistic cartoon or computer game animations. The topic of

## Symbols and Message Writing Machine for Specially Abled Persons

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### Abstract:

Today more and more people are turning to robots to do their job because robots are more versatile, accurate, reliable and limit human effort. Arms of robots programmed robots have functions similar to the human arm. The aim of the project is to improve font style writing using voice as input. This can be useful for various applications such as people with Dysgraphia, which is a writing disability can use this machine to create trajectory movement with the human voice as input. People with physical disabilities can use this typewriter / typewriter during the test to record their test objectives. I used hardware Raspberry Pi 3B and Arduino which is a powerful way to do this to control real-time performance related to the device. Usually, a doctor's note is not readable and pharmacists and patients face the challenge of defining the right words for them. Even in industry, this device can be used to convert text into text using speech-to-text converter and convert this text into two-dimensional links (x, y) and so on in the handwriting gesture moves. Thus, written font signatures are readable in Capital format i.e., capital letters serving the purposes listed above. The machine is arranged in a speech recognition system also enables the user to write down what he or she is saying and to draw previously described images. The robot arm is programmed to record patient names or someone is speaking into the microphone. Performing writing tasks, robotic the arm will be fitted with a pen. It will be a low-cost device that can be configured to operate people with physical disabilities to write.

### Keywords:

Arduino, Raspberry Pi 3B, Speech Recognition, Writing Machine

### Introduction:

For many years people who could not write that they were disabled or blind, they had no way of expressing their thoughts on paper. And, when he appeared the tests had to find a portable author to write their paper at the time, they said he. Considering these issues, we have tried to find a solution to this by introducing them an automatic typewriter that will record as one speaks into a microphone. Therefore, the main purpose of the proposed program is to facilitate physical disabilities people. This phone can be used by people with disabilities when writing. Main The purpose of developing the proposed system is to assist people with physical disabilities writing or writing. Currently, people with disabilities need a writer / author on time tests to write their papers. The rapidly growing development of high technology as well production has made a significant contribution to human development. In this project, industrial requirements such as good quality and high precision have helped us create project and all this can be achieved with machines controlled by a computer similar to a computer numerical control system (CNC). This project includes I XY plotter that draws or writes two-dimensional data on a rectangular link a system that combines costs with a variety of applications such as Servo motor and stepper motor, which can be separated by its high

## AUTOMATIC WATER QUALITY MONITORING and MANAGEMENT

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### **Abstract:**

For human life and the health of the environment, water is important. An automated water quality monitoring and management system is developed for villages, workplaces, etc. In this project, different sensors are used to design a device to calculate the water pH, the water turbidity and the water flow. Smart interface sensor is used to track water contamination and monitor Leakages from water pipelines along with identification of illegal water pumping and also interfaced actuators to time scheduling of water supply. The water tank level, the water leak detector in the pipelines and the pH sensor have been used to monitor water quality and the water temperature sensor to track the water temperature. In the earlier, the ultrasonic sensors are used for tests. The automation of the system is demonstrated by Arduino Mega microcontroller board. With this device installed in smart villages, used to collect and evaluate the resident's water usage habits and save a lot of water from waste.

**Keywords:** *Arduino mega, Flow sensor, GSM module, pH sensor, Temperature sensor, Turbidity sensor.*

### **Introduction:**

Nowadays, water is considered as one of the scarcest natural resources on our planet. It is important to humankind, animals, and plants. Depending on the quality of water, it may either be a source of life and good health or a source of diseases and deaths. The growing environmental degradation in recent years brought about by development, population increase and climate change increases the need for researchers to look into its negative impact in the environment, especially in water sources and its implication. Increasing water pollution in oceans, lake, and river triggers worldwide demand more advanced methods in environmental monitoring systems particularly in the field of water quality monitoring. Moreover, developing countries like the Philippines rely on the conventional methods of collecting water samples and water analysis. Due to lack of technical know-how and a huge amount in the initial investment, water analyses are usually done through conventional procedures or by using portable testers which are not only expensive and laborious but also lack the capabilities for real-time data acquisition, analyses and fast dissemination of gathered information which are crucial and essentials for effective water quality monitoring endeavour. This proposed system is suitable for monitoring physical and chemical water characteristics in remote areas and reduce manpower requirement. It can be utilized for water quality monitoring which presents many advantages like its portability and near real-time data acquisition and data logging capability. It has gained popularity among the research community ranging from environmentalist to embedded systems community. However, applications for the aquatic area are far more challenging activities compared to the land-based WSN applications due to its electronic component which has zero tolerance to water or even moisture intrusion. WSN-based applications for environmental monitoring have been implemented for applications such as water quality monitoring, water chemical monitoring hydrodynamic performance monitoring, irrigation, and agriculture. Other studies are focused on the enhancement of the

# Modelling a Point-to-Point MIMO-OFDM Antenna System with 5G Beamforming

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## Abstract:

In order to provide higher data rates, recent wireless standards have adopted the combination of Multiple-Input-Multiple-Output (MIMO) and Orthogonal Frequency Division Multiplexing (OFDM) techniques. In an OFDM system, the data is carried by multiple sub-carriers that are orthogonal to each other. In the MIMO systems, the radio link capacity has been increased by using multiple transmission and receiving antennas. Because MIMO uses antenna arrays, beamforming can be adopted to improve the received Signal-to-Noise Ratio (SNR) which in turn reduces the Bit Error Rate (BER).

**Keywords:** *Beamforming, BER, MIMO, OFDM, SNR.*

## Introduction:

Multiple Input Multiple Output – Orthogonal Frequency Division Multiplexing (MIMO-OFDM) systems are the norm in current wireless systems (e.g., 5G NR, LTE, WLAN) due to their robustness to frequency-selective channels and high data rates enabled. With ever-increasing demands on data rates supported, these systems are getting more complex and larger in configurations with an increasing number of antenna elements, and resources (subcarriers) allocated. With antenna arrays and spatial multiplexing, efficient techniques to realize the transmissions are necessary. Beamforming is one such technique, that is employed to improve the Signal to Noise Ratio (SNR) which ultimately improves the system performance, as measured in terms of Bit Error Rate (BER). It illustrates an asymmetric MIMO-OFDM single-user system where the maximum number of antenna elements on transmit and receive ends. It models a spatial channel where the array locations and antenna patterns are incorporated

into the overall system design. For simplicity, a single point-to-point link (one base station communicating with one mobile user) is modelled. The link uses channel sounding to provide the transmitter with the channel information it needs for beamforming.

## Working of Orthogonal Frequency Division Multiplexing (OFDM)

**Modulation:** A mapping of the information on changes in the carrier amplitude, frequency or phase and combination.

**Multiplexing:** Method of sharing a bandwidth with independent data of another channel. OFDM is the combination of both modulation and multiplexing. Multiplexing basically refers to independent signals, those produced by different signals. In that the signal itself is firstly split into independent channels, modulated by data and the finally are multiplexed to create the OFDM carrier. OFDM is generally a special case of Frequency Division Multiplexing (FDM). In this scheme, a large number of overlapping, orthogonal and narrow band sub-carriers are transmitted in parallel. The available transmission bandwidth is divided by these carriers.

The separation of sub-carriers is just like that there is very compact spectral utilization. As an analogy, FDM channel is just like a water flow out of a faucet, a whole bunch of water coming out of all-in-one stream. In contrast the OFDM signal is just like a shower from where a same amount of water will come as a lot of small streams. One of the most advantages of one over another is that if we put our thumb over the faucet hole, we can stop the water flow but we cannot do the same for the shower. Although both of them do the same thing but they respond differently to interference. One of the most advantages of one over another is that if we put our thumb over the faucet hole, we can stop the

## Vehicle to Vehicle Communication System using Vanet

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### Abstract:

Technological innovations have improved the quality of life; thousands of kilometres can be travelled in hours or less. Vehicular Ad Hoc Network (VANET) has become a promising topic in research community due to its various applications like safety, infotainment, and traffic management application. VANET supports Vehicle to Vehicle (V2V) communication. With an increase in the number of vehicles on the road, the number of vehicle accidents is also increasing in equivalent pace. Therefore, safety is the essence of daily life; to reduce this adverse effect vehicle to vehicle communication is predominantly required. For safety applications, vehicle broadcast two types of messages that are beacons and emergency messages. Beacons include vehicle status like position, velocity, speed, etc. are disseminated periodically. Vehicles for safety application broadcast self-information messages, which sometimes results in congestion due to increasing vehicle density. To avoid congestion, our attention is towards designing a VANET that utilizes the communication medium efficiently, reliable and undelayed message reception are taken into consideration. The most challenging task is to deliver emergency messages before the deadline. VANET other applications also had made Internet services available during traveling and had given a smooth shape to traffic. The proposed system also developed to identify the severity of the accident using machine learning and image processing techniques

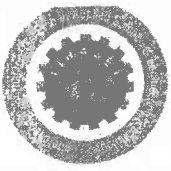
### Keyword:

Beacons, infotainment, VANET, V2V

### Introduction:

Today, new technologies are incorporated into cars that detect potential road hazards and improve the driving experience. There are three key components being integrated into cars: sensors, information systems and communication technologies to create connected vehicle networks. Vehicle-to-Vehicle (V2V) communication is being used to reduce traffic congestion, improve passenger's safety and enable the efficient management of vehicle on roads[3]. Here we present how vehicles communicate and deliver emergency messages before deadline to avoid road mishaps. The Vehicular Ad hoc Network (VANET) is a technology having the art of integrating ad hoc network, wireless LAN and cellular technology to achieve intelligent Inter-Vehicle Communications (IVC) also known as V2V communications and Roadside-to-Vehicle Communications [6]. Vehicular Ad hoc Network (VANET) is a type of Mobile Ad hoc Network in which communicating nodes are vehicles and roadside communication equipment's [1]. In VANETs nodes can communicate with each other without the use of central access points, means that vehicular nodes are treated as "computers on wheels" or "computer networks on wheels". The FCC (Federation of Communication Consortium) allocated a frequency spectrum for V2V and V2R or R2V wireless communication in 1999[6]. The commission then established Dedicated Short-Range Communication (DSRC) services in 2003 using frequency band of 5.850—5.925 GHz. Some of the characteristics of VANETs which differentiates it from other mobile ad hoc network are frequent changing topology and high mobility, no power constraint, geographical positioning





# Identification of Medicinal Plants using Deep Learning

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**Abstract:** Identification of the correct medicinal plants that goes in to the preparation of a medicine is very important in ayurvedic, folk and herbal medicinal industry. The main features required to identify a medicinal plant is its leaf shape, color and texture. Color and texture from both sides of the leaf contain deterministic parameters to identify the species. In this project we explore feature vectors from both the front and back side of a green leaf along with morphological features to arrive at a unique optimum combination of features that maximizes the identification rate. A database of medicinal plant leaves is created from scanned images of front and back side of leaves of commonly used medicinal plants. The leaves are classified based on the shape and dimension combination. It is expected that for the automatic identification of medicinal plants this system will help the community people to develop their knowledge on medicinal plants, help taxonomists to develop more efficient species identification techniques and also participate significantly in the pharmaceutical drug manufacturing.

**Keywords:** Classification, feature extraction, morphological features, optimization, plant identification, texture features.

## I. INTRODUCTION

### A. Introduction

The world bears thousands of plant species, many of which have medicinal values, others are close to extinction, and still others that are harmful to man. Not only are plants an essential resource for human beings, but they form the base of all food chains. The medicinal plants are used mostly in herbal, ayurvedic and folk medicinal manufacturing.

Herbal plants are plants that can be used for alternatives to cure diseases naturally. About 80% of people in the world still depend on traditional medicine. Meanwhile, according to herbal plants are plants whose plant parts (leaves, stems, or roots) have properties that can be used as raw materials in making modern medicines or traditional medicines. These medicinal plants are often found in the forest. There are various types of herbal plants that we can know through the identification of these herbs, one of which is using identification through the leaves. and protect plant species, it is crucial to study and classify plants correctly. Combinations of a small subset amounting to 1500 of these plants are used in Herbal medicines of different systems of India. Specifically, commercial Ayurvedic preparations use 500 of these plants. Over 80% of plants used in ayurvedic formulations are collected from the forests and wastelands whereas the remaining are cultivated in agricultural lands. More than 8000 plants of Indian origin have been found to be of medicinal value.

### B. Motivation

In the ancient past, the Ayurvedic physicians themselves picked the medicinal plants and prepared the medicines for their patients. Today only a few practitioners follow this practice. The manufacturing and marketing of Ayurvedic drugs has become a thriving industry whose turnover exceeds Rs. 4000 crores. The number of licensed Ayurvedic medicine manufacturers in India easily exceeds 8500. This commercialization of Ayurvedic sector has brought in to focus several questions regarding the quality of raw materials used for Ayurvedic medicines. Today the plants are collected by women and children from forest areas; those are not professionally trained in identifying correct medicinal plants. Manufacturing units often receive incorrect or substituted medicinal plants. Most of these units lack adequate quality control mechanisms to screen these plants. In addition to this, confusion due to variations in local name is also rampant. Some plants arrive in dried form and this make the manual identification task much more difficult. Incorrect use of medicinal plants makes the Ayurvedic medicine ineffective. It may produce unpredictable side effects also. In this situation, strict measures for quality control must be enforced on Ayurvedic medicines and raw materials used by the industry in order to sustain the present growth of industry by maintaining the efficacy and credibility of medicines.

