

# Dielectric Resonator Antennas for RF Energy-Harvesting/ Wireless Power Transmission Applications

*A state-of-the-art review*

This article presents an overview of dielectric resonator (DR)-based sensing elements and their applications in RF energy-harvesting (RFEH) and wireless power transmission (WPT) systems. With increased wireless applications, the demand for electrical energy goes up, thereby enabling the development of various energy sources. RF energy is widely available and the most efficient energy source. Although DR antennas (DRAs) have been studied extensively in the last few decades, they have not been employed in RFEH and WPT applications. The intention of the proposed article is 1) to provide an overview of the DRA for RFEH and WPT applications; 2) to accommodate various performance enhancement approaches for the DRA; and 3) to highlight the research gap

for developing a complete rectenna system that helps future researchers. We believe that this survey may help the DRA.

## INTRODUCTION

The massive progress in electronic technology has yielded electronic devices with reduced power consumption. In applications such as the Internet of Things, millions of electronic devices are interconnected to provide various services to the citizens of a city in a faster way [1]. All these services are provided with the help of sensing elements. Since the lifetime of conventional batteries is limited [2], EH devices are suitable alternatives to conventional batteries. EH is a process of utilizing available ambient energy efficiently for powering small electronic gadgets. EH devices have used solar, acoustic, wind, mechanical, and RF sources, each having merits and demerits. However, with increasing wireless applications and with the



## **A Deep Learning Model for Average Fuel Usage in Large Vehicles**

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### **ABSTRACT**

When it comes to creating unique machine learning models for fuel consumption, this research recommends adopting a data summary strategy based on distance as opposed to the conventional time period. This method is used with seven variables obtained from vehicle speed and road grade to create a highly predictive neural network model for typical fuel usage in heavy vehicles. The proposed approach can be readily designed and implemented for each vehicle in a fleet to maximise fuel efficiency. All of the model's predictors are averaged across predetermined time intervals. For routes that incorporate both city and highway duty cycle segments, a 1 km window is able to estimate fuel consumption with a 0.91 coefficient of determination and mean absolute peak-to-peak percent error less than 4%.

**Keywords:** Vehicle modeling, neural networks, average fuel consumption, KNN, data summarization, fleet management, statistical models, FNN

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### **1. INTRODUCTION**

Manufacturers, regulators, and customers are all interested in fuel economy models. They are required during the whole car ownership experience. In this study, we focus on predicting typical fuel use during maintenance and operation for heavy trucks. In general, there are three types of methods used for creating models of fuel consumption: • Models that are grounded in the physical sciences and built from a thorough comprehension of the system's dynamics. These models employ elaborate mathematical equations to describe the motion of the vehicle's parts at each time step [1, 2]. Machine learning models [3, 4], which are data-driven and reflect an abstract mapping from an input space consisting of a specified collection of predictors to an output space representing the goal outcome, in this case average fuel consumption. • Statistical models, which are similarly data-driven and create a relationship between a collection of predictors and a result of interest [5], [6].

The Cost and accuracy, relative to the needs of intended application, are two primary areas where the methods diverge.

Here, we offer a simple model that may be applied to any fleet of heavy trucks. A fleet manager's ability to optimise route planning for all vehicles based on each vehicle's estimated fuel consumption is greatly aided by having accurate models of all cars in the fleet at his disposal. Goods transportation [7], public transportation [3], construction [8] and garbage collection [9] all use fleets of vehicles. In order to be useful for any fleet, the technique must be generalizable to a wide range of vehicle technologies (current and future) and configurations without requiring in-depth familiarity with each vehicle's unique physical attributes and measurable parameters. After weighing the benefits of more precision against the costs associated with creating and tailoring a model for each vehicle in the fleet, machine learning emerges as the method of choice.

#### ***Existing work***

Existing model that can be easily developed for individual heavy trucks in a big fleet is proposed for

If a fleet manager has reliable models of all the cars in the fleet, he or she may optimise route planning for the entire fleet based on the expected fuel consumption of each individual vehicle, guaranteeing that the route assignments are optimised to reduce fuel consumption across the board.

This method is used with seven variables obtained from vehicle speed and road grade to create a highly predictive neural network model for typical fuel usage in heavy vehicles.

For routes that incorporate both city and highway duty cycle segments, a 1 km window is able to estimate fuel consumption with a 0.91 coefficient of determination and mean absolute peak-to-peak percent error less than 4%.

#### ***Present work***

As was previously noted, digital models of complex systems are frequently developed using artificial neural networks (ANN). Some of the challenges that machine learning models encounter when the input and output are in separate domains are brought to light by the models suggested in [15]. The input



# RAB(REVOCABLE ATTRIBUTE BASED) DATA STORAGE IN MOBILE CLOUDS

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**Abstract :** Users may now upload data to the cloud via their mobile devices, which is a trend that is gaining popularity. To protect the confidentiality and privacy of user data, cloud storage systems commonly use attribute-based encryption (ABE). One of the main inefficiencies of ABE is the large processing overheads at mobile devices during user revocation and file access. We propose a READS system with a number of desirable properties to address this issue. Beginning with a fine-grained access control mechanism, our RADS solution enables owners of outsourced files to examine them without having to individually invite only people they trust. Additionally, our RADS technique enables mobile users to authorize the CSP to share costly computations in file access without revealing the contents of the files.

**Index Terms –** Fine Grained System, Distributed System, Information Security, ABE(Attribute Based Encryption)

## 1. INTRODUCTION

Because of enhancements in specialized strategies and the expansion of convenient electronic contraptions, an ever- increasing number of individuals are progressing from fixed to portable distributed computing [1]. Information saved in the cloud can be gotten to from any area utilizing a client's cell phone (e.g., a cell phone or tablet) in the versatile distributed storage frameworks [2], [3]. Clients can utilize portable capacity arrangements like Dropbox or I Cloud to back up their pictures, films, and different records, making it conceivable to recover this data from any place. Information security and protection concerns might be the best hindrance to the far and wide reception of versatile distributed storage frameworks. Information put away in the cloud ought to be encoded involving cryptography as a typical practice. In any case, in ordinary encryption frameworks, document proprietors should know the personalities of all approved clients to unscramble their records; this is in some cases unfeasible in distributed computing. To take into account more versatile access control, distributed storage frameworks have started utilizing characteristic- based encryption (ABE) [4, [5,] [6, 7]. In these arrangements, rather of requiring a foreordained rundown of supported clients, the record's proprietor can rather characterize an entrance strategy, and just clients who consent to that arrangement will be conceded admittance to the document. The confined assets of cell phones make it improbable that versatile clients will actually want to help ABE, in spite of the way that ABE gives an adaptable method for protecting re-appropriated information. By and large, cell phones like cell phones have restricted computational capacity and power supply, and the broad cryptographic estimations expected to unscramble ABE plans (e.g., [8], [9], [10]) would cause a lot of force utilization. In this manner, while using ABE to get the fine-grained admittance control in versatile distributed storage frameworks, it is expected to diminish the estimations of cell phones in the record access technique. What's more, a successful disavowal component is expected to keep unapproved clients from getting to information that has been rethought with regards to portable cloud executions of ABE. Due to their transient nature and



# Analysis of Women Safety using Machine Learning Techniques on Tweets

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## ABSTRACT

Women and girls have been experiencing a lot of violence and harassment in public places in various cities starting from stalking and leading to sexual harassment or sexual assault. This research paper basically focuses on the role of social media in promoting the safety of women in Indian cities with special reference to the role of social media websites and applications including Twitter platform Facebook and Instagram. This paper also focuses on how a sense of responsibility on part of Indian society can be developed the common Indian people so that we should focus on the safety of women surrounding them. Tweets on Twitter which usually contains images and text and also written messages and quotes which focus on the safety of women in Indian cities can be used to read a message amongst the Indian Youth Culture and educate people to take strict action and punish those who harass the women. Twitter and other Twitter handles which include hash tag messages that are widely spread across the whole globe sir as a platform for women to express their views about how they feel while we go out for work or travel in a public transport and what is the state of their mind when they are surrounded by unknown men and whether these women feels safe or not?