## **Automatic road lane detection using convolutional neural network**

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### **Abstract:**

Detection of lanes is an essential module for autonomous vehicles and Advanced Driver Assistance Systems (ADAS). Many methods for lane detection have been suggested in recent years. Although, these techniques focus on identifying the lane from a single frame, and they usually provide arguably dissatisfying performance in dealing with certain extreme situations such as degradation of the lane line, large shadows, significant occlusion of vehicles, noisy inputs of images, etc. Practically, lanes are supposed to be on-road continuous line structures. Hence, a lane that cannot be precisely detected in the live frame can be extrapolated from the information of previous frames. Therefore, multiple frames are used from a continuous driving scenario to approach lane detection. A hybrid architecture-combination of a Convolutional Neural Network (CNN) and You Only Look Once (YOLO) algorithm is involved for lane and object detection.

### **Keywords:**

Neural Networks, CNN, YOLO Algorithm, Machine learning

### **Introduction:**

In this Paper Our understanding of driving conditions in real time has become increasingly realistic, in terms of size development of precise optical sensors and electronic sensors, more accurate computer performance and efficiency machine learning algorithms. Among the various other features of private driving vehicles, the discovery of a roadway is a thing principal and most importantly. The car will know where to go if the lanes are stopped obtained, thus avoiding the risk of crossing other routes. As reported in the relevant works, there is aa number of modern methods presented with smooth and complex operation. They include route detection with geometric models some incorporating such techniques focused on in-depth machine learning. Some also present issues related to energy reduction while others use certain supervised learning strategies and other road segregation. Many of the methods mentioned above limit their effects to finding road routes in a single, current driving environment and causing poor performance while handling extreme driving scenes like the big shadow, the destruction of the highway line, and the important car closure, as shown in the top three photos in Figure In view of these factors, the route may be incorrectly predicted or incorrectly named, can be partially acquired, or cannot be detected. The main reason for this is, the information presented with the current image frame is almost insufficient. Considering that the driving conditions continue again usually the same or almost the same between two to three adjacent frames, the linear line of the next. A few quick frames are almost identical and related. By

## Deep learning approach for massive MIMO hybrid beamforming

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### Abstract:

Hybrid beamforming is a promising way to reduce the complexity and cost of large multi-input multi-output (MIMO) systems while providing a high amount of data. However, the design of a hybrid precoder is a challenging task that requires a state-of-the-art response (CSI) and problem-solving problem. This paper proposes an in-depth, unregulated RSSI-based learning approach to design hybrid beamforming in large MIMO systems. In addition, we propose i) a way to design a synchronization signal (SS) at first access (IA); and ii) how to design a codebook for analog precoder. We also tested system performance with a virtual channel model in a variety of contexts. We show that the proposed approach not only significantly enhances spectral efficiency especially in frequency-division duplex communication (FDD) through a partial CSI response, but also has a near-average value ratio and surpasses some of the state-of-the-art in full - CSI solutions.

### Keywords:

Beam training, Deep Learning, Hybrid Beamforming, Massive MIMO.

### Introduction:

In large MIMO, the number of antennas in the base station (BS) rises to serve a few users and it was shown that [2] the effects of rapid blurring and disturbance disappear as the antenna value in the BS increases. High frequency multiplication and variability gain is achieved with a large MIMO, which also results

in higher visual efficiency and greater energy efficiency. On the other hand, each antenna in the main MIMO series requires a radio-frequency (RF) chain. Therefore, the power used by the RF features as a power amplifier makes large MIMO systems expensive and

inefficient. To address this energy consumption problem, lowering the cost-effective power

hardware, and yet providing better performance, a hybrid beamforming (HBF) approach was introduced [3]. It involves using a small number of analog beamformers sent to drive multiple horns to form a beam, each connected by a single RF chain to a digital conductor. This combination of phase-based analog mix with baseband digital beamformers reduces the number of transmission chains while maintaining the total volume at an acceptable level [4], [5]. In fact, hybrid beamforming techniques have been developed in the technology of the fifth-generation mobile network (5G) in millimetre wave (mm-Wave) bands [6]. However, a clear measurement of the mm-Wave channel is usually required in order to design glossy matrices that are mixed in the sender. Although a number of methods for measuring mixed light channels have been proposed over the past few years [7], channel measurement remains a difficult task due to the complex structure of precoding and the imperfections of the RF series. Among the previous studies, the authors in [8] designed hybrid beamforming by analysing orthogonal frequency division multiplexing (OFDM) - based frequency-selective structures. The large MIMO systems of the wideband mm-Wave are investigated in [9] to design a mixed

## COVID-19 Diagnosis System by Joint Classification and Segmentation

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### Abstract:

The corona virus and its variants cause worldwide damage to human health. The virus and its variants spread the speed of light from one country to another and from person to person. Although pharmacy, engineering and medical specialists come up with new ways of saying virus detection, there is still some ambiguity in finding the difference between covid virus and common diseases. Among the various tests, medical radiology proved to be the best diagnostic method for detecting the virus. In this project, we suggest how to do it radiology examination to take pictures of the chest and diagnose and measure the affected area using digital image processing techniques. The model incorporates the development of images, feature extraction using CNN, Segmentation and thresholding for retrieval remove the lung area if covid is present or not. Seeing the victims, an algorithm is used YOLO.

**Keywords:** COVID-19, medical imaging, Segmentation, YOLO algorithm

### Introduction:

In December 2019, a corona virus appeared, called SARS-COV-2Wuhan, China, who contracted COVID-19 while infecting humans.COVID-19 is a very serious disease that can lead to the death of an infected person. The threat posed by COVID-19 led the World Health Organization (WHO) to declare it the COVID-19 epidemic in March 2020. The Corona virus is a highly diverse group of people,RNA bacteria are covered, single-stranded and widely distributed in birdsand

mammals.These germs sometimes infect people, causing short to moderate breathing diseases. Prior to SARS-COV-2, two corona viruses were known to be very oldHuman Disease: SARS-COV, which causes severe acute respiratory syndrome (SARS); and MERS-COV, which causes Middle East Respiratory Syndrome(MERS). However, unlike SARS and MERS, the first symptoms of COVID 19 are very severe, or they may appear mildly, accepting the spread of infection with asymptomatic patients, which has led to the current epidemic.Although the WHO has emphasized the need for greater testing and communicationtracking to better deal with this epidemic, not all countries have a laboratory required infrastructure and reagents to effectively handle this task. Moreover, to find results from some of these tests may take a few days, leading to uncertainty Patients with COVID-19 with mild or no symptoms may continue to spread the disease over time waiting for test results.With the growth of in-depth learning methods, medical imaging is growing sought attention with a computer-assisted analysis of lung conditions.Automatic analysis of Computed Tomography (CT) scans, enabledto identify dangerous nodules. Radiographic analysis also received relevant effects on the diagnosis of TB symptoms, and many others heart disease. Emerging bacteria is a major problem in the global community health, and technology can help to differentiate the immediate conditions for delivery on timely treatment.

Hence, the diagnosis should be initiated at an early stage. Based on the symptoms, when a person approaches a clinic, few tests are done for confirmation of the disease along with CT

# IOT BASED FOREST FIRE DETECTION AND PREVENTION SYSTEM

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**Abstract:** *In forests, forest fires are the most common danger, and they have a devastating impact on forest resources and biodiversity. In order to avoid forest fires, early detection and preventative measures are essential. It is proposed that several sensors be used to construct an autonomous early warning and prevention system to remotely monitor culturally significant locations for fire and weather extremes. Sensor data is transmitted to the control station if a fire is detected. Drones are activated whenever a dangerous situation arises, such as when smoke or fire is detected by the sensors; the control center monitors the sensor data and activates the system.*

**Keywords:** *Biodiversity, Control Station, Firefighting, Hazard, Hotspot, Sensors.*

## INTRODUCTION

Forests play a crucial role in the well-being of humans. They have a positive impact on the country's economic, environmental, and social well-being. They're essential to wildlife's existence, and they also play a function in the food chain, which helps to keep the ecosystem in balance. Everything we need to live, from the air we breathe to the wood we use, is derived from forests. Not only can forests keep animals safe, but they help keep watersheds clean, limit soil erosion, and slow the effects of global warming. After processing fire photos collected by cameras, forest fire detection systems detect the occurrence of forest fires and dispatch the necessary assistance to put them out. Climate change and human-caused

## Enhancement of Hydroponics Agriculture

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### Abstract:

In a developing country like India, where agriculture is the backbone of the country, agriculture is plagued by several problems like small and fragmented land holdings, manures, pesticides, chemicals used for agriculture etc. consumers also increasingly demand for the healthy diet that is rich in quality and free of agricultural chemicals and pesticides. Currently hydroponic cultivation is gaining popularity all over the world because of efficient resources management and quality food production. Soil based agriculture is now facing various challenges such as urbanization, natural disaster, climate change, indiscriminate use of chemicals and pesticides which is depleting the land fertility. With the advantages in technology and the improvement of people's living standards, hydroponic plants become an integral part of daily life. This type of agriculture could be high yielding if monitored and controlled efficiently. Hydroponic plants not only decorate the environment, but also can delight us. However, traditional plant cultivation has been mainly performed in the soil. With the development of various techniques, the soilless cultivation has become a more mature and popular breeding choice such as hydroponic. Hydroponic is an eco-friendly system to cultivate crop without soil by utilizing aquaculture and hydroponics. At present, hydroponics is mainly used in agricultural production. Hydroponic cultivation is an agricultural method where nutrients are efficiently provided as mineral nutrient solution. Modern people have been always engaged in work and they have no more extra time to look after hydroponic plants. In order to maintain the correct PH level in nutrient solution by pumping

the nutrients whenever the PH level reduced by minimal fixed point. By using Arduino Uno Microcontroller, the flow of nutrient solution into plants is controlled.

**Keywords:** Agriculture, Hydroponics, Nutrient Solution and PH.

### Introduction:

Hydroponics is an agricultural method of production plants in the production area without the use of soil - water-based nutrients – and to improve the growing conditions production. Hydroponic plants grown have a much faster and more productive growth rate than of plants grown in the ground. Because they are cultivated in containers, pest and disease control is excellent. In natural conditions, the soil itself acts as a mineral reservoir but not essential for plant growth. Roots can easily absorb mineral nutrients from the soil if it is they dissolve in water. If minerals are present artificially supply of plant water, and then plant number in the long run we need soil to thrive. We can plant any part of the world plant this way. How to grow plants with using mineral nutrient solutions, in water, outdoors planting in the soil is known as hydroponics. For convenience and automatically perform many real-world tasks information and communication technology methods are used. The internet plays a major role in usage fields of information technology and communication. Online communication mainly involves clients-server connection. Information and communication technology moves on to the next stage in re-creation information sharing

## IOT Based Coal Mine Safety Monitoring and Alerting System

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### **Abstract:**

The coal is one of the most important raw materials in many industries. It is used to generate electricity and to extract many chemicals from the product as well building materials. Coal extraction from coal mines, however, is complex and dangerous process. Many accidents occur in coal mines around the world that cause casualties economic losses. Risks and risks can be greatly reduced by using the latest smart technology. Security is a very important part of any kind of industry. In the mine industry safety and security is an important aspect of it all. To avoid any kind of danger the mining industry follows certain basic safety measures. Accidents still occur underground mines due to rising temperatures, rising water levels, and leaks of methane gas. Here we are providing safety for employees. If an employee is in danger, he or she may press a panic button and notify security. To improve safety in underground mines, a reliable communication system should be established between underground miners and the fixed my system. Communication the network should not be interrupted at any time and in any situation. Expensive Zigbee A smart wireless mine monitoring system is proposed which is an early warning in this regard project. Today the safety of miners is a major challenge. The lives and health of the miner are at stake a few serious problems, not only in the workplace, but also in the background its effect. Mining operations emit harmful and toxic gases which expose their associated workers are at risk of life. This puts a lot of pressure on the mining industry. To increase productivity and reduce mining costs and safety considerations for

employees, a new approach is needed. The miner's life is in danger especially toxic gases are often released from underground mines. These gases cannot exist the human senses are easily detected. This thesis investigates the presence of toxic gases in a critical situation region and their effects on miners. This system monitors the environment parameters such as temperature, humidity and high toxic gases. This program also provides early warning, which will be useful to all miners present within the mine to save their lives before there was an injury. The system uses Zigbee technology to develop a wireless sensor network.

### **Keywords:**

Gas sensor, PIC Microcontroller, temperature sensor, water level sensor, Wi Fi / GSM module, Zigbee

### **Introduction:**

This chapter serves as an introduction to thesis. Identifies communication problems in underground mines and safety issues. The need for discovery and real-time monitoring of the program is also discussed briefly. It also presents the objectives and the structure of the thesis. Underground mining operations prove to be a risky business in terms of safety and health staff are worried. These risks are caused by different techniques used for different extraction minerals. The deeper the mine, the greater the risk. These security issues are very worrying especially in the coal industry. Therefore, the safety of employees should always be paramount consideration for any type of mining, whether coal or any other mineral. Underground coal mining involves a greater

# Smart Shopping Trolley with Mobile Application Based On IoT

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## Abstract

The Internet of Items connects more and more things every day (IoT). For example, in a grocery store, a smart shopping system may connect all of the items. Low-cost RFID tags may be added to each item in an IoT system, which may be read by a smart shopping cart's RFID reader when the item is put in the cart. To avoid lengthy lines at the register, clients may now pay for their purchases using their smartphones. This system may also be coupled with RFID scanners, enabling it to maintain inventory track and, if required, communicate stock changes to a central server. Additionally, inventory management is simplified thanks to the use of RFID readers instead of laborers who must manually scan every item in the system. Design criteria, a prototype system, and a secure communication protocol are some of the methods used in this study to prove the system's viability in the real world. We believe this is the first time that a smart shopping system with security in mind has been offered.

**Keywords:** IoT, RFID, Smart phone, Cloud, ESP8266, WiFi Module.

## I. INTRODUCTION

IoT has made it possible for physical items to communicate with each other. Computer and communication capabilities may now be found in a wide range of everyday objects. As a result, the industrial, financial, and environmental systems have undergone a new revolution. Managing data, communicating wirelessly, and making snap decisions in real-time are all adversely affected by this issue. Security and privacy issues in the IoT need the usage of lightweight cryptographic algorithms. Smart homes, wearable gadgets, and e-health systems have seen a lot of activity in the IoT research sector. Because it has gotten so little attention in the scientific world, RFID is the subject of this investigation. RFID readers may be used to monitor a smart shelf if each item for sale is equipped with a tag that can be read by a reader. There are many benefits to this on the surface, including an RFID-equipped shopping cart that may automatically scan items and generate billing information when they are put in a smart cart. Customers save time by not having to stand in long checkout lines. A server may receive real-time status



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## IoT Based Solar Powered Multipurpose Agriculture Robot

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**Abstract:** In India, farming employs 70% of the labor force. In agriculture, there are several methods, including seed sowing and ploughing. The existing methods of seeding, spraying pesticides, and ploughing are inefficient. Costly and unwieldy equipment is necessary for the aforementioned activities. As a consequence, developing a system that decreases the need for labor and time can help India's agricultural sector. The proposed study intends to construct a robot capable of ploughing, seed planting, and water spraying. The suggested robot is powered by solar photovoltaic (PV) panels, eliminating the requirement for an external power source. The whole architecture is restricted by an Android application that interfaces with an IoT ESP8266 and sends signals to the robot for needed activities. As a result, DC motors are used to plough the ground and plant the seeds. Consistent spacing is maintained for seed sowing. To irrigate the crop, a sprinkler with revolving nozzles is used. This mechanical vehicle will save labor costs while also speeding up and improving accuracy. It combines many activities, so it is cost-effective. When compared to tractors or other agricultural instruments such as electric pumps, this equipment requires less energy.

**IndexTerms** - Agrirobot, ESP8266, IoT, Arduino, Solar panel, MIT app.

### I. INTRODUCTION

Agriculture has been around for thousands of years, and its evolution has been shaped by a variety of climates, civilizations, and technologies. As a result, the agricultural system should be upgraded to reduce farmers' efforts. The designed model automatically sows the seeds and sprays insecticides. Based on robotic assistance, the prototype offers innovative technology for optimizing agricultural procedures such as seed planting and pesticide spraying. In today's age, particularly in the agriculture sector, we do not have enough competent laborers. Manual farming takes more time and produces more pollutants. The major goal of creating automation in the agricultural industry is to minimize labor and time necessary to execute procedures on crops, so that human efforts may be reduced by up to 90%. Automation is necessary for worker safety and health, particularly when people are expected to do hazardous tasks. Crop sowing, which includes autonomous precision seeding and integrates robotics and geomapping, is a previously established robotics application. Precision Hawk supplies farmers with a mix of robotic hardware and analytic software to monitor and analyze crops. Other applications include agricultural weeding and spraying systems, autonomous tractors, and harvesting and picking systems.

More and more agricultural enterprises are turning to the Internet of Things (IoT) to increase their capabilities, efficiency, global reach, and a host of other factors. Sensors will continue to become smaller, more complicated, and more inexpensive thanks to this discovery. Because networks are utilized all across the globe, smart farming is a success. Smart farming, which focuses on innovation in the agricultural sector, is the primary answer to the difficulties that businesses are experiencing today. Farmers may get the necessary information and monitor their agricultural sector by using IoT devices and smartphones.

The system is made up of simple components such as a solar panel, a DC motor, a battery, a relay, a motor driver, a relay driver, a WiFi module, and an Arduino controller. The whole process is managed by a microcontroller. The battery is charged by the solar panel. This battery provided electricity to both the vehicle and the motor. The field is ploughed and the seed is planted using a DC motor. The microcontroller regulates and varies the distance between the two seeds. As soon as the robot has completed its mission, we may alter its course using WiFi commands and IP addresses. The benefit of this solar-powered multi-function Agri-robot is that it does not need any fuel or gasoline to operate since it runs on solar energy. Because of the employment of the Arduino controller, the circuit model is less complicated and compact.

### II. RELATED WORK

Agriculture automation may assist farmers in reducing their efforts. Vehicles are being developed to perform tasks such as ploughing, seed sowing, and water spraying. All of these duties have yet to be carried out with a single-vehicle. The robots in this application are designed to focus efficiently and to conduct the actions independently. A vehicle is used to do tasks such as ploughing, seed planting, and water spraying in this idea. This machine uses less energy than a tractor, and it also reduces agricultural instrument pollution by using a solar panel to power it. As a result of a lack of useful agriculture equipment. Adapting to new methods is necessary.

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## Secure Content Based Image Retrieval Using Deep Neural Network in the Cloud

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### Abstract:

Images are being generated at an ever-increasing rate by sources such as defines and civilian satellites, military reconnaissance and surveillance flights, fingerprinting and mug-shot-capturing devices, scientific experiments, biomedical imaging, and home entertainment systems. For example, NASA's Earth Observing System will generate about 1 terabyte of image data per day when fully operational. A content-based image retrieval (CBIR) system is required to effectively and efficiently use information from these image repositories. Such a system helps users (even those unfamiliar with the database) retrieve relevant images based on their contents. Application areas in which CBIR is a principal activity are numerous and diverse. With the recent interest in multimedia systems, CBIR has attracted the attention of researchers across several disciplines. Nowadays, rapid and effective searching for relevant images in large image databases has attained an arena of extensive awareness in many applications, the tremendous growth of smart mobile devices, the Content-Based Image Retrieval (CBIR) becomes popular and has great market potentials. Secure image retrieval has attracted considerable interests recently due to the outsourcing of CBIR onto the cloud. In this paper, we propose and implement a secure CBIR framework that performs image retrieval on the cloud without

the user's interaction. A pre-trained generic DNN model (e.g., VGG-16) is used to extract the feature vectors of an image on the user side. VGG-16, is used to extract the deep features of an image. The information about the neural network is strictly concealed by utilizing the lattice based homomorphic scheme and apply PAHE encryption to secure features.

### Keywords:

Content Based Image Retrieval, Deep Neural Network (DNN), VGG16, PAHE, Cloud.

### Introduction:

To enable such input method as a substitute, a system is designed which follows a low-cost approach to control cursor on a computer system without the use of mouse. In the proposed system, the cursor movement of the computer system is controlled by the eyeball movement using OpenCV. It is interfaced with IP camera which detects the Eyeball movements and based on these eyeball movements the cursor can be controlled accordingly which are processed using the OpenCV. As the computer technologies are growing rapidly, the importance of human computer interaction becomes highly notable. Some persons who are disabled cannot be able to use the computers. Content based image retrieval is highly

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## OpenCV Based Real time Secured Video Streaming

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### Abstract

In the domain of proper content delivery over the internet, security of the sharing data plays a key role. In this project we stream the real time video from server end to client end with high security internet protocol. The main objective of this project is to stream the data without any server load. Providing security for the sharable data plays a key role in this concept. Here we use the OpenCV tool for the analysis of the video at the server side, OpenCV is a computer vision tool that is used for the AI and machine learning and also Image processing based visual applications. We also use the windows socket programming in this project to bind the windows software to the server networks like TCP or UDP. We are using UDP transmission in this system. We use the Visual studio platform to write the code for video streaming and use proper internet protocol for the transfer of the data. Here in this project we are using the socket programming to provide security to the data that is to be transferred. In this we use a particular port at both the server and client ends. Here we are using raw RGB camera as input for the video at server side, which saves the data in .bmp(Bitmap) format.

**Keyword:** OpenCV, Visual Studio, Windows Socket programming, Bitmap.

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### I. INTRODUCTION

Security is an important aspect of today's world. Video surveillance has been widely used as an important component of the security system. The things that we see usually create more impact in our brains than the things we usually read to or listen to. That to these days security for the data which is being transmitted has decreased very much, as the technology is being developed to the far ends so the security of the data is lost to the other far end. The technology is being evolved exponentially over the years. The work done by humans is being automated by Machines. Applications such as face detection, video surveillance systems have been more importantly used in computer vision topics these days. These systems are more useful in image processing systems based on video streams to show the required results according to users. OpenCV is a source computer vision library which is written in c and C++ and runs on major operating systems. By using it, one can process images and videos to identify objects, faces, or even handwriting of a human. Image processing is a method to perform some operations on an image, in order to get an increased image. If we talk about the basic definition of image processing then "Image processing is the analysis and control of a digitized image, especially in order to improve its quality". We can use these techniques to build the effective security system by using the video stream and using OpenCV to process the stream. We can use various other technologies to stream the video from one end to other end, but the major key point here is the security of the data that is being transmitted through the internet. So to make sure that the data which is being transmitted through the internet is secured completely we are using Windows Socket programming to bind the windows software with the network services and then transfer the data over the internet.

## BLOCK BASED CARRY SPECULATIVE APPROXIMATE ADDER FOR ENERGY EFFICIENT APPLICATIONS

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### **Abstract:**

In this brief, a low energy consumption block-based carry speculative approximate adder is proposed. Its structure is based on partitioning the adder into some non-overlapped summation blocks whose structures may be selected from both the carry propagate and parallel-prefix adders. Here, the carry output of each block is speculated based on the input operands of the block itself and those of the next block. In this adder, the length of the carry chain is reduced to two blocks (worst case), where in most cases only one block is employed to calculate the carry output leading to a lower average delay. The effectiveness of the proposed approximate adder is compared with state-of-the-art approximate adders using a cost function based on the energy, delay, area, and output quality. The results indicate the reduction in terms of the cost function compared to other approximate adders.

**KEYWORDS:** Approximate computing, low power, speculative adder, energy-efficient

### **INTRODUCTION**

In current digital systems, one of the key constraint is the thermal design power (TDP) could limit the performance of digital systems. One of the techniques which may help to obtain the most out of this constraint is the use of the approximate computing technique. It may be used for application domains such as multimedia and image processing, digital signal processing, wireless communication, machine learning, and data mining which are inherently error-resilient. The technique may be used to attain more energy reduction and/or performance at the cost of some accuracy loss. In recent years, various approximate computing techniques at different software/hardware levels have been proposed. Examples includes thread fusion and tunable kernels, approximate accelerator, imprecise logic or arithmetic unit, and approximate Instruction Set Architecture (ISA).

In this brief, we deal with approximate adders which are utilized as the basic operator in performing other arithmetic operations such as subtraction, multiplication, and division. Approximate adders have been received many attention by the designers. In the state-of-the-art approximate adders, where most of them are based on the carry propagate structures, the energy and speed gains have been achieved by hardware manipulation, logic simplification, and voltage over scaling. While some of the adders were based on a configurable output accuracy, others had a fixed accuracy level. The accuracy configurability imposed some overheads in terms of delay, area, and power which could limit their use in some applications where such re-configurability is not needed.

# IOT AND GSM BASED COVID-19 MEDICATION ALERTS AND SUPERVISORY OF HEALTH USING ARDUINO

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Health monitoring and medication warnings are the primary goals of this initiative, which is aimed at people with Covid-19 and other health conditions. Corona, pulmonary disorders, and a decrease in oxygen levels are all contributing to a growing death rate in today's world. Because of this, it is imperative that we overcome all of these issues. As a result, we've created a wearable and portable remote health monitoring system that uses cutting-edge technologies like IOT, GSM,

embedded computing, and wearable sensors to help individuals with chronic conditions like COPD, low oxygen levels, and high blood pressure live better lives. Consequently, as information spreads from all directions, fewer people will need to see a doctor on a regular basis. The patient-friendly nature of wireless transmission has made it easier to implement in monitoring systems.