Keywords: Machine learning, Sexual Harrasment, Sentimental analysis, Safety, Women

## Introduction

Twitter in this modern era has emerged as a ultimate microblogging social network consisting over hundred million users and generate over five hundred million messages known as 'Tweets' every day. Twitter with such a massive audience has magnetized users to emit their perspective and judgemental about every existing issue and topic of internet, therefore twitter is an informative source for all the zones like institutions, companies and organizations. On the twitter, users will share their opinions and perspective in the tweets section. This tweet can only contain 140 characters, thus making the users to compact their messages with the help of abbreviations, slang, short forms, emoticons, etc. In addition to this, many people express their opinions by using polysemy and sarcasm also. Hence twitter language can be termed as the unstructured. From the tweet, the sentiment behind the message is extracted. This extraction is done by using the sentimental analysis procedure. Results of the sentimental analysis can be used in many areas like sentiments regarding a particular brand or release of a product, analyzing public opinions on the government policies, people thoughts on women, etc. In order to perform classification of tweets and analyze the outcome, a lot of study has been done on the data obtained by the twitter. We also review some studies on machine learning in this paper and research on how to perform sentimental analysis using that domain on twitter data. The paper scope is restricted to machine learning algorithm and models. Staring at women and passing comments can be certain types of violence and harassments and these practices, which are unacceptable, are usually normal especially on the part of urban life. Many researches that have been conducted in India shows that women have reported sexual harassment and other practices as stated above. Such studies have also shown that in popular metropolitan cities like Delhi, Pune, Chennai and Mumbai, most women feel they are unsafe when surrounded by unknown people. On social media, people can freely express what they feel about the Indian politics, society and many other thoughts. Similarly, women can also share their experiences if they have faced any violence or sexual harassment and this brings innocent people together in order to stand up against such incidents. From the analysis of tweets text collection obtained by the twitter, it includes names of people who has harassed the women and also names of women or innocent people who have stood against such violent acts or unethical behaviour of men and thus making them uncomfortable to walk freely in public.

## Existing work

People often express their views freely on social media about what they feel about the Indian society and the politicians that claim that Indian cities are safe for women. On social media websites people can freely Express their view point and women can share their experiences where they have faced abuse harassment or where we would have fight back against the abuse harassment that was imposed on them . The tweets about safety of women and stories of standing up against abuse harassment further motivates other women data on the same social media website or application like Twitter. Other women share these messages and tweets which further motivates other 5 men or 10 women to stand up and raise a voice against people who have made Indian cities and unsafe place for the women. In the recent years a large number of people have been attracted towards social media platforms like Facebook, . It is a common practice to extract the information from the data that is available on social networking through procedures of data extraction, data analysis



## A Secure Keyword Search Mechanism for Data Sharing in Cloud Computing

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### ABSTRACT

Hardware and software expenses in computer infrastructure have been greatly lowered because to the advent of cloud infrastructure. To ensure security, the data is normally encrypted before it's outsourced to the cloud. Unlike searching and sharing the plain data, it is tough to search and share the data after encryption. Nevertheless, it is a key responsibility for the cloud service provider as the users expect the cloud to do a speedy search and return the result without sacrificing data confidentiality. To tackle these challenges, we propose a ciphertext-policy attribute-based mechanism with keyword search and data sharing (CPAB-KSDS) for encrypted cloud data. The suggested system not only provides attribute-based keyword search but also enables attribute-based data sharing at the same time, which is in contrast to the existing solutions that only support either one of two aspects. Additionally, the keyword in our scheme can be modified throughout the sharing phase without interacting with the PKG. In this paper, we discuss the notion of CPAB-KSDS as well as its security model. As an added bonus, we provide a concrete strategy and show that it is secure in the random oracle model against both the chosen ciphertext attack and the chosen keyword assault. Finally, the comparison of performance and properties shows that the proposed structure is both practical and efficient.

**KEYWOEDS:** Cloud Computing, Ciphertext-Policy Attribute Based Mechanism with Keyword Search and Data Sharing (CPAB-KSDS), PKG, Encryption, Attribute Based Encryption.

### 1. INTRODUCTION

#### 1.1. BACKGROUND WORK

As a term, "cloud computing" encompasses both the software and the underlying infrastructure of remote servers and networks that are used to provide on-demand access to shared resources over the internet. Historically, "Services" have been referred to as "Computer Code as a Service" (SaaS). The Cloud is the collective noun for the software and infrastructure of data centres. The term "Public Cloud" is used to describe a Cloud that is made available to the public on a pay-per-use basis. Utility Computing is the product being offered. Amazon Web Services, Google App Engine, and Microsoft Azure are all examples of utility computing that are available right now. When referring to internal datacenters of a company or other organisation, the term "private Cloud" is typically used. This means that Cloud Computing encompasses both SaaS and Utility Computing but typically excludes private Clouds. The word "cloud computing" is used interchangeably; it should be replaced only if necessary for clarification. Fig. The diagram in 1.1 illustrates how people participate in Cloud Computing as either consumers or providers.

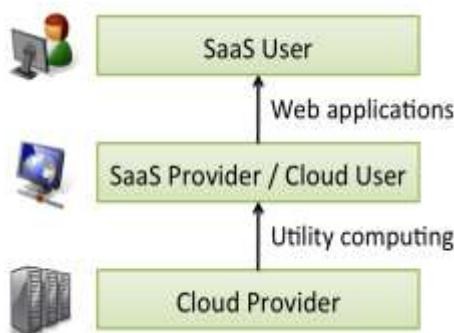


Fig: 1.1. User and Providers of Cloud Computing

To improve a networking infrastructure that incorporates all types of resources, usage areas, etc., falls under the purview of future Internet research and development. Cloud-based technology research is, thus, crucial to the long-term success of the Internet. Like the clever consequence of the re-marking



## Cartooning of an Image/Video Using Opencv and Python

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### ABSTRACT

To cartoonize images and different objects and blend them accordingly as we require. Our aim is to create a cartoon which doesn't look like a filter applied on an image but, is actually a cartoonic view of an input image. The bilateral filter and an edge detection mechanism are all that's needed to create a rough cartoon impression. We can access this cartoon images through an application where you can also save them and make changes.

**KEYWORDS :** Cartooning, cartoon, cartoonpictures, cartoonify, imageconverting, imageformat, animation, generative adversarial network(GAN), image processing and sharp image.

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### 1. INTRODUCTION

#### **Problem statement:**

Image processing is a technique used to modify an image in some way, such as by improving it or by eliminating unnecessary functional data. are located in less busy lanes. Cartooning of an image is an interesting project under image processing where it takes an input image, processes it and produces an output as a cartoon.

#### **Motivation:**

Cartoons are often sardonic, biting, and slant their opinions on a subject. However, it is not simple to draw cartoons. True mastery of this art form requires years of formal training and the natural talent of a select few. Several breakthrough technologies have emerged in recent years that make this now a realistic goal. to create cartoons entirely on the computer. This can be recreating and helps one to have a cartoonic view of everything..

#### **Objective:**

To develop an application to cartoonize humans, other objects and images. Make it possible to blend as many cartoons as possible. Save the cartoons in the application if needed.

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### Literature Review

**M. Sweet, "Traffic Congestion's Economic Impacts: Evidence from US Metropolitan Regions," *Urban Studies*, vol. 51, no. 10, pp. 2088–2110, Oct. 2013**

Traffic congestion alleviation has long been a common core transport policy objective, but it remains unclear under which conditions this universal byproduct of urban life also impedes the economy. Using panel data for 88 US metropolitan statistical areas, this study estimates congestion's drag on employment growth (1993 to 2008) and productivity growth per worker (2001 to 2007).

**Md. Munir Hasan, GobindaSaha, Aminul Hoque and Md. Badruddoja Majumder, "Smart Traffic Control System with Application of Image Processing Techniques," in 3rd International Conference on Informatic Electronics & Vision, Dhaka, May 2014.**

In this paper we propose a method for determining traffic congestion on roads using image processing techniques and a model for controlling traffic signals based on information received from images of roads taken by video camera. We extract traffic density which corresponds to total area occupied by vehicles on the road in terms of total amount of pixels in a video frame instead of calculating number of vehicles. We set two parameters as output, variable traffic cycle and weighted time for each road based on traffic density and control traffic lights in a sequential manner.



## Road Pothole Detection using Convolutional Neural Networks

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### ABSTRACT

One of the leading causes of both vehicle breakdowns and accidents on the road is the prevalence of potholes. A rise in both vehicle traffic and pollution has led to an increase in both large and small potholes on roads across the country. Here, we introduce a Convolutional Neural Network for classifying road potholes using the Tensor Flow and Keras libraries. The proposed system uses images of potholes in the road to categorise them using convolutional neural networks. In order to find potholes, the system employs a convolutional neural network model. If the CNN method is bolstered by additional feature extraction strategies, it is expected that the resulting pothole classification accuracy will improve. Using deep convolutional neural networks, we have shown their utility and potential for analysing images of potholes. With the goal of releasing this model on the Django framework running on a local host.

Keywords: Road Pothole, Deep Learning, Tensor Flow, Keras, CNN

## 1. INTRODUCTION

### 1.1 Introduction of project

Specifically, we propose employing Deep CNN (convolutional neural network) for deep learning on the problem of road potholes. As a novel approach to this problem space, we have adopted the CNN approach to deep learning after collecting a sufficient amount of data containing images of potholes under different conditions and weather. Moreover, a contrast was made between the custom-made convolutional neural model and some of the pre-trained models.

This project proposes a method for detecting potholes in roads by training a Deep Learning algorithm suitable for such a classification problem. Implementing Convolutional Neural Networks in Tensor Flow.

To help engineers devise a classification strategy for avoiding potholes in roads, we proposed using a dataset informed by deep learning (dl). The research employed Convolutional neural networks, a type of deep learning (CNN). If the CNN approach is bolstered by additional feature extraction methods, it is expected that roadpothole classification accuracy will improve.

## 2. LITERATURE SURVEY

A literature review is a piece of writing that summarises the most important findings and methods related to a specific topic. Secondary sources are those that discuss previously published data and knowledge in a specific field and, in some cases, time frame.

The purpose of a literature review is to bring the reader up to speed on the state of the art in a given field, but it also lays the groundwork for other endeavours, such as potential future research in the field, and thus precedes a research proposal. It typically follows a specific structure and combines elements of summary and synthesis.

Outline of The Project:

- Define a problem
- Gathering image data set
- Evaluating algorithms
- Detecting results

The steps involved in Building the data model is depicted below.

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# Using Machine Learning Models to Predict Growth of Plant and Output in Greenhouse Environments

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## ABSTRACT

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Accurately forecasting how plants will develop and what kind of harvest they will produce is a crucial issue for greenhouse growers and farmers are general. In order to control the environmental improve higher production, match supply and market demand, and reduce costs, producers could benefit from the development of models that can properly model growth and yield. Recent advancements in ML, and especially Deep Learning (DL), can give potent analytical tools are new. This proposed research makes use of Machine Learning(ML) and DL methods to estimate production and plant growth variance in two greenhouse settings: tomato yield forecasting and Ficus benjamina stem growth. To improve upon traditional methods of making predictions, we make use of a brand new, state-of-the-art deep Recurrent Neural Network (RNN) based on the Long Short-Term Memory (LSTM) neuron model. The RNN design takes into account both the historical values for yield, growth, and stem diameter, as well as the microclimate circumstances, while modelling the desired growth parameters. In order to assess the efficacy of various ML techniques, such as Support Vector Regression and Random Forest Regression, a comparative analysis is presented that use the mean square error criterion. Extremely encouraging findings are given based on information collected from two greenhouses in Belgium and the United Kingdom as part of the EU Interreg SMARTGREEN project (2017-2021).

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**Keywords:** Deep Learning(DL), Ficus Benjamina, Support Vector Regression, Random Forest Regression, Machine Learning(ML), Recurrent Neural Network(RNN), Long Short-Term Memory(LSTM).

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## 1. INTRODUCTION

In this paper author is predicting ficus plant growth/crop yield by evaluating performance of various machine learning algorithms such as SVR (Support Vector Regression),Random Forest Regression (RF), and LSTM(Long Short-Term Memory) deep neural network algorithm. SVR and RF are the traditional old algorithms whose performance of prediction will be low due to unavailable of deep learning technique. To overcome from this problem author is using LSTM deep neural network algorithm to predict plant growth .

Deep learning extends classical ML by adding more “deep” (complexity) into the model, as well as transforming the data using various functions that create data representations in a hierarchical way, through several levels of abstraction. A strong advantage of DL is feature learning, i.e., automatic feature lower level features. DL can solve complex problems particularly well and fast , due to the more complex models used, which also allow massive parallelization. These complex models employed in DL can increase classification accuracy, DL includes different components , such as convolutions , pooling layers , fully connected layers , gates , memory cells , activation functions , encoding/decoding schemes , depending on the network architecture used, e. g ., Convolutional Neural Networks , Recurrent Neural Networks and Unsupervised Networks .