**Keywords:** Arduino, UNO, IOT, GSM, Supervisory, computations,

## OCCLUDED PROHIBITED ITEMS DETECTION: AN X-RAY SECURITY INSPECTION BENCHMARK AND DE-OCCLUSION ATTENTION MODULE

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### Abstract:

Security inspection often deals with a piece of baggage or suitcase where objects are heavily overlapped with each other, resulting in an unsatisfactory performance for prohibited items detection in X-ray images. There have been rare studies and datasets touching on this important topic in the literature. In this work, we contribute the first high-quality object detection dataset for security inspection, named Occluded Prohibited Items X-ray (OPIXray) image benchmark. OPIXray focused on the widely-occurred prohibited item "cutter", annotated manually by professional inspectors from the international airport. The test set is further divided into three occlusion levels to better understand the performance of detectors. Furthermore, to deal with the occlusion in X-ray images detection, we propose the De-occlusion Attention Module (DOAM), a plug-and-play module that can be easily inserted into and thus promote the most popular detectors. Despite the heavy occlusion in X-ray imaging, the shape appearance of objects can be preserved well, and meanwhile different materials visually appear with different colors and textures. Motivated by these observations, our DOAM simultaneously leverages the different appearance information of the prohibited item to generate the attention map, which helps refine feature maps for the general detectors. We comprehensively evaluate our module on the OPIXray dataset and demonstrate that our module can consistently improve the performance of state-of-the-art detection methods such as SSD, FCOS, etc, and significantly outperforms several widely-used attention mechanisms. In particular, the advantages of DOAM are more significant in

the scenarios with higher levels of occlusion, which demonstrates its potential application in real-world inspections.

### Keywords:

Occlusion, X Ray, SSD, FCOS and DOAM

### Introduction:

Security inspection usually adopts X-ray scanners to find whether there is any prohibited item in passenger luggage. In this scenario, objects in the luggage are randomly stacked and heavily overlapped with each other, leading to heavy object occlusion. As a result, after a long time localizing prohibited items in large amounts of complex X-ray images without distraction, security inspectors struggle to accurately detect all the prohibited items, which may cause severe danger to the public. And changing shifts frequently will cost a large number of human resources, which is not advisable. Therefore, a rapid, accurate, and automatic approach to assist inspectors to detect prohibited items in X-ray scanned images is desired eagerly. As the technology of deep learning especially the convolutional neural network develops, the recognition of occluded prohibited items from X-ray pictures can be regarded as an object detection problem of computer vision. To torch this important topic, we contribute the first high-quality object detection dataset for security inspection, named Occluded Prohibited Items X-ray (OPIXray) image benchmark. To deal with the occlusion in X-ray images, De-occlusion Attention Module (DOAM) is proposed, a plug-and-play module that can be easily inserted into most popular detectors

### PROPOSED METHODOLOGY:

## **ANIMAL DETECTION SYSTEM IN FARM AREAS**

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### **Abstract:**

Implementation of animal detection in farming can be used to prevent the wild animals from entering the farm fields, thereby reducing the damage caused by them to the property and the people working there. This would be of great relief to farmers since as per the reports by the All India Kisan Sabha, the loss due to these damages is considerably high and the attacks are increasing in number every year. Animal detection can be implemented using computer vision and deep learning. It will help in detecting and identifying the animal which tries to enter the field. The details which are collected in turn are sent to field owners and other officials through an android app. They could make use of these details to take necessary actions to prevent the damage that could be caused by these animals which otherwise would be of great difficulty. When it comes to old age, it becomes necessary to monitor our old ones for their health and safety. Due to weakness and weak joints they have a great risk of falling down. Now it is important to know if an old age person has fallen so that he/she can be helped on time. Also people on wheelchair need to be checked for fall detection. For this purpose we propose a smartfall detection system. The system uses accelerometer and gyro sensor to detect person movements, It can be mounted on persons hand or wheelchair for detection. The sensor is connected to a microcontroller in order to constantly transmit the acceleration data. Now the system keeps monitoring for fall detection and abrupt movement changes in person. A sudden abrupt change with jerk in the system is treated as a fall. Now in case the person did not fall and alarm was false, the system allows to snooze the alert if person presses snooze button in 5 seconds. If person does not press the snooze, system detects person has fallen and automatically triggers alert through Wi-Fi connection to alert the loved ones of the person about the situation instantly.

### **INTRODUCTION**

As forest lands are decreasing day by day, it became very hard for animals to live in forest areas. Due to over population in the country it occurs deforestation this results in the shortage of food and shelter for those animals which live in the forest lands. Due to shortage of food and shelter, animals are directly depending on farm lands for their food. So animal interference in farmlands is increasing day by day which effects human life and property causes humananimal conflict but as per nature's rule every living creature on this earth as important role in eco-system. Agriculture is the backbone of the economy but because of the animal interference in agricultural lands there will be a huge loss of crops. Animals such as Wild boars , Elephants, and other animals coming in contact with humans causes a huge damage for the crops, damages grains and water supplies, and also damages grain stores, and other assets. Wild animals sometimes attacks farmers in the crops which leads to vital injuries and even deaths of farmers. Farmers in India face serious threats from pests, natural calamities and damage by the animals resulting in lower yield of crops. So, farmers are not that effective and it is not feasible to hire guards to keep an eye on crops and prevent wild animals. In this project to detect since safety for both animals and human is more important. So, this system is essentially implemented in the farm lands to protect from animal interface. In India, agriculture is one of the major economic forces. In 2018, the Gross Domestic Product (GDP) rate for agriculture was 7.8 percentage and generated Rupees 555,679 million. Every year,



# Managing Attendance using Facial Recognition Technology

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## Article Info

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## ABSTRACT

*This article discusses the management of attendance using facial recognition technology. Attendance being a very important side of administration might usually become a time constraint, repetitive job, loaning itself to inaccuracies. Organizations need to keep a track of individuals inside the organization like staff and students to maximize their performance. Being a prime feature of biometric verification, facial recognition is being used enormously in several such applications, like video monitoring and CCTV footage system, an interaction between computer & humans and access systems presents indoors and network security. By utilizing this framework in this project an approach to the detection and identification of human faces is presented and then recognizes the person by comparing characteristics of the face to those from the Trained model using Viola Jones and LBPH (Local Binary Patterns Histograms) from OpenCV. Furthermore, a new approach that gives a detailed attendance report to parents or authorized person using an auto mail system where overall attendance is posted is introduced.*

*Keywords- Attendance, Facial recognition and detection, Haar cascade, LBPH, OpenCV-Python.*

## 1. INTRODUCTION

At various institutions, maintaining student attendance is the most difficult task. Each institution has its own method of recording attendance, whether it is through the use of an attendance sheet or through the use of biometrics. However, these methods are time-consuming. The majority of the time, students' attendance is taken using an attendance sheet distributed to faculty members. This requires considerable effort and time. We have no way of knowing whether or not the authenticated student is responding. Calculating consolidated attendance is another significant task that is prone to human error. In some instances, the attendance sheet may be misplaced or stolen by a student. To resolve

these issues, we require an automated attendance management system [3]. At the moment, facial recognition and image processing are extremely interesting topics that have only scratched the surface. Facial recognition is rapidly eclipsing other forms of biometrics (fingerprints, RFID, etc), as facial recognition systems employ a set of unique features for each individual. This proposed project can be used to develop an attendance system that utilises facial recognition because the traditional method, i.e., pen and paper, is not only time consuming and burdensome, but also prone to proxies and manipulation. Our goal in developing this project is to make the attendance system more efficient, to eliminate proxies and manipulation, and to save time



# IMPLEMENTATION OF ANTI-COLLISION ROBOT USING FPGA AND IR SENSOR

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## ABSTRACT:

In multi-robot environment, when many robots are moving in the same workspace, there is a possibility of their physical collision with themselves as well as with physical objects. In the present work, we have proposed and developed a processor incorporating smart algorithm for avoiding such collisions with the help of IR sensor and implemented it by using VHDL. The design procedure and the simulated results are very useful in designing and implementing a practical system. The RTL schematic view of the processor is achieved by successfully synthesizing. In this paper, a prototype of robot for obstacle detection using IR proximity sensor has been designed using FPGA. The design includes the adaptation of the FPGA for the implementation of detection of obstacles with IR proximity sensor and the motor driven circuit with L293D to drive the motors of robot. Using Verilog HDL coding the design is implemented on SPARTAN6 FPGA board. Co-design of software-hardware tasks which are used to design robotic systems that have improved reliability. We have successfully implemented the design and verified the hardware for different test circumstance.

**Keywords:** Field Programmable Gate Array(FPGA), Infrared sensor(IR sensor) Navigation, Simulation, VHDL.

## INTRODUCTION

The FPGA-bot is a low-cost moving robotics platform designed using DE1 or DE2 board. The FPGA-bot is designed to be a small self-directed vehicle that is programmed to move in reaction to sensory input. A wide variety of sensors can be easily attached to the FPGA bot. Here we are using IR proximity sensors for the detection of the obstacle. Then 9V rechargeable battery pack is used to supply power. Two DC drive motors are used to move the robot. The robot can move forward, left, right and stop based on the detection of the obstacle. The FPGA is automated to act as the controller. The DC motors are controlled by timing pulses produced by the FPGA board.

The appearance of reconfigurable Field Programmable Gate Arrays (FPGA) has given increased to a new platform of complete robot control system. With FPGA devices, we can design to fit the requirement of control system tasks for a robot. A FPGA-based control system is designed to solve the problem of parallel tasks attaining control which occurs on single processor machine. FPGA is as flexible as software and reliable as hardware. Timing analysis can be done easily and also the programs can be converted into hardware blocks which do not require any operating systems. Robots carry out many various tasks. During these tasks the robot moves and orients. While navigating, it uses signals from the environment and the contents of its own memory to make the correct decisions. This form of navigation may be many depending on the given task and problem.



## Automated Food image Classification using Deep Learning approach

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**ABSTRACT** -Because of its growing importance in the health and medical fields, food image categorization is a new research subject. Automated food recognition techniques will undoubtedly aid in the development of diet monitoring systems, calorie estimation, and other similar applications in the future. Automated food classification methods based on deep learning algorithms are discussed in this research. For food image classification, SqueezeNet and VGG-16 Convolutional Neural Networks are utilized. It was shown that applying data augmentation and fine-tuning the hyper parameters improved the performance of these networks, making them appropriate for practical applications in the health and medical domains. Because SqueezeNet is a lightweight network, it is easy to set up and maintain. SqueezeNet can attain a high level of accuracy even with fewer parameters.

Specific foods-whole grains or potato chips? Specific diets-the Mediterranean diet or the "Twinkie" diet?

And what about when or where people consume their calories: Does eating breakfast make it easier to control weight? Does eating at fast-food restaurants make it harder? There's ample research on foods and diet patterns that protect against heart disease, stroke, diabetes, and other chronic conditions. The good news is that many of the foods that help prevent disease also seem to help with weight control-foods like whole grains, vegetables, fruits, and nuts.

**KEYWORDS:** Food Classification, Image processing, Squeeze Net, VGG-16 Network, Transfer learning.

### 1.1 DEEP LEARNING:

### 1. INTRODUCTION:

It's no secret that the amount of calories people eat and drink has a direct impact on their weight: Consume the same number of calories that the body burns over time, and weight stays stable. Consume more than the body burns, weight goes up. Less, weight goes down. But what about the type of calories: Does it matter whether they come from specific nutrients, fat, protein, or carbohydrate?

Deep learning is a machine learning technique that teaches computers to do what comes naturally to humans: learn by example. Deep learning is a key technology behind driverless cars, enabling them to recognize a stop sign, or to distinguish a pedestrian from a lamppost. It is the key to voice control in consumer devices like phones, tablets, TVs, and hands-free speakers. Deep learning is getting lots of attention lately and for good reason. It's achieving results that were not possible before.

In deep learning, a computer model learns to perform classification tasks directly from images, text, or sound. Deep learning models can achieve state-of-the-art accuracy, sometimes exceeding human-level

# IOT BASED TEMPERATURE MONITORING SYSTEM USING FPGA

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## Abstract:

FPGA with Internet of Things latest technology and this method has been used to launch many smart devices with great apps for our modern day. One more The IoT challenge is to manage the vast amount of sensitive data generated on smart devices which are limited resources and subject to missing data due to link failure. In this paper in particular will focus on FPGA with the IoT platform, i.e., the use of low-cost FPGA implementation the entire IoT sub-set including TCP / IP protocol, Control System and Data Recovery etc. over the past few years, we have made great strides in the field of IoT applications to FPGA court. This process is updated with low cost, effective power consumption in real time remote vision system. The main purpose of this study is to focus on how FPGA-based hardware resources can be accessed anywhere. Cost of care servers can be scaled down by creating a cloud-based monitoring system. Data loss exists avoided with the help of this process. Making connections to various networks integrated devices (computer, tablet, mobile phone) simultaneously anywhere in the world. There are a variety of business areas that require you to monitor the temperature and review the situation in them the temperature should be kept at a very low level in the food storage system. An IoT-based temperature monitoring system helps us monitor the food storage system temperature and update data in the cloud at regular intervals.