## **Ad Sherlock Efficient Deployable Click Fraud Detection for Mobile Applications**

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### **ABSTRACT**

Without mobile advertising, there would be no mobile app ecosystem. It's clear that click fraud, where ads are clicked on by malicious code or bots, poses a serious threat to the sustainability of this ecosystem. Click fraud can now be detected by server-side analysis of advertising requests. Due to the simplicity with which the detection can be avoided, for example when the clicks are disguised behind proxies or are geographically separated, such methods may produce a large number of false negatives. In this paper, we provide AdSherlock, an efficient and deployable client-side (within-app) solution to click fraud detection in mobile apps. AdSherlock divides the computationally intensive phases of recognising click requests into an offline and an online procedure. AdSherlock uses a probabilistic pattern-creation approach based on URL (Uniform Resource Locator) tokenization that operates in an offline mode. These patterns, in conjunction with an ad request tree model, are used to identify click requests in real time, thereby detecting click fraud. AdSherlock was put through its paces by creating a prototype and testing it with real-world applications. The online detector is built into the executable bundle of the programme through binary instrumentation. When compared to other methods for detecting click fraud, AdSherlock performs better while practically never affecting system performance.

**KEYWOEDS:** Click fraud detection, mobile advertising, adrequests identification.

### **1. INTRODUCTION**

A mobile app ecosystem would not exist without mobile advertising. It has been estimated that by 2020, the global market for mobile advertising would be worth \$247.4 billion.

[1]. Third-party mobile ad providers like AdMob

[2] provide ad libraries that app developers incorporate into their apps in order to integrate advertisements. The embedded ad library retrieves ad content from the network and presents it to the user when the user is on a mobile device running the app. PPC (Pay-Per-Click)

[3] is the most popular style of monetization, in which the developer and the ad supplier are paid by the advertiser when a user clicks on the ad. Click fraud.

[4] is a significant challenge for the long-term health of this ecosystem since it involves fraudulent clicks (or touch events on mobile devices) on advertisements. These clicks are typically generated by malicious code or automated bots. Generally speaking, the various click fraud techniques can be broken down into two categories: in-app frauds, which involve inserting malicious code into the app to generate forged ad clicks, and bots-driven frauds, which involve using bot programmes (such as a fraudulent app) to automatically click on advertisements. Recent work MAdFraud

[5] conducts a large-scale measurement of ad fraud in real-world applications, allowing for a quantification of inapp ad fraud. Ad requests are made by around 30% of apps in a sample of about 130K Android apps, according to MAdFraud.

Another recent piece of study examines bot-driven click fraud by employing the automated click generation programme ClickDroid [4] to conduct real-world click fraud attacks against eight of the most popular ad networks. Based on the data [4], it seems that six of the eight ad networks are susceptible to these kinds of attacks. An easy method for spotting click fraud in mobile apps is to use a server-side detection method based on a predetermined threshold. Clicks from the same device identifier (for example, IP address) on an ad server within a short time frame may be suspicious and blocked. However, when clicks are hidden behind proxies or geographically dispersed, this simplistic strategy may produce a large number of false negatives.

### **2. OVERVIEW OF**

AdSherlock is designed to be used by app stores. Before an app is released for download, the app store can use AdSherlock to analyze the app and instrument the online fraud detector into the app for click fraud detection at runtime. Only app binaries (e.g., APKs(Android application package)) are needed, and AdSherlock does not assume any developer input.



# Analysis of the Efficiency of Machine Learning Methods for Disease Prediction

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### ABSTRACT

Machine learning aids in the diagnosis and treatment of a wide variety of diseases. Improved disease prognosis and patient care can be achieved through the use of predictive analysis, which benefits from the application of powerful multiple machine learning algorithms. Disease prediction may be done quickly and accurately using machine learning techniques. These clinical characteristics are used in conjunction with machine learning algorithms for disease classification. In the end, we use a graph to compare the outcomes of various machine learning classification techniques.

**KEYWORDS:** Machine learning, classification, KNN, Data mining, Naviee bayes

### 1. INTRODUCTION

Keeping a patient healthy is a constant challenge due to the fact that each sickness has its own unique set of symptoms. Traditional medical practise assigns relative importance to each symptom in order to predict the presence of a disease and aid in the diagnosis process. The symptom with the greatest impact on the condition is given the most weight. Data mining supplements and replaces conventional medical expertise in aiding in the diagnosis and prognosis of disease. By using this strategy, we are able to extract previously unseen patterns, relationships, and knowledge that would have been inaccessible using more conventional statistical methods. Privilege and correct conclusion are ever-present contributors to the effective treatment. Data mining concepts are flexible enough to uncover hidden numbers, relationships within a database, and machine learning approaches to further assess a patient's case based on the documented clinical information. Machine learning algorithms are used to forecast a wide range of diseases and to develop effective regimens for improved health while minimizing the risks of excessive cost, slow recovery, and incorrect treatment. Thankfully, machine learning algorithms prove effective at disease prediction, and there are still a plethora of untapped methods to investigate. In this paper, we proposed a graphical user interface (GUI) application that makes use of machine learning methods for a disease prediction system, mining on the symptoms of the disease, and finally detecting the disease by comparing the performance or accuracy of different techniques in doing so. To get there, we'll use machine learning categorization techniques like Naive Bayes, Decision Tree, Support Vector Machines, and Random Forest, which can reliably predict the outcome of each new insertion.

### 2. RELATED WORK

One area where machine learning can be used is in the prediction of cardiovascular disease. The flexibility and adaptability of optimization algorithms make them well suited for handling difficult, non-linear issues. In order to enhance the quality of heart disease classification, we used the Fast Correlation-Based Feature Selection (FCBF) technique to eliminate redundant information. Then, we use a Multilayer Perception | Artificial Neural Network optimised with Particle Swarm Optimization (PSO) and Ant Colony Optimization (ACO) methods to perform a classification based on various classification algorithms like K-Nearest Neighbor, Support Vector Machine, Naive Bayes, Random Forest, and others. Applying the suggested hybrid method to the heart disease dataset, the results show the method's efficacy and robustness in processing different types of data for disease classification. Therefore, this research evaluates the outcomes of several machine learning algorithms based on a variety of metrics (such as accuracy, precision, recall, f1-score, etc.). Through the use of the proposed optimised model by FCBF, PSO, and ACO, we achieve a maximum accuracy of 99.65% in our classifications. The outcomes demonstrate that the proposed system outperforms the previously stated categorization method.

### 3. ARCHITECTURE

A system architecture or systems architecture is the conceptual model that architecture is the conceptual model that defines the structure, behavior and more views of a system. An architecture description is a formal description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviors of the system. System architecture can comprise system components, the externally visible properties of those components, the relationships between them.