## Keywords:

*IOT Based, Temperature Monitoring System, FPGA*

## Introduction:

Building a cloud-based monitoring system is very important to reduce the cost of maintaining servers, to avoid data losses and to make the

access easy with multiple internets connected devices (computer, tablet, mobile phone) at the same time anywhere in the world. There are various industrial areas it requires you to monitor temperature and update the status to the cloud. Food preservation is one of the areas where the temperature must be maintained at the lowest level. IOT based temperature monitoring system help us to monitor the food preservation system temperature and update the data to the cloud at the regular interval. This IOT system can be constructed using Spartan3an FPGA Starter Kit, Wi-Fi Module and IOT Cloud server. Web services with FPGA based hardware have already been realized and defined. Their embedded nature permits the developers to simply adjust those services to energetically interrelate with their surroundings, e.g., to attain real-world measurement data or control various actuators. Such entities can be called environment-aware web services in difference to classical web services that work on remote physical or virtual machines. The IOT applications can be developed by implementing

## An Arithmetic logic unit design using reversible logic gates

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### Abstract:

An 16-bit ALU Arithmetic and Logical Units are designed using Fredkin gate . The Proposed ALU performs two arithmetic and six logical operations. This ALU is constructed so that the cost of the circuit remains low and power losses can be reduced. After performing these functions the simulation of the ALU is carried out. Then the power analysis for the reversible ALU and irreversible ALU is done and compared. A design constructing the Arithmetic Logic Unit(ALU) based on reversible logic gates as logic components is proposed. By using reversible logic gates instead of using traditional logic gates such as AND gates and OR gates , a reversible ALU who function is the same as the traditional ALU is constructed. The presented reversible ALU reduces the information bits use and loss by reusing the logic information bits logically and realizes the goal of lowering power consumption. Digital system implemented by using conventional gates like AND and OR gates dissipate a major amount of energy in the form of bits which gets erased during logical operations. This problem of energy loss can be solve by using reversible logic circuits in place of conventional circuits. Reversibility has become the most promising technology in digital circuits designing. In today's world ALU is one of the very important part of any system having many applications in computers, cell phones, calculators etc.An

Arithmetic Logic Unit (ALU) is a digital multifunctional circuit that performs Arithmetic (Sub, Add,) and Logical (AND, XOR, NOR) operations on two operands A and B

B. It is not possible to realize quantum computing without implementation of reversible logic. The main purposes of designing reversible logic are to decrease quantum cost, depth of the circuits and the number of garbage outputs. This paper provides the basic reversible logic gates, which in designing of more complex system having reversible circuits as a primitive component and which can execute more complicated operations using quantum computers. The reversible circuits form the basic building block of quantum computers as all quantum operations are reversible

### Keywords:

ALU, STLD

### Introduction:

The ever growing demand of high end computing applications have posed the challenge of continuous technology upgradation. The upgradation in technology has enabled the complex applications like Cloud computing, Real-time transitions on huge databases, Bio-technological computations a reality. Technological advancements in terms of higher operational frequency and



## Prepaid Energy Meter with Remote Access

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### ABSTRACT

Energy fuels the growth and development of any country, and as such effective monitoring, measurement, billing, and access control are not proper. As the advancement of technology and dependencies on electrical appliances increases, the usage and requirement of electricity are increasing rapidly, and the utilities are facing difficulties in collecting electric bills.

The current project is designed to allow the amount of energy to be used if the account has a balance. It also allows the operator to recharge the user account using an app.

- The system first accepts account recharge and allows using only limited units of energy as per recharge and then cuts off the supply. It also consists of an app that enables the operator to recharge the meter remotely.
- The second part is that the User can also stop the flow of electricity from a remote location if the electricity is not in use.
- The third part is continuously monitoring and sending the remaining power units to the user's phone.

The prepaid electricity meter could be widely used to provide a new, customized electricity billing system, where users may recharge when they intend to use that facility. This puts forward an innovative electricity billing and "use as needed" electricity usage scheme. It also eliminates the need for manual electricity meter reading tasks.

Key words: Electricity Billing; NodeMCU; Raspberry Pi;

### INTRODUCTION:

The Electricity Board cannot understand consumers' demand in the present Electricity system. The consumer faces problems like tracking energy usage and forgetting to switch off the power not in use. The solutions for all these problems are to keep track of the consumers for accurate monitoring, controlling and theft detection. These are all the features to consider when designing an efficient energy system. The present prototype is to study energy usage for driving different appliances in a controlled and systematic manner. This concept is based on Pay first use later one. From the consumers' perception, the idea is attractive because there is no Fear of disconnection and reconnection. Our prototype mainly deals with an energy meter, which utilises the features of embedded systems, i.e., a combination of hardware and software to implement the desired functionality. The paper discusses the use of

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**DESIGN AND SYNTHESIS OF NOVEL 1,2,3-TRIAZOLE SCAFFOLDS: BIOLOGICAL ACTIVITY AND MOLECULAR DOCKING STUDIES**

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**ABSTRACT**  
The first study are elucidated by different types of heterocyclic groups and used to study the anti-cancer activities of polycyclic (1,2,3-triazole) activity in conventional and in vivo studies. The synthesis of novel derivatives are characterized by proton nuclear magnetic resonance techniques as a non-spectroscopic approach. The *in vitro* anti-cancer activity in the HeLa, SK-N-SH and H1299 cell lines by using MTT assay. The docking studies are also done. Compounds are tested in CDK-2, CDK-5, CDK-7, CDK-9, CDK-13, CDK-14, CDK-15, CDK-16, CDK-17, CDK-18, CDK-19, CDK-20, CDK-21, CDK-22, CDK-23, CDK-24, CDK-25, CDK-26, CDK-27, CDK-28, CDK-29, CDK-30, CDK-31, CDK-32, CDK-33, CDK-34, CDK-35, CDK-36, CDK-37, CDK-38, CDK-39, CDK-40, CDK-41, CDK-42, CDK-43, CDK-44, CDK-45, CDK-46, CDK-47, CDK-48, CDK-49, CDK-50, CDK-51, CDK-52, CDK-53, CDK-54, CDK-55, CDK-56, CDK-57, CDK-58, CDK-59, CDK-60, CDK-61, CDK-62, CDK-63, CDK-64, CDK-65, CDK-66, CDK-67, CDK-68, CDK-69, CDK-70, CDK-71, CDK-72, CDK-73, CDK-74, CDK-75, CDK-76, CDK-77, CDK-78, CDK-79, CDK-80, CDK-81, CDK-82, CDK-83, CDK-84, CDK-85, CDK-86, CDK-87, CDK-88, CDK-89, CDK-90, CDK-91, CDK-92, CDK-93, CDK-94, CDK-95, CDK-96, CDK-97, CDK-98, CDK-99, CDK-100, CDK-101, CDK-102, CDK-103, CDK-104, CDK-105, CDK-106, CDK-107, CDK-108, CDK-109, CDK-110, CDK-111, CDK-112, CDK-113, CDK-114, CDK-115, CDK-116, CDK-117, CDK-118, CDK-119, CDK-120, CDK-121, CDK-122, CDK-123, CDK-124, CDK-125, CDK-126, CDK-127, 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## RESEARCH PAPER

## Influence of Silver and Copper Substitution on Structural, Dielectric, Magnetic, and Catalytic Properties of Nano-Lanthanum Ferrites

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### ABSTRACT

The research paper describes the synthesis of silver, copper doped (LaXFeO<sub>3</sub>) nano lanthanum ferrites (where X = Ag, Cu, both Ag and Cu) by using the sol-gel method. Their dielectric properties, magnetic properties, and catalytic applications were studied by LCR tester and VSM (Vibrating Sample Magnetometer), UV-Vis Spectroscopy respectively. The dielectric properties were studied as a function of frequency and applied field at room temperature and also in a temperature range of 313 K to 673 K. These results confirmed that the doping of silver and copper decreases the dielectric properties due to their conducting behavior. Room temperature magnetic properties revealed the doping of copper influenced the magnetic properties. It was noticed that the magnetism of bare LaFeO<sub>3</sub> is very low and the magnetism of La<sub>0.5</sub>Ag<sub>0.25</sub>Cu<sub>0.25</sub>FeO<sub>3</sub> and La<sub>0.5</sub>Cu<sub>0.5</sub>FeO<sub>3</sub> has increased almost 100 times. This may be attributed to the size and shape of the nano ferrites. Also, the catalytic performance of the doped LaFeO<sub>3</sub> nanomaterials showed better catalytic performance. The results indicated that the developed nanostructures will find applications in telecommunications.

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### INTRODUCTION

Perovskite oxides ABO<sub>3</sub>, composed of rare earth metal A ion with a radius larger than 1.0 Å and transition metal B ion with radius in the order of 0.6 – 0.8 Å, is attained great interest in the modern chemical industry due to its unique properties like

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high conductivity as well as excellent thermal and chemical stability [1, 2]. Among various ABO<sub>3</sub> type perovskite oxides, the orthorhombic distorted perovskite structured lanthanum ferrite with formula LaFeO<sub>3</sub> has gained immense interest under its wide applications in the areas of catalysis



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## Exploring English Language Teacher's Role in the Classroom

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### Abstract

This paper discusses the importance of defining the teacher's role in building a class room community. It discusses some new teaching techniques in oral class, which breaks the traditional teaching methods. If teachers are aware of the advantage of these new methods and put them into practice, then we can create a lively and natural atmosphere so that the students will lose their inhibition and learn English happily. The main point of this paper is that the best teaching method can produce the best effect and it should be a combination of some flexible and approaches rather than only one single teaching method as well as the cooperation of teacher and students.

**Keywords:** The Importance of English, How students treated differently, The Role of the Teacher in the classroom, Teaching Techniques, some repertoire of skills for a teacher.

### Introduction:

It is universally recognized that the teacher is the key person in an education system. He /she enjoy the high esteem and prestigious status and he/she plays pivotal role. Around him, whole system of education revolves. But many English Teachers think that the duller class should be English class, because students don't like speaking English in the pressure of shyness, let alone be active in class, as a result the oral class becomes a teacher-based class rather than student-based. But I think we arranged it well, it will be the most interesting and vivid class. This paper exemplifies the strategies from the following aspects.

### 1. The Importance of Oral English

We all know communication is the basic and essential function of human language. Communication between human beings is an extremely complex and ever-changing phenomenon. One of the best ways to learn communicate is to speak a lot. Students therefore need plenty of speaking practice. Certainly the aim of all our teaching is to train students for communicative efficiency. Traditionally, language teaching in many countries concentrated on grammar, reading and writing and failed to give learners an opportunity to gain realistic experience



## Post Colonial Identity in the selected novels of V.S. Naipaul a Critical Study

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### Abstract

V. S. Naipaul's work as a novelist, travel writer, and journalist provides a case study for examining the evolution of the links between realist form and the global imagination over a 60-year span. Naipaul's identity has been portrayed as incomplete and totally hybrid, as it is the result of a mix of cultures: Indian, Caribbean, English, Diasporic, postcolonial, and colonial. These and other labels have had a significant and lasting impact on Naipaul's mental state of being, raising the question of his identity or position of belonging in today's aware intellectual world. In Naipaul's works, there has always been a sense of diaspora and estrangement. This research paper examines Naipaul as a product of the World of literature, whose literary path has been one of admitting his belongingness and location, as well as a crisis of cultural identity, using the junction of 'diasporic' and 'postcolonial' theories. It is to give a more differentiated and definitive picture of V. S. Naipaul as an "epitome" of colonial and postcolonial identity, such as the intersection of identities inside one identity.

**Keywords:** Post Colonialism, Identity crisis, Estrangement, Exile, Post Colonial Novel etc.

### INTRODUCTION

Vidiadhar Surajprasad Naipaul was born on August 17, 1932, in the small Trinidadian town of Chaguanas, to an Indian Brahmin family. His grandpa came to Trinidad as an indentured labourer from Benares (Varanasi) in Uttar Pradesh (India). Seepersad Naipaul, his father, was a Trinidad Guardian correspondent who also authored a collection of short tales about various themes of captivity and alienation, which are also themes in his son's fiction. After receiving a scholarship to Oxford University, he moved to the United Kingdom in 1950. Since then, he has established himself as a postcolonial writer. In 2001, he was awarded the Nobel Prize in Literature. A House for Mr. Biswas (1961), A Bend in the River (1979), and India: A Million Mutinies Now (1990), Beyond Belief: Islamic Excursions among the Converted Peoples (1998), and A Wounded Civilization are only a few of his great literary masterpieces (1977). In 1971, he won the Booker Prize for his moving work in a free state. He was a well-known writer of the modern age whose writings dealt with colonialism, identity crises, and civilizations.

Over the course of fifty years, he authored over thirty books. In 1955, he married Patricia Anne Hale, who became his reader, editor, and critic. His works all shared a common topic of post-colonial identity and experience. In the post-colonial age, everyone of his characters in the story went through some sort of identity problem. And the novels did a fantastic job of capturing that emotion. In one of his novels, *Half a Life*, V. S. Naipaul expresses the sentiment of his protagonist by saying:

"...Once again, Willie finds himself in a predicament. He feels. I don't know where I am. I don't think I can pick my way back. I don't ever want this view to become familiar. I must not unpack. I must never behave as though I am staying." [1]

Malika Naipaul and Nadir Naipaul are two of Naipaul's children from a previous marriage. In *The World Is What It Is: The Authorized Biography of V.S. Naipaul*, Patrick French, an unofficial editor for Naipaul, has depicted a troubled and misplaced personal life of V. S. Naipaul who strives for identity (2008).

Naipaul was denied a PIO card (Person of Indian Origin) in July 2010 due to a lack of documents proving his Indian ancestry. The world recognises and respects Naipaul's Indian ancestry, but the government placed suspicions on him rather than feeling proud that the Nobel Prize-winning writer requested a PIO card.

"Naipaul's Pakistani wife Nadira had approached the Indian high commission in London recently for a PIO card for the author. Nadira, however, was completely taken aback when unfazed mission officials told her that the author could get the card only if he produced documents to prove that his ancestors lived in India or more specifically Gorakhpur in eastern Uttar Pradesh where Naipaul's maternal father is said to have lived." [2]

Critical Analysis on the Post-colonial identity from the novels of a House for Mr Biswas, the Mimic Men Despite the alienating consequences of colonialism, the entire range of Naipaul's writing, which has aspects of high comedy and tragic sadness, has been inextricably identified with his own quest for identity, meaning, home, and community. Through these lines, V. Naipaul wishes to

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### A NOTE ON GLOBALLY IDEMPOTENT AND ARCHIMEDIAN $\Gamma$ -SEMGROUPS AND THEIR CHARACTERIZATION BY RELATIVE MAXIMAL AND RELATIVE PRIME $\Gamma$ -IDEALS

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#### ABSTRACT

In this paper, we introduce relative  $\Gamma$ -ideal, relative maximal  $\Gamma$ -ideal, relative prime  $\Gamma$ -ideal, relative idempotent in various classes of  $\Gamma$ -semigroups. We prove some properties of commutative  $\Gamma$ -semigroups which are not necessarily cancellative  $\Gamma$ -semigroups. Also, we study globally idempotent  $\Gamma$ -semigroup, Archimedean  $\Gamma$ -semigroup,  $\mu$ - $\Gamma$ -semigroup, and characterize them with relative maximal and relative prime  $\Gamma$ -ideals

**KEYWORDS:**  $\Gamma$ -Semigroup, Relative  $\Gamma$ -Ideal, Relative Maximal  $\Gamma$ -ideal, Relative Prime  $\Gamma$ -ideal, Relative Idempotent, Globally Idempotent  $\Gamma$ -Semigroup, Archimedean  $\Gamma$ -Semigroup,  $\mu$ - $\Gamma$ -Semigroup, Can- Cancellative  $\Gamma$ -Semigroup

AMS Subject Classification: 20M12, 20M10, 20N99, 20M12, 20M07

#### INTRODUCTION AND BASIC NOTIONS

Sen [20] introduced the concept of  $\Gamma$ - semigroup as a generalization of semigroup and that of ternary semigroup. Many classical notions and results of the theory of semigroups have been extended and generalized to  $\Gamma$ -semigroups. The author [4] studied some power-joined  $\Gamma$  semigroup. This has indeed been and is an active and current area of research with potential for future research work since its discovery in 1981 onwards as is clear from lots of research papers written on this algebraic structures by extending and generalizing the analogue notions and properties of rings and semigroups [5], [6], [7], [8], [9], [10], [11], [12], [13], [14], [21], [22], [23], [24], [25], [26], [30], [32], [33], [34], [35], [36], [37], [38], [47] These notions can also be studied in hyper structures.

Now for the sake of completeness and clarity, we introduce and recollect some definitions as a prerequisite to prove our results.

There are two definitions of  $\Gamma$ -semigroups, the definition given by Sen [20], and the definition given by Sen and Saha [21] and literature for both of them are available in the bibliography on its different aspects. For the sake of completeness and clarity, we briefly recollect here the motivation that led Sen [20] to define  $\Gamma$ -semigroups [5].

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### Novel Pyrimidinone Linked 1,2,3-Triazole Scaffolds as Anti-Microbial and Antioxidant Agents: Synthesis, In-vitro and In-silico Studies

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#### Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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#### Original Research Article

#### TRACT

This present study, studies the synthesis of a novel series of pyrimidinone linked 1,2,3-triazole scaffolds by click chemistry method. Further, the synthesized compounds were evaluated for their microbial studies against *S. aureus* and *S. pneumoniae*. Among the synthesized compounds, 15a-f compounds demonstrated significant antimicrobial activity against *S. aureus*, *S. pneumoniae*, *E. coli* and *P. aeruginosa*, as evident from the zone of inhibition results. In addition,

synthesized compounds were screened for their antioxidant activity by the 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay method. Furthermore, computational study was performed to understand the interactions between synthesized compounds with dehydroquinone synthase of *Staphylococcus aureus* (PDB ID: 2ZC5) and few compounds revealed the highest binding energies  $\Delta G = -9.5, -8.8$  and  $-10.1$  kcal/mol.

**Keywords:** Pyrimidinone; click chemistry; antimicrobial; DPPH; antioxidant; zone of inhibition.

#### 1. INTRODUCTION

Microbial infections have become a major problem for the world's population and have a significant impact on health. These diseases pose a challenge to the scientific community to discover new drugs (antibiotics) to kill microorganisms. The development of pharmaceuticals has played an important role in the treatment and prevention of infectious diseases. With the use of antibiotics, microbial resistance has increased exponentially. Currently,

wide range of biological uses, including anticancerous [1], antimicrobial, and antiviral, anti-HIV [6], antifungal activity [9], and  $\alpha$ -glucosidase inhibitory activity [10]. Chemical synthesis offers a wide range of scaffolds, including 1,2,3-triazole derivatives [11] such as using 1,2,3-triazole derivatives, including, 1,2,3-triazole [12], 1,2,3-triazole [13], some of the drugs such as carbonyl derivatives [14], [15]. Recently, the synthesis of 1,2,3-triazole derivatives [16]. Based on the literature



**The Role of Written Corrective Feedback in enhancing the EFL writing skills of Engineering students in Andhra Pradesh**

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**ABSTRACT**

Writing is an obviously important talent for students to succeed academically at the college level. This is most likely because engineering courses are always graded on writing assignments, and engineering colleges' curriculum requires a certain number of prerequisite writing courses for this purpose. Considering the significance of writing skills in the classroom, engineering students are prone to making a variety of written errors, which negatively affect their performance in the academics in a considerable manner. Moreover, writing plays a crucial role throughout English as a second language (EFL) classroom; students are expected to write a lot. The prescribed writing tasks, however, may not aid students much in strengthening their writing skills unless they receive reliable feedback on their work. As a result, linguists and teachers have focused their research on this issue, hoping to find solutions to help students improve and develop their

19-20  
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# A Note on Jacobson Radicals in Special Boolean Like Rings

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**Abstract:** In this paper we endure the learning of Special Boolean-like rings(BLR) . In segment 1 we debate the assets of a Special Boolean-like ring. If R is a commutative ring with unity , we verify that R is a Special BLR allowing that R is a BLR. Further we display that a Special BLR is regular  $\Leftrightarrow$  it is a BR. A method is given to construct special Boolean rings from Boolean rings and certain modules over them. In section 2 we prove that a SBLR 'R' is a subdirect product of a family of rings  $\{R_i\}$ , somewhere individually  $R_i$  is either a two component field or a four component BLR H4 or a zero-ring. In section 3 we discussed nearby the Jacobson radical  $J(R)$  of a Special BLR ,R and demonstrate that  $J(R) = N(R)$  , where  $N(R)$  is the nilradical of R. As a moment of this, we illustration that every BR is semi simple. Finally we demonstrate that every special BLR which is semisimple, is a BR.

Keywords: Boolean ring(BR), Boolean like ring(BLR), subdirect product, Special Boolean like ring(SBLR)

## 1. SBLRs AND THEIR PROPERTIES

We prove that every one BLR is a Special BLR. If R is a commutative ring with distinctiveness 1, we verify that R is a SBLR  $\Leftrightarrow$  R is a BLR. Further we illustration that a SBLR is regular  $\Leftrightarrow$  it is a BR. We give a method of constructing SBLR from BR's and certain modules over them.

Let us recall that

**Definition 1.1:** A commutative ring R is termed a special BLR if (i)  $r+r=0$  for all  $r \in R$ , (ii) every section of R can be articulated as the totality of an idempotent and a nilpotent section of R, and (iii)  $mn=0$  for nilpotent elements m, n in R.

**Note 1.2 :** (i) By a corollary , every one homomorphic copy of a infrequent BLR is also a infrequent BLR.

(ii) If a SBLR 'R' partakes no nonzero nilpotent rudiments, then by (ii) of the overhead definition, R is a BR.

(iii) If a is a nilpotent element, then by taking  $m=n=a$  in (iii) of the above definition,  $aa=0$ , i.e.,  $a^2=0$ .

According to A.L.Foster, a commutative ring R with unity is a BLR if it is of characteristic 2 and  $x(1+x)y(1+y)=0$  for all  $x, y \in R$ .

We display that every single BLR is a special BLR. Before that we first prove a lemma.

**Lemma 1.3:** If R is a Boolean-like ring, at that time

(i)  $a^4 = a^2$  for all  $a \in R$

(ii)  $r \in R$  is nilpotent iff  $r^2 = 0$

**Proof:** (i) If  $a \in R$  , then by taking  $x=y=a$  in the definition we get that  $a(1+a)a(1+a) = 0$  .  
 $a^2+a^3+a^3+a^4=0 \Rightarrow a^2+a^4=0 \Rightarrow a^2=a^4$  , since char. of R is 2.

(ii)  $r$  is nilpotent, then  $r^m=0$  ,  $m>1$ . w.l.o.g we possibly will undertake that m is even i.e.,  $m=2n$  for nearly n. Consequently  $0=r^m=r^{2n}=(r^2)^n=a^2$ , since  $a^2$  is an idempotent by (i). Opposing is minor.

### Importance of Writing Skills in the Engineering Curriculum

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#### ABSTRACT

Writing is an important productive skill that everyone, including engineering students, should consider developing for the betterment of their careers. Writing skills are incorporated into engineering courses allow students to both "write to learn" and "learn to write." The concepts "writing to learn" and "learning to write" are integral to the study of how writing is used in all disciplines across the engineering colleges. Writing studies scholars call this "writing across curriculum" because it promotes writing instruction in courses where students may not expect to encounter writing assignments and courses that students take throughout their undergraduate education.

When students write to learn, they are actively engaging with material by thinking through and articulating important concepts and issues addressed within the course. Writing in an engineering course will not only help students learn subject matter, but also enable them

### ACADEMIC YEAR: 2021-2022

1. A. Surendra Reddy, G. Durga Prasad, S. Venkateswara Rao, Dr.K. Prasada Rao, "DESIGN AND CFD ANALYSIS OF SHELL AND TUBE HEAT EXCHANGER" The International journal of analytical and experimental modal analysis, ISSN NO:0886-9367, Volume XIII, Issue VII, July/2021, Page No: 161-169.
2. D.A.Hameed, S.Venkateswara Rao, Dr.C.N.Bhaskar , " Enrichment of Cop Of Vapour Compression Refrigeration System By Using Diffuser And Nozzle" Turkish Online Journal of Qualitative Inquiry (TOJQI), Volume 12, Issue 7, July, 2021, PP:1402 – 1412.
3. Anam Vamsi Kumar, S.Venkateswara Rao and C.Naga Bhaskar, " PERFORMANCE ANALYSIS OF 4-S DIESEL ENGINE WITH KARANJA OIL METHYL ESTERS WITH IGNITION IMPROVER" International Journal of Creative Research Thoughts (IJCRT), ISSN: 2320-2882, IJCRT | Volume 9, Issue 12 December-2021.
4. R.Sai Sandeep, G.Jitendra and S.Venkateswara Rao, "Investigation of Experimental Analysis on sub cooling, superheating effect and performance of low cost Refrigeration system using R1270 as refrigerant" International research Journal of Engineering and Technology, Volume 8, Issue 5, May 2021, P-ISSN: 2395-0072, PP: 1200-1206.
5. M N Venkata Kalyani, S.Venkateswara Rao and K.Prasada Rao, "Thermo Hydraulic Studies on Enhancement of Thermal Performance using Cylindrical finned Microchannel" International Journal of Research, Volume X, Issue XII, December/2021, ISSN NO:2236-6124, Page No: 74-84.
6. Anam Vamsi Kumar, S.Venkateswara Rao and K.Prasada Rao, "PERFORMANCE ANALYSIS OF A FOUR STROKE DIESEL ENGINE FUELED WITH KARANJA ETHYL ESTER" December 2021, Volume 8, Issue 4, (E-ISSN 2348-1269, P- ISSN 2349-5138), PP-441-446.
7. B.Hemanth, K.Prasada Rao, S.Venkateswara Rao, "HEAT TRANSFER ENHANCEMENT IN SPIRAL PLATE HEAT EXCHANGER USING NANOFLUIDS" International Journal of Creative Research Thoughts (IJCRT), Volume 10, Issue 1 January 2022 | ISSN: 2320-2882, PP: 710-715.
8. Banda Mary, Sarnala Venkateswara Rao, COMPUTATIONAL FLUID DYNAMICS OF DOUBLE PIPE HEAT EXCHANGER BY USING VARIOUS MATERIALS, JOURNAL OF RESOURCE MANAGEMENT AND TECHNOLOGY, ISSN NO: 0745-6999, Vol12, Issue4, 2021 , PageNo:1020 – 1028.
9. Goriparthi Ravi Teja, Sarnala Venkateswara Rao And Guduru Sai Phani Teja, "EXPERIMENTAL INVESTIGATION ON PERFORMANCE OF VAPOUR COMPRESSION REFRIGERATION SYSTEM BY ARRANGING THE NOZZLE AT THE OUTLET OF CONDENSER" International Journal of Research Volume X, Issue IX, September/2021, ISSN: NO: 2236-6124, PP: 179-183.