# Using Machine Learning Models to Predict Growth of Plant and Output in Greenhouse Environments

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## ABSTRACT

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Accurately forecasting how plants will develop and what kind of harvest they will produce is a crucial issue for greenhouse growers and farmers are general. In order to control the environmental improve higher production, match supply and market demand, and reduce costs, producers could benefit from the development of models that can properly model growth and yield. Recent advancements in ML, and especially Deep Learning (DL), can give potent analytical tools are new. This proposed research makes use of Machine Learning(ML) and DL methods to estimate production and plant growth variance in two greenhouse settings: tomato yield forecasting and Ficus benjamina stem growth. To improve upon traditional methods of making predictions, we make use of a brand new, state-of-the-art deep Recurrent Neural Network (RNN) based on the Long Short-Term Memory (LSTM) neuron model. The RNN design takes into account both the historical values for yield, growth, and stem diameter, as well as the microclimate circumstances, while modelling the desired growth parameters. In order to assess the efficacy of various ML techniques, such as Support Vector Regression and Random Forest Regression, a comparative analysis is presented that use the mean square error criterion. Extremely encouraging findings are given based on information collected from two greenhouses in Belgium and the United Kingdom as part of the EU Interreg SMARTGREEN project (2017-2021).

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**Keywords:** Deep Learning(DL), Ficus Benjamina, Support Vector Regression, Random Forest Regression, Machine Learning(ML), Recurrent Neural Network(RNN), Long Short-Term Memory(LSTM).

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## 1. INTRODUCTION

In this paper author is predicting ficus plant growth/crop yield by evaluating performance of various machine learning algorithms such as SVR (Support Vector Regression),Random Forest Regression (RF), and LSTM(Long Short-Term Memory) deep neural network algorithm. SVR and RF are the traditional old algorithms whose performance of prediction will be low due to unavailable of deep learning technique. To overcome from this problem author is using LSTM deep neural network algorithm to predict plant growth .

Deep learning extends classical ML by adding more “deep” (complexity) into the model, as well as transforming the data using various functions that create data representations in a hierarchical way, through several levels of abstraction. A strong advantage of DL is feature learning, i.e., automatic feature lower level features. DL can solve complex problems particularly well and fast , due to the more complex models used, which also allow massive parallelization. These complex models employed in DL can increase classification accuracy, DL includes different components , such as convolutions , pooling layers , fully connected layers , gates , memory cells , activation functions , encoding/decoding schemes , depending on the network architecture used, e. g ., Convolutional Neural Networks , Recurrent Neural Networks and Unsupervised Networks .



## Image Security by Using Artificial Neural Networks

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### ABSTRACT

Concern for one's own safety has been universal for quite some time. The possibility of a security breach in a private area is now one that everyone wants to eradicate. When a breach in the conventional security system is detected, alarms are sounded. However, a significant improvement in security can be achieved by the use of image processing in conjunction with deep learning via convolution neural networks for picture identification and classification. This is because it is able to extract intricate details from photographs with the use of sophisticated and accurate face and body detection algorithms. Transitions in machine learning, especially deep learning, are occurring at a rapid pace. There would be significant strides made in every area of science and technology if this kind of technology were used to improve upon present systems and models. It's the same with computerised visual perception. This study intends to do the same by demonstrating how these two may be combined and put to use in the realm of security to accomplish far more than was previously thought possible.

Keywords –Image procurement, Image segmentation, compression, decompression, neural networks

### Introduction

Neural network [1] is used to refer to artificial neural network [2], while has been used to refer to biological neural network [3]. The biological neural network is a network of biological neurons, which is in relation with nervous system. The artificial neural network is composed of artificial neurons, which is the simulation of biological neural network. According to the learning ability, artificial neural network has been used in artificial intelligence [4]. For example, it is used to guide the robot to play chess, it is used in pattern recognition [5,6], such as pattern classification or object recognition, it is used in function approximation [7], such as time series prediction or modeling, and it is also used in data processing [8,9], such as filtering, clustering, blind signal separation and compression. The proposed multimedia content authentication scheme is shown in Fig. 6. Here, the media data, original authentication code and key are used to feed a neural network, which produces a secret parameter. Compared with media data, the secret parameter is of small size. Then, the secret parameter and the key are stored or transmitted in a secure way, while the media data are distributed freely. During distribution, media data may be tampered maliciously. In authentication, the received media data, secret parameter and key are used to feed the same neural network, which produces the computed authentication code. By comparing the original authentication code and the computed one, the authentication result is produced. That is, if there is only slight difference between them, then the multimedia data are not tampered, otherwise, they are tampered. To authenticate multimedia data successfully, two conditions are required. Firstly, the secret parameter and key are correct. Secondly, the received media data are same to or not very different from the original media data

### Existing Work

As e-commerce and financial dealings have moved online, protecting user information has become more crucial than ever. Information is protected across all platforms and applications thanks to data security measures including encryption, hashing, tokenization, and key management. The security of photos during network transmission or when stored in the cloud, however, has received very little attention.

#### Disadvantages:

Previous studies lacked efficient algorithms for image compression, and current systems made the encryption and decryption of images a cumbersome procedure.

### Proposed Work

This project encrypts and decrypts photos using an artificial neural network, and the author also uses an artificial neural network to minimise the size of the images so they may be transferred more quickly across the network. After being trained on a dataset of photos, a model used for Autoencoder and Decoder can produce an output image that is worse in quality than the input image but is also less in file size and thus transfers more quickly over a

network.

We are encrypting images by training a neural network on the CIFAR dataset; once the model is ready, we apply it to an input image; the result is a pixelated mess that no human can decipher; and during decryption, we use the same method in reverse.

Advantages:

When compared to prior work, the compression results from our proposed method are superior. We also make it simple to store, retrieve, and send images in the cloud by encrypting them in a way that is indecipherable to cloud service providers and other unauthorised parties.

## Conclusion

Work In this paper, some existing research work in neural network based content protection is firstly introduced, including neural network's properties suitable for content protection and some content protection schemes based on neural network. Then, a multimedia content authentication scheme is proposed, which makes use of neural network's learning ability and one-way property to detect malicious tampering on multimedia content. The performance evaluation shows the scheme's practicality. Furthermore, some open issues in this 14 research field are presented. Finally, some conclusions are drawn..

## References

- [1] Hajek P, et al. Uncertain Information Processing Expert Systems. Boca Raton, Florida: CRC Press, 1992.
- [2] Dai Q, Chen SC, Zhang BZ, Improved CBP neural network model with applications in time series prediction. NEURAL PROCESSING LETTERS 18 (3): 197-211 DEC 2003. [8] Y. D. Jou, "Design of real FIR filters with arbitrary magnitude and phase specifications using a neural-based approach," IEEE Trans. Circuit and Systems-II, vol. 53, no. 11, October 2006.
- [4] S. Kulkarni, B. Verma, and M. Blumenstein, 1997, Image Compression using a Direct Solution Method based Neural Network, Proceedings of the Tenth Australian Joint Conference on Artificial Intelligence, Perth, Australia, 114-119.
- [5] Gabriele Manganaro, P. Arena, L. Fortuna. Cellular Neural Networks: Chaos, Complexity and VLSI Processing, Springer Series in Advanced Microelectronics, 1999.