## DESIGN AND CFD ANALYSIS OF SHELL AND TUBE HEAT EXCHANGER

A. SURENDRA REDDY<sup>1</sup>, G. DURGA PRASAD<sup>2</sup> S. VENKATESWARA RAO<sup>3</sup> DR.K.PRASADA RAO<sup>4</sup>

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### ABSTRACT

Shell and tube heat exchangers are the most common type of heat exchangers used in present scenario. Heat exchangers are widely used equipment in various industries such as power generation and transportation, refrigeration industry and chemical process industries because it suits high pressure application. Presented in this project is comparison for several shell- and-tube heat exchangers with segmental baffles. The objective of this project is to design a shell and tube heat exchanger with segmental baffles and to study the flow and temperatures inside the shell and tubes using Ansys software tool for the different baffles assemblies and orientation also overall heat transfer is calculated for each design. This project totally contains 5 designs for comparison. The process in solving simulation consists of modeling and meshing the basic geometry of shell and tube heat exchanger using CFD package Ansys 14.5.

### Keywords:

#### 1. INTRODUCTION:

Heat exchangers are one of the usually used equipment within the procedure industries. Heat Exchangers are used to transfer warmness between procedure streams. One can recognize their utilization that any technique which contain cooling, heating,

condensation, boiling or evaporation would require a heat exchanger for that reason. Process fluids, commonly are heated or cooled before the process or undergo a phase exchange. Different heat exchangers are named according to their application. For instance, warmth exchangers being used to condense are called condensers, similarly



## Enrichment of Cop Of Vapour Compression Refrigeration System By Using Diffuser And Nozzle

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### Abstract

this investigational analysis exemplifies the design and test of diffuser at compressor inlet and nozzles at condenser outlet and expansion valve outlet in VCR with the help of R134a refrigerant. The diffuser with divergence angle of 15°, 17° and the nozzle with convergent angle 15°, 17° are designed for same inlet and outlet diameters. Initially diffusers are tested at compressor inlet diffuser is used with inlet diameter equal to exit tube diameter of evaporator and outlet tube diameter is equal to suction tube diameter of the compressor. Diffuser helps to increase the pressures of the refrigerant before entering the compressor it will help to reduce the compression work and achieve higher performance of the vapour compression refrigeration system. Then nozzles are tested at condenser outlet and expansion valve outlet, where as nozzle inlet diameter equal to discharging tube diameter of condenser and outlet diameter equal to inlet diameter of expansion valve. Extra pressure drop in the nozzle helped to accomplish higher performance of the vapour compression refrigeration system. The system is analyzed using the 1st and 2nd laws of thermodynamics, to resolve the refrigerating effect, the compressor work input, coefficient of performance(COP)..

**Keywords:** Diffuser, Nozzle, Coefficient of performance, Refrigeration effect.

### 1. Introduction

In VCR system, the refrigerant underneath goes phase changes from liquid to vapor and then vapor to liquid during a closed cycle by absorbing the warmth within the evaporator and reject the warmth at condenser. The coefficient of performance (COP), that may be a magnitude relation of heat transfer rate at the evaporator to the ability input to the compressor within the refrigeration system. The COP will be increased either by decreasing the compressor work or by increasing the refrigeration effect. completely different form of ways are tried out for improving the cop of the VCR system, as according in literature G.Naga Raju et al[1] in this paper have studied enhancement of cop of vapour compression refrigeration system by using the diffusers at compressor inlet and as well as condenser inlet. When using the diffuser at compressor inlet the coefficient of performance is increased by 6% and using the diffuser at condenser inlet the coefficient of performance is increased by 3%. Neeraj Upadhyay et al[2] to studied the analytical study of vapour compression refrigeration by using diffuser and sub-cooling to improve the cop of the system either by decreasing the compressor work or by increasing the refrigeration effect. In this paper to increase the refrigeration effect by incorporating of diffuser and sub cooling process. By using the diffuser consumption power is by compressor and cop is enhanced from 2.65 to 3.38. Vivek Kumar et al [3] have developed are placement configuration by inducting one. Diffuser in between the condenser inlet and compressor, 2.Heat exchanger at condenser outlet. By victimization these two to evaluate the various parameters like coefficient of performance, refrigerant impact and compressor work of this system with the help of R134a refrigerant. Compare these parameters with convectional system the cop of changed system increased by around 1.14. P.G.Ishote et al [4] have studied the performance of various condensers by changing the pressure and alter in cop of refrigeration system. Once changing the convectional condenser by small channel heat exchanger the pressure changes there are change in rate of heat transfer. This may help to manage the heat losses occurring within the condenser section. So



## PERFORMANCE ANALYSIS OF 4-S DIESEL ENGINE WITH KARANJA OIL METHYL ESTERS WITH IGNITION IMPROVER

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**Abstract:** The present study covers the various aspects of biodiesels fuel derived from Karanja seed oil and also the study of performance and emissions on four stroke compression ignition engine. Crude Karanja seed oil is converted to Karanja seed oil methyl esters by transesterification process. The obtained biodiesel properties are measured experimentally and analyzed with diesel. The performance and emission parameters of biodiesel blends were compared with the diesel and from the result analysis the optimum Karanja seed oil blend is found. After finding optimum blend, the tests were conducted on the same engine with addition of DMC (Dimethyl carbonate) as a fuel additive at 5%, 10% and 15% on volume basis and evaluate its effects on diesel engine characteristics. The main purpose of fuel additives is to improve the combustion process and reductions of exhaust emissions. Finally, the experimental outcomes are analyzed with the diesel. The blend KSOME15 with DMC10% is shows better performance and lower emissions. Finally, results show the improvement in engine performance and reduction of emission parameters needs to justify the potentiality of the Karanja seed oil methyl ester as alternative fuel for diesel engine without any modification.

**Index Terms** – Karanja oil, Biofuel, Alternative fuels, Performance of biofuels.

### I. INTRODUCTION

Biodiesel is defined as mono alkyl esters of long chain fatty acids derived from vegetable oils or animal fats which conform to ASTM D6751 specifications use in diesel engines. Biodiesel refers to the pure fuel before blending with diesel fuel. Biodiesel is the name of a clean burning alternative fuel, produced from domestic, renewable resources. Biodiesel contains no petroleum, but it can be blended at any level with petroleum diesel to create a biodiesel blend. It can be used in CI engines with little or no modifications. Biodiesel is simple to use, biodegradable, nontoxic, and essentially free of sulfur and aromatics. It is less harmful to the environment for it contains practically no sulfur and substantially reduces emissions of UHC, CO, poly cyclic aromatic and particulate matter.

Biodiesel is intended to be used as a replacement for petroleum diesel fuel, or can be blended with petroleum diesel fuel in any proportion. Biodiesel does not require modifications to a diesel engine to be used. Biodiesel is simple to use, biodegradable, nontoxic, and essentially free of sulphur and aromatics.

Biodiesel is a clean burning renewable fuel made using natural vegetable oils and fats. Biodiesel is made through a chemical process which converts oils and fats of natural origin into fatty acid methyl esters (FAME). Biodiesel is not vegetable oil. "The use of vegetable oils for engine fuels may seem insignificant in past. But such oils may become in the course of time as important as petroleum and the coal tar products of the present time."

In this project we tried to investigate the potential use of Karanja seed oil methyl esters as bio-diesel. During the course of this project we have actually prepared Karanja seed oil methyl ester. Various experiments were conducted on KSOME and the results were recorded. We collected the results of Karanja seed oil methyl esters from various journals and research papers. The results of KSOME were compared with conventional diesel. In recent years the use of fuel additives with diesel and biodiesel blends are gaining interest to enhance the engine characteristics and rapid reductions in exhaust emissions.

The fuel additives are mainly used to improve the fuel properties up to certain extent for various fuels due to more stable, low viscosity value, higher cetane value and rich inherent oxygen concentration produces the clean combustion of fuels in the engine cylinder and lower the tailpipe exhaust emissions.

Fuel additives are used in diesel engines because there can improve the performance parameters and combustion characteristics and reduce tail pipe emissions as CO, HC, NO<sub>x</sub> and other parameters.

A. Veereshbabu et al., [1] They was studied Biodiesel was prepared from the non-edible oil of pongamia pinnata L. By

# Investigation of Experimental Analysis on Sub-Cooling, Superheating Effect and Performance of Low Cost Refrigeration System using R1270 as Refrigerant

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**ABSTRACT:** R1270, also known as CARE 45, is refrigerant grade propylene (propene), a natural, or "not in kind", refrigerant suitable for use in low and medium temperature refrigeration applications. It is non-toxic, with zero ODP (Ozone Depletion Potential) and very low GWP (Global Warming Potential). This paper researches the effect of a test examination completed to decide the exhibition of local icebox when a melted oil gas (LPG) is locally accessible. The performance of a standard VCRS cycle can be obtained by varying evaporator and condensing temperatures over the required range. The effects of evaporator and condensing temperatures on specific and volumic refrigeration effects of a standard VCRS cycle. As shown in the figure, for a given condenser temperature as evaporator temperature increases the specific refrigeration effect increases marginally. It can be seen that for a given evaporator temperature, the refrigeration effect decreases as condenser temperature increases. These trends can be explained easily with the help of the P-h diagram. It can also be observed that the volumetric refrigeration effect increases rapidly with evaporator temperature due to the increase in specific refrigeration effect and decrease in specific volume of refrigerant vapour at the inlet to the compressor. Volumetric refrigeration effect increases marginally as condenser temperature decreases.

**KEYWORDS:** Refrigerant (R1270), Evaporator, Refrigerating effect, COP. Vapour Compression Refrigeration, COP, Domestic Refrigerator, Eco-Friendly Refrigerants, Sub-Cooling, Super Heating.

## 1. INTRODUCTION

Due to the massive demand for electricity over the world, we think of recovering the energy already spent but not being utilized further to overcome this crisis with less investment. The climatic change and global warming demand accessible and affordable cooling systems in refrigerators and air conditioners. Henceforth, we suggest COST-FREE Cooling Systems. LPG is stored in liquefied state in a cylinder before its utilization as fuel. According to the energy survey, the refrigerator is one of the heaviest power consumers amongst household appliances. It works on the principle that the expansion of LPG will occur during the conversion of liquid LPG into gaseous form. As a result of this, LPG gas pressure drops, and the volume of gas will increase this will result in a decrease in gas temperature and acts as the refrigerant. According to the second law of thermodynamics, this cooling process can only be performed with the aid of some external work. Hence, the power supply is regularly required to drive a refrigerator. The substance that works in a refrigerator to extract heat from a cold body and deliver it to a hot body, i.e., to surrounding, is called refrigerant. Globally 17500 metric tons of conventional refrigerants are consumed by domestic refrigeration like CFC, HFC which causes high depletion of the ozone layer (ODP), and Global Warming Potential (GWP). The use of LPG instead

of CFC 22 has made better progress since it has an environment-friendly orientation with no ODP. Good product efficiency is resulted from the use of LPG because of its characteristics. It indicates LPG can be used as an alternative refrigerant to CFC 22. After performing newsystem, an experimental analysis is done in CFD.

### 1.1 Objectives

- To obtain the characteristic benefits of LPG refrigerant.
- To determine the COP of the refrigerator using LPG as a refrigerant.
- To benefit from the Cooling effect free of cost by eliminating the compressor.
- To produce an eco-friendly refrigeration system by green technology that eliminates the use of ozone-depleting refrigerants.

### 1.2 Properties of R1270

- Colorless.

## Thermo Hydraulic Studies on Enhancement of Thermal Performance using Cylindrical finned Microchannel

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### Abstract

*In general microchannels having small hydraulic diameters so they are provide high heat transfer coefficients. Now a day's microchannel heat sinks (MCHS) are considered as twenty first century cooling solution. In this work numerical study on microchannel heat sink for heat transfer enhancement by using extended surfaces has been carried out. Rectangular microchannel (RMC) and cylindrical finned rectangular microchannels are used in current study. Water was employed as the cooling liquid and copper as microchannel material, two heat flux levels,  $q'' = 100 \text{ W/cm}^2$  and  $q'' = 200 \text{ W/cm}^2$  is applied to the bottom wall of the heat sink, were tested. A three-dimensional Computational Fluid Dynamics (CFD) model was built and analysis was done by using FLUENT, to investigate the conjugate fluid flow and heat transfer problem involving simultaneous determination of the temperature field in both the solid and liquid regions. This work focused on laminar flow with Reynolds Numbers 300, 500, 700 and 900 with corresponding velocities of 0.44, 0.72, 1.02 and 1.32 m/s within microchannel with hydraulic diameter  $5.86 \times 10^{-4} \text{ m}$  for single-phase liquid flow. The influence of the thermo physical properties of the fluid on the flow and heat transfer, are investigated by evaluating thermo physical properties at a reference bulk temperature. The local Nusslets number, average wall temperature, bottom wall temperature, pressure drop and performance factor of finned microchannels are evaluated and compared.*

**Keywords:** Heat exchangers, finned channels, RMC, CFD analysis.

### 1. Introduction

A great deal of work has been conducted on single-phase heat transfer in microchannels since Tuckerman and Pease's pioneering effort (1981) on the cooling of very large-scale integrated circuits (VLSI). In early 1981, Tuckerman and Pease (1981) first explained the concept of microchannel heat sinks and predicted that single-phase forced convective cooling in microchannels could potentially remove heat at a rate of the order of 1,000 W/m<sup>2</sup>. Forced convection in channels and liquid injection has been used for faster and larger scale cooling in industry for decades. Microchannel heat transfer, however, has become increasingly popular and interesting to researchers due to high heat transfer coefficients, with potential for record-high heat transfer coefficient and low to moderate pressure drops when compared to conventional air and liquid cooled systems (Philips 1988; Gillot et al. 2000; Hsu et al. 1995; Hahn et al. 1997; Martin et al. 1995; Viday et al. 1993). For example, microchannel heat sinks have been demonstrated for high-power laser diode array cooling and have achieved a heat flux removal rate of 500 W/cm<sup>2</sup> (Missaggia et al. 1989; Munding et al. 1988; Beach et al. 1992).

In the last few decades, studies on two-phase flow and heat transfer characteristics in microchannel flow passages have become increasingly important due to the rapid development of micro-devices used for various engineering applications, such as medical devices, high heat flux compact heat exchangers, and cooling of high-power density micro-electronics, supercomputers, plasma facing components, and high-powered lasers. The continuing push toward more densely packed microchips may require greater heat dissipation than that typically provided by simple forced air-cooling systems. Liquid cooling using microchannels integrated with microchips is the next most attractive



# PERFORMANCE ANALYSIS OF A FOUR STROKE DIESEL ENGINE FUELED WITH KARANJA ETHYL ESTER

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**Abstract :** Owing to gradual depletion of world petroleum reserves, increase in crude oil prices and impact of environmental pollution of increasing exhaust emissions, there is a need for suitable alternative fuels for diesel engine. The use of vegetable oil in CI engine results in low CO and HC emissions compared to conventional diesel fuel. The present study covers the various aspects of biodiesels fuel derived from Karanja seed oil and also the study of performance and emissions on four stroke compression ignition engine. Crude Karanja seed oil is converted to Karanja seed oil methyl esters by transesterification process. The obtained biodiesel properties are measured experimentally and analyzed with diesel. In the initial stage, the tests were conducted on the four stroke single cylinder water cooled diesel engine with constant speed by using diesel and base line data is generated by varying loads. In the second stage, experimental investigation has been carried out on the same engine with same operating parameters by using the Karanja seed oil of methyl esters in different proportions as KSOME05, KSOME15, KSOME25 & KSOME35 to investigate the performance and emissions characteristics. The performance and emission parameters of biodiesel blends were compared with the diesel and from the result analysis the optimum Karanja seed oil blend is found.

**IndexTerms - Karanja Methyl esters, Biodiesel, Transesterification.**

## I. INTRODUCTION

Energy is derived from non renewable (conventional) and renewable (non conventional) resources and the former are in the process of depletion. These are fossil fuels oil, coal and natural gas. It took million of years to build up these resources. Renewable resources are solar energy, wind energy, Water energy and biomass. Approximately 80% of the world's energy is produced by fossil fuels. However, in France, the French Atomic Energy Commission established nuclear reactors which produce enough energy to meet 70% of country's requirement. Energy is key input for technological, industrial, social and economical development of a nation. Five generations (125 years) ago, wood supplied up to 90% of our energy needs. Due to the convenience and low prices of fossil fuels wood use has fallen globally. The present energy scenario now is heavily biased towards the conventional energy sources such as petroleum products, coal, atomic energy etc, which are finite in nature besides causing environmental pollution. Of the available energy, the present energy utilization pattern is heavily biased for meeting the high energy requirement in urban and metropolitan cities.

The extensive use of energy operated devices in domestic, industrial, transport and agricultural sectors in urban and rural areas have resulted in overall economical development of the society. The electricity available for farming operations and in rural and urban areas is been generated using the fossil and static energy resources such as petroleum oil, coal and atomic energy and to a limited extent by hydropower. These all sources have a great influence on our economy and environmental aspects. These have resulted in serious considerations for the use and availability of various energy resources.

Globally, about 40% of worlds energy needs are being met from petroleum products as of today. The anticipated growth in demand was expected to be 7%. There has been a significant and impressive growth in this sector which has surpassed and failed all the estimates, forecast and projections made in this regard. It is estimated that the world oil consumption will increase from 68 million barrel per day to 94 million barrel per day in next decade. India is hard pressed for this important modern resources and is making all possible efforts to explore the off and on shore crude and gas production besides having more than required refining capacity. The demand for petroleum products in India has been increasing at a rate higher than the increase in domestic availability. In the wake of this situation there is urgent need to promote use of alternative fuels which must be technically feasible, economically competitive, environmentally acceptable and readily available.

India being a predominantly agricultural country requires major attention for the fulfillment of energy demands of a farmer.



# HEAT TRANSFER ENHANCEMENT IN SPIRAL PLATE HEAT EXCHANGER USING NANOFLUIDS

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**Abstract:** A possible way to enhance the rate of heat transfer in a spiral plate heat exchanger is by employing nanofluids as their working medium. Hence, in the present work, effects of nanofluids on the thermal performance of spiral plate heat exchanger has been investigated numerically and validated with experimental work. First, a counter-current spiral plate heat exchanger is designed and modeled. Later, simulation of spiral plate heat exchanger has been carried out by employing conventional fluid water-water,  $TiO_2$ -water, and  $SiO_2$ -water to investigate the heat transfer rates. Finally, the performance of the spiral plate heat exchanger using nanofluid is compared with that of using water and nanofluids. The results reveal that approximately 20 to 25% heat transfer augmentation with nano fluids of 3% overall volume concentration. It is observed that the use of nanofluids improves the thermal performance of spiral heat exchangers.

**Index Terms –** Spiral plate Heat Exchanger, CFD Analysis, Nanofluids.

## I. INTRODUCTION

A heat exchanger is a device used to exchange or transfer heat between two or multiple fluids i.e., liquids, vapors, or gases of various temperatures. Depending on the type of heat exchanger employed, the heat transferring process can be fluids of the same phase or different phases i.e., 2-phase fluids, and occur through a solid separator, which prevents mixing of the fluids, or direct fluid contact. They are widely used in space heating applications, refrigeration, HVAC, thermal power stations, chemical processing, petrochemical plants, waste heat treatment, natural-gas processing, and slurry and sludge treatment processes, etc.

In heat exchangers, there are several types of components employed and a wide range of materials are used in their fabrication. While coming to a selection of appropriate components and materials, it depends upon the type of heat exchanger and its application. As discussed in earlier sections, the most common components used in heat exchangers are fins, drums or wheels, shells, tubes, plates and spiral coils, etc. The desirable property to fabricate the components in the heat exchanger is high thermal conductivity. So, the materials used in constructing heat exchangers should have high thermal conductivity. Metals such as copper, brass, aluminum, titanium and stainless steel, etc. Other materials such as graphite, composites, ceramics, etc., which can withstand high temperatures are also used.

Classification of heat exchangers based on their construction are:

- Recuperative vs. Regenerative
- Direct vs. Indirect
- Static vs. Dynamic
- Types of components and materials used

## COMPUTATIONAL FLUID DYNAMICS OF DOUBLE PIPE HEAT EXCHANGER BY USING VARIOUS MATERIALS

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### ABSTRACT

Heat transfer system is described by using the function it fulfills in a process. On the same course, Heat exchangers are the equipment utilized in business strategies to get better warmness between system fluids. They are broadly utilized in space heating, refrigeration, air conditioning, electricity flora, chemical vegetation, petrochemical flora, petroleum refineries, and natural fuel processing. Heat exchangers are a device that exchanges the warmth among two fluids of different temperatures which can be separated by using a strong wall. The temperature gradient or the differences in temperature facilitate this switch of warmth. Transfer of heat occurs by means of 3 precept approach: radiation, conduction and convection. In the use of warmness exchangers radiation does take region. However, in contrast to conduction and convection, radiation does not play a main position. To maximize the heat switch, the wall need to be skinny and manufactured from a totally conductive cloth. The biggest contribution to warmness switch in a heat exchanger is made through convection.

The objective of this venture is to decide the Temperature, general boundary warmness flux, stress, internal wall temperature of a cylindrical pipe and we taking two styles of models like double pipe warmness exchanger with directly fins & double pipe heat exchanger with helical fins the use of the one of a kind substances like AL 7075, COPPER, AL 2024, TI64-AL-V of a cylindrical pipe all through at thermal conditions the use of computational fluid dynamic analysis. The DPHE was first modeled using CATIA software program after which imported into Ansys software perform a FLUID FLOW (FLUENT) evaluation. To practice the inlet & outlet parameters on DPHE had been taken the boundary conditions. Finally concluded the version and fabric is the appropriate for DPHE based totally on the Temperature, strain, total heat flux, Inner wall temperature values.

**Keywords:** DPHE, Catia, CFD, Helical and Normal Fins, Temperature, Pressure.

refineries and chemical flora for several years.

### 1 INTRODUCTION

In many business applications warmth has to be transferred from one flowing fluid to some other via a strong barrier separating these fluids. The system's used for this purpose are referred to as warmness exchangers.

The double pipe warmness exchanger will be a method to simplify to change heat between fluids whilst not mixing at unique temperatures. In a warmness exchanger, two styles of warmth transfer occur like convection and conduction. Typically convection occurs in each running fluids and conduction via partitions of warmth exchanger that separates the fluids. The warmth transfer coefficient improvement capability beside a minimal loss in friction issue defines the inserts. Tube inserts are applied for warmth transfer development in one-of-a-kind business fields like fossil gasoline

#### 1.1 Heat Exchangers

A Heat Exchanger is a device that is used to switch thermal strength (enthalpy) between two or more fluids, between a solid surface and a fluid, or between solid particulates and a fluid, at one-of-a-kind temperatures and in thermal touch.

In Heat Exchangers, there are typically no outside warmness and work interactions. Typical programs contain heating or cooling of a fluid circulate of difficulty and evaporation or condensation of single- or multi component fluid streams.

Heat exchangers have full-size business and domestic programs. Many styles of warmth exchangers were developed to be used in steam electricity flora, chemical processing flora, constructing warmth and

## EXPERIMENTAL INVESTIGATION ON PERFORMANCE OF VAPOUR COMPRESSION REFRIGERATION SYSTEM BY ARRANGING THE NOZZLE AT THE OUTLET OF CONDENSER

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### Abstract

Vapour compression refrigeration system is a high dimensional thermodynamic coupling system in which the coefficient of performance (COP) is the area of interest and tremendous researches are going to increase the coefficient of performance (COP). In this work a Vapour compression refrigeration system using R134a refrigerant as a working fluid and working based on a vapour compression cycle is designed and fabricated. In this system nozzle is placed between the high pressure side (condenser) and low pressure side (expansion valve). The main aim of this study is to find the effect of nozzle arrangement on COP of a system. The nozzle placed is used to increase the velocity of refrigerant liquid going from condenser to expansion valve. An experimental investigation has been performed on this system with concentrating variables like coefficient of performance (COP), compressor power consumption and cooling capacity. The COP of a system is increased after placing the nozzle between condenser and expansion valve.

**Keywords:** Nozzle , VCR System and Coefficient of performance(COP)

### 1. Introduction

Refrigeration is the science of the producing and maintaining temperatures below that of the surrounding atmosphere. This means the removing of heat from a substance to be cooled. Heat always passes downhill, from a warm body to a cooler one, until both bodies are at the same temperature. Not only perishables today many human work spaces in offices and factory buildings are air-conditioned and a refrigeration unit is the heart of the system. Before the advent of mechanical refrigeration water was kept cool by storing it in semiporous jugs so that the water could seep through and evaporate. The evaporation carried away heat and cooled the water. This system was used by the Egyptians and by Indians in the Southwest. Natural ice from lakes and rivers was often cut during winter and stored in caves, straw-lined pits, and later in sawdust insulated buildings to be used as required.

The Romans carried pack trains of snow from Alps to Rome for cooling the emperor's drinks. Though these methods of cooling all make use of natural phenomena, they were used to maintain a lower temperature in a space or product and may properly be called refrigeration. In simple, refrigeration means the cooling or removal of heat from a system. The equipment employed to maintain the system at a low temperature is termed as refrigerating system and the system which is kept at lower temperature is called refrigerated system.

Refrigeration is generally produced in one on the following three ways:

- (1) By melting of a solid,
- (2) By sublimation of a solid, and