# Enhancing Cloud Technology Privacy And Security Through Feature Data Sharing

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### ABSTRACT

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Storage and retrieval of data can be done remotely via the internet, thanks to cloud computing. Problems with data privacy and access control arise, however, when information is stored on a cloud server that cannot be verified. Due to their inflexibility and lack of fine-grained access control, existing encryption systems like symmetric and asymmetric schemes are unsuitable to provide the access control. Attribute-based encryption is one of the most well-known cryptographic methods for ensuring confidentiality and enabling granular permissions in cloud storage. In this paper, we take a close look at the wide range of access structure and multi-authority ciphertext policy attribute-based encryption schemes currently in use. Additionally, this overview delves deeper into many facets of ciphertext policy attribute-based encryption, including hidden policy, proxy re-encryption, revocation mechanism, and hierarchical attribute-based encryption. Moreover, this research evaluates and contrasts several ABE schemes with regard to their capabilities, safety, and performance. The applicability of attribute-based encryption is also determined in this work. In conclusion, this work compares and contrasts several ABE schemes in order to identify areas of future study and problems that still need to be solved in the field of attribute-based encryption.

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**KEYWORDS:** Cloud Computing, Data privacy, Privacy, Encryption, Access control, Attribute-based encryption(ABE), authority verification, hidden access policy, privacy preserving.

---

## 1. INTRODUCTION

### *cloud computing:*

The term cloud computing refers to the practise of renting out access to various forms of digital infrastructure (including programmes and servers) over the World Wide Web (typically the Internet).

Complex architecture is represented in system diagrams by a cloud-shaped symbol. Data, programmes, and processing are all sent to external services in cloud computing. Cloud computing refers to the use of remotely hosted servers and software applications. Many of these businesses give their customers access to sophisticated server infrastructures and cutting-edge application suites.

- There are consumer-oriented uses for super computing power that were previous for the military and academic institutions. Examples of these include financial portfolios, customize information, data storage, and massively immersive computer games. These application scan perform trillions of calculations per second.
- To divide data processing tasks, the cloud computing uses large groups of computers, often running low-cost consumer PC technology with specialized networking. In today world, the majority of computers are part of a vast network of interconnected devices. Virtualization techniques are routinely used to unlock the full potential of cloud computing.
- It includes: Features and service models:
- Consider these elements of cloud computing, according to NIST definition:
- Rather than dealing with the service providers directly, customers can self-provision computer resources such as server time and network storage as needed.
- Using standard protocols, any client system no matter how thin or thick, can access network capabilities (e.g., mobile phones, laptops, and PDAs).
- Multi-tenant models allow the providers resources to be pooled to serve many clients, with unique physical and virtual resources dynamically assigned and reassigned according to the demands of the consumers. it is common for customers to be unable or unwilling to know exactly where their purchased goods are located, but may have the option of specifying location at a more abstract level of abstraction (e.g., country, state, or data center). Resources include virtual machines, storage, processing, and network bandwidth.

The ability to automatically provision and release capabilities in specific situation rapid scaling Out and scaling in. In terms of provision in Clients have seemingly count option to pick from, and they may buy as many as they want any time they want.

- A metering capability at a level of abstraction appropriate to the type of service is used to

# Analysis of Facet-Loaded Rectangular DR-Rectenna Designs for Multisource RF Energy-Harvesting Applications

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**Abstract**—In this article, the characteristics of four spiral-facet structures are studied for RF energy-harvesting (RFEH) applications for increasing the harvesting power from the surrounding atmosphere. A rectangular dielectric resonance antenna (RDRA) is selected and placed above an FR4-epoxy substrate. Metallic rectangular spirals are then placed on the dielectric resonator (DR) surface to create resonances with insensitive polarization characteristics. The proposed spirals help provide wideband/multiband characteristics at 4.85, 5.0, 5.5, 5.8, and 6.25 GHz that covers 5G 4.9, WLAN 5.0, WLAN 5.5, Wi-Fi 5.8, and Wi-Fi 6E bands, respectively. The minimum gain achieved is 5 dBi in all possible configurations. A broadband rectifier circuit (4.67–7.0 GHz) with a staircase multistage transmission line matching network (MN) covering all resonant frequencies in various facet-loaded antenna configurations is proposed for RF-to-dc conversion purposes. The rectifier's maximum power conversion efficiency (PCE) is achieved as 77.3% at a 13.5 dBm input power level, and the corresponding output voltage is 4.92 V.

**Index Terms**—Broadband rectifier, circular polarization (CP), multiband, power conversion efficiency (PCE), radio frequency energy harvesting (RFEH), spiral facet.

## I. INTRODUCTION

**R**ADIO frequency energy harvesting (RFEH) is a promising approach for better alternatives for power sources that can mitigate the dependence on conventional batteries. The available power density in the ambient environment is low. However, the RFEH technique has grabbed significant

attention over other harvesting techniques due to increasing its signal availability even in the indoor environment and the small size of the harvesting system [1]. In the RFEH approach, the electromagnetic (EM) energy available in the surrounding environment is utilized and processed as suitable for powering low-power electronic devices, which is possible by a suitable harvesting system, named a rectenna or rectifying antenna. The performance of this rectenna system solely relies on the antenna and the rectifier circuit efficiency. Also, increasing the harvesting power by the antenna increases the rectenna output [2].

Nowadays, printed antenna configurations are more popular due to their ease of fabrication and compact size. Several planar and nonplanar antenna configurations have been reported for wideband/multiresonance characteristics. Various planar antenna configurations, viz., single-band [3], [4], broadband [5], and multiband [6] characteristics, have been investigated. Nonplanar antennas, such as dielectric resonator antennas (DRAs), have advantages such as high efficiency, large power handling capability, and 3-D design flexibility over traditional antennas. Hence, the DRAs configurations are promising solutions for replacing conventional planar antennas. Besides, the DRAs have remarkable properties of broad bandwidth, high gain, and compatibility with planar antenna feeding techniques [7]. The antennas with a large effective aperture can collect more RF energy from the ambient environment. Therefore, high-gain characteristics in antennas are highly desired to ensure the maximum collection of RF energy from the surroundings.

Furthermore, the concept of a high-gain antenna in energy-harvesting applications has been well studied in [8]. The high-gain antennas are suitable if the incident direction of the received signal is known. However, for the unknown direction of the incident wave, an omnidirectional radiation feature, ensuring the significant receiving of RF energy in the receiver terminal, is desired. Also, the ambient energy is randomly polarized. Hence, the receiving antenna with circular polarization (CP) characteristics is essentially required to receive both linear and circularly polarized waves, which minimizes the polarization mismatch loss between transmitting and receiving antennas. A dual-polarized antenna with both

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## Low Light Image Enhancement

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### ABSTRACT

Each day, countless photographs are shot using the cameras on a wide variety of mobile devices. Even though advancements in image sensor technology have greatly enhanced the clarity of such obtained images, the visual quality is by no means guaranteed under varied illumination conditions. An original and straightforward strategy for improving images in dim conditions is provided in this work. The suggested method's central idea is to use several diffusion spaces to estimate the illumination component, which is likely to appear as the bright pixel even under the low-light scenario. By choosing the maximum value at each pixel position of those diffusion spaces, the illumination component can be correctly isolated from the scene reflectance and fine-tuned separately for improved visual quality. So, since the iterative diffusion process has a tendency to disclose previously hidden lighting components with brilliant intensities, we propose adopting the maximal value among diffused intensities at a specific pixel point, so-called maximal diffusion value, as the illumination component. The suggested method enhances image quality without major distortion while effectively suppressing the problem of noise amplification, in contrast to prior approaches that still face difficulties to balance between over-saturated and conservative restorations. Results from experiments conducted on reference datasets demonstrate the effectiveness and robustness of the suggested strategy in comparison to previously introduced methods in the literature.

**KEYWORDS:** Low-light image enhancement; deep learning; retinex; YCbCr.

### 1. INTRODUCTION

The low-light condition in everyday photographs is typically the result of a combination of circumstances, such as the time of day, the quality of the available light, and the presence of deliberate shadows. As a result, important details are lost and the scene's underlying structures take on a different appearance on the surface, thus diminishing the image quality and user experience. Many computer vision algorithms, including those for object detection [1], recognition [2], stereo matching [3], etc., suffer significantly when presented with such distorted inputs. Despite the fact that modern mobile devices, especially smartphones, contain camera modules that have the applicable solution, its usefulness is still constrained. Several techniques have been developed to effectively enhance the visual quality of low-light photographs. Historically, the most common method for this task has been to use the statistical information of the original input image to directly boost the hidden structure so that it becomes visible. However, the restoration outputs of those algorithms have a tendency to oversaturate relatively bright sections, making the textural qualities of the associated region likely unnoticeable. In order to alleviate this issue, histogram equalisation and its derivatives [4, 5] can slightly flatten the distribution of pixel intensities across the whole range. Additionally, they may be easily integrated with a number of optimization approaches, which greatly aid in adaptively adjusting the dynamic range by normalising the histogram of the original image. However, most histogram-based algorithms primarily focus on enhancing the contrast, rather than estimating the illumination component in an image, and therefore they typically fail to moderately restore the underlying structure that is buried in the shadows (e.g., under- or over-enhanced in uneven illuminations). Low-light image enhancement has instead made extensive use of the Retinex theory's [6] underlying assumption that the image may be divided into scene reflectance and its illumination. A large body of research in this domain, known as the decomposition-based method, has focused on isolating the lighting component from the reflectance component in an effort to get an improved early result. Over-highlights of edge-like regions generate aesthetically odd effects in the enhanced result, despite the fact that textural features are properly disclosed in the reflectance component. Furthermore, such an overemphasis frequently results in defects of halo artefacts around edge structures. In this work, we suggest a new, straightforward strategy for improving images shot in dim conditions. The proposed method is based on our realisation that the diffusion process provides a clear indication of the bright-light attribute present in the illumination component even in the shadowed area. Accordingly, we suggest using the highest value at each pixel position across various diffusion spaces as the lighting factor. Comparing the results of illumination estimate using this scheme with those using the maximal value among RGB channels or the association with neighbour pixels, as shown in Fig. 1(c) and (d), demonstrates a striking difference. It's worth noting that our pixel-wise pooling procedure has a good capacity to decrease the blur artefact caused by aggregation in the local window, which is commonly recognised for the local consistency of lighting in prior methods [7], [8]. Color inconsistency is avoided by choosing the highest diffusion value in the intensity channel alone throughout the enhancement process. It should be kept in mind that the predicted illumination component is modified in accordance with both global and local stretching techniques, as done in earlier methods [9], [10]. Here is a brief overview of the paper's most important findings: • The proposed method makes an effort to implement the idea that lights will typically show up brightest in the dark [6, 11]. To this purpose, we suggest using the highest value across all pixels in a set of diffusion spaces for the illumination. To

# E-Agri Kit: Agricultural Aid Using Deep Learning

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**Abstract-** This project showcases an agricultural aid app that was built and designed to assist farmers by employing Image Processing, Machine Learning, and Deep Learning. Features like early detection of plant disease are available in our application and are implemented in a number of ways. It was determined that Convolutional Neural Network was superior for detecting plant diseases with a high degree of accuracy. The farmer can use the weather forecast to plan out agricultural tasks like harvesting and plucking at the optimal time. A crop-specific fertilizer calculator is in the works to determine how much urea, diammonium phosphate, and muriate of potash should be applied to a given area to prevent the recurrence of disease caused by depleted soil minerals

**Keywords-** Deep learning, Techniques, Agriculture, Remote sensing, e-Agriculture, Image Processing, Plant Disease Detection.

## I. INTRODUCTION

A research by the Associated Chambers of Commerce and Industry of India [1] estimates that annual agricultural losses due to pests and diseases amount to Rs.50,000 crore (\$500 billion). It's as if at least 200 million people in this country go to bed hungry every night. Because of its significance, agriculture is the main source of income for most of the rural people in low-income countries. Huge amounts of money are wasted because of unforeseen pest invasions and unfavorable weather conditions that damage crops. A simple agro android app system can make a big difference in the quality of life for people in rural areas. When plant infections spread, they can cause a wide range of issues, including crop failures and food scarcity.

In order to help farmers deal with this problem, we conducted a thorough literature analysis [5] and created an android app called Agricultural Aid that employs machine learning to detect plant diseases. In order to provide services such as a 7-day weather forecast, a fertilizer calculator, and language translation into up to four different languages, we have integrated this detection with an Android app developed with Android Studio and its APIs.

With the use of Machine Learning and Deep Learning models, we were able to use images to categorize diseases. The first method is called "Image Processing," and it entails a string of preprocessing procedures to zero in on the damaged region. These stages include filtering, colour space conversion, thresholding, and contouring. Using these methods in tandem with principles from Machine Learning enables the classification of affected areas. However, this type of method has a low degree of accuracy.

The "GrabCut" Algorithm can be used in place of these processes; it is an effective method of foreground extraction that can be used to get rid of background noise with minimal human involvement [4]. Although this method could improve the application's background removal and classification accuracy, it is not being used at this time.

The second strategy, called Deep Learning, employs a deep neural network to train and test leaf image databases for illness categorization. The results of numerous Deep Learning Models, such as CNN, ResNet-152, and Inception v3, are compared in this work. As part of our agriculture support, we use pictures of healthy and diseased plant leaves to train and shape a CNN Model into an automated plant disease system.

# A Novel Implementation of Robust CT scan Based Brain Diagnosis Process Using CNN GB Technique

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**Abstract-** While existing methods for detecting shilling attacks in online recommender systems are effective at identifying individual attackers, they are not as effective at detecting group shilling assaults, in which a group of attackers cooperate to influence the output of the system by injecting bogus profiles. This article presents a method for detecting shilling attacks as a group, using the bisecting K-means clustering algorithm. We begin by separating each items rating track and subdividing those into potential groups based on a predetermined amount of time. In the second place, we propose using the degree of item attention and user activity to determine the suspiciousness of candidate groups. In the end, we use the bisecting K-means algorithm to cluster the candidate groups according to their suspicious degrees and obtain the attack groups. Experiments conducted on the Netflix and Amazon data sets validate the superiority of the suggested strategy over the gold standards the second place, we propose using the degree of item attention and user activity to determine the suspiciousness of candidate groups. In the end, we use the bisecting K-means algorithm to cluster the candidate groups according to their suspicious degrees and obtain the attack groups. Experiments conducted on the Netflix and Amazon data sets validate the superiority of the suggested strategy over the gold standards.

**Keywords-** Detection, Shilling Attacks, Bisecting clustering, recommender systems, accuracy.

## I. INTRODUCTION

The brain tumor of CT scan images cannot be identified if any noise over imposed on object. The CT scan-based brain tumor detection system gives the better diagnosis process [1].

For any medical image processing techniques follows the three categories of operation those are pre-processing feature extraction and classification. Preprocessing stage is offering segmentation, transformation, and filtration. In this research work adaptive median filtration is taken as pre-processor.

CNN and GBML are selected for classification, feature extraction; therefore, getting output is a disease location of brain image. The CT scan is a primary imaging tool, which can scan the human brain and giving the diagnosis disorders.

This decision-making process can help the fast and accurate disease identification and classification [11-12]. The recent technologies giving the hidden information about selected medical image.

Image pattern recognition and human interaction are the computer applications in image recognition mechanism. These types of tools are developing the data acquisition from x-ray, MRI, CT and various medical imaging techniques [13-15]. The diagnosis center lab technicians and researchers are using this application they can diagnosis the process simple.

## II. LITERATURE SURVEY

[1] Bengio, Y., Lamblin, P., Popovici, D., Larochelle, H.: Greedy layer-wise coaching of deep networks. Advances in Neural Information Processing Systems 19 (NIPS), 153–160 (2007). Complexity concept of circuits strongly suggests that deep architectures can be an awful lot extra



# DM (DATA MINING) & FEATURE ANALYSIS OF COLLEGE STUDENTS' CAMPUS NETWORK BEHAVIOUR.

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## ABSTRACT:-

Data Mining, Student Network Activity

There has been a shift in the management of student affairs from anecdotal, qualitative knowledge to scientific, quantitative analysis, thanks in large part to the rise and promotion of big data methods that allow teachers to understand the behaviour patterns of students in a timely and accurate manner, especially to find the groups of students that need to be focused on in a timely manner. With a total of 23.843 million Internet access records spanning 4 years, this paper uses the clustering method of data mining to analyse the campus network behaviour of 3,245 students at a specific B university. In the end, we see that there are four distinct categories of students in terms of their Internet access, and that 350 of them are heavy network users. These students' academic outcomes and general performance are impacted. Data mining was performed on student campus network behaviour in this study, which can be used as a real-world example of how data mining can be put to use in the field of student affairs management. This work provides useful information that can be used to further the professionalisation and rigour of the field.

**Index Terms - Data -Mining, Qunatitative, Analysis, Big Data, Network Acitivity, Digital Campus**

## 1. Introduction

Management issues in student affairs are exacerbated by the tension between the limited time and resources of student counsellors and the wide range of student behaviours. This makes it more difficult to identify and reach out to students who may need help before their problems become more serious. Student counsellors have been able to conduct quantitative analysis of student behaviours at school since the turn of the 21st century thanks to the rapid development of information technology in education and the construction of digital campuses, allowing them to identify and intervene with students who may be experiencing difficulties early on.

Modern college students are the first generation to grow up with the Internet, and its pervasive presence permeates every aspect of their lives, from socialising to academics to general thought processes. As a result, we have the opportunity to utilise big data techniques to learn about the habits of their campus network. Existing student counsellors face a challenge and an important opportunity in the explosive growth of data categories and data scales: how to mine useful information for student counsellors. Using a combination of big data thinking and big data mining techniques, the authors of this study set out to examine the characteristics of college students' network behaviour rules and identify those students who should be monitored closely due to their heavy use of the campus network, all while beginning with real-world work problems. Data mining in this study could also serve as a real-world example for other students to learn from.

# IOT Based Indoor And Outdoor Air Pollution Monitoring System Using Raspberry PI

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## Abstract

Living in a healthy surroundings is a want for every person whether indoor or out of doors. However, pollutions occur everywhere and most human beings are merely conscious of the significance of getting clean outside air to breathe and aren't worried approximately the indoor air great. Indoor air pleasant refers to the fine in the constructing, and pertains to the health and comfort of the building occupants. Dangerous debris exist in the outside air, pollute the indoor environment and bring risky conditions because the polluted air travels into the residence or constructing through home windows or doorways. There fore, a wi-fi Internet of Things-primarily based totally air satisfactory tool is advanced to display the air incredible in the indoor environment. The proposed gadget integrates a low-price air great sensor, temperature and humidity sensors, a unmarried-board laptop (Raspberry Pi 2 microprocessor) and cloud storage. The tool gives actual-time air remarkable studying, transfers the information via a wi-fi network to the Internet and displays the facts in dedicated website. Further more, it shops statistics in cloud storage and sends e-mail notification message to the individual at the same time as bad scenario is met. The study has a giant impact on promoting cheaper and transportable clever pollution tracking system as the development of the tool the use of low-fee and off-the-shelf additives.

**Keywords:** IOT, WSN, Raspberry PI, Etc.

## I. INTRODUCTION

Most of the people they are worried is secure to eat or the water wholesome lifestyles is the air approximately their health, whether or not or now not the meals is straightforward to drink. The maximum essential issue in exceptional which most human beings pay little interest to there surroundings. The air pollutants is frequently occurring in Malaysia because of many sources inclusive of open-fire, gas combustion from automobiles, and factories waste. These activities launch harmful gases and one of the examples is nitrogen oxide (NOX) that's the number one component of acid rain formation. Harmful gases affect our wellness and can set off lung most cancers or chronic coronary coronary heart disease even though in indoor environments. This is due to the truth the polluted out of doors air come into the indoor environment via windows and doors. Thus, a device which detects the air

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# 1. Studies on Synergistic Approaches to Optimize Oil and Gas Well Cementing

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**Abstract:**

*Nano silica, when combined with cement slurry aids in improving its compressive strength even, reduces the wait-on-cement time for cement plugs. This study focuses on the combined effect of nano silica used in natural oil and gas well cementing. A comparative study is conducted on the performance of cement slurry (conventional 118 pcf (15.8 lbm/gal) with nano silica and cement slurry without nano-silica.*

*The cement slurry combined with nano-silica has shown an early compressive strength development in cement slurry at different concentration of silica fume at 10% and 20% by weight of cement. This study also focuses on other areas for improvement including slurry stability, free fluid reduction, lower fluid loss value, fine rheology, appropriate thickening time and higher ultimate compressive strength development. The cement slurry with nano-silica has shown improvement in the compressive strength due to the increased rate of hydration, thus thickening time was within 5hrs.*

**Keywords:** Nano silica, Low density slurries, viscosity, cement thickening time, cement-compressive strength, formation permeability.

## 2. Studies on Synergistic Approaches to Optimize Stimulation Techniques in Oil and Natural Gas Production

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### **Abstract:**

*For effective cleaning of oil and gas wells and their revival, a novel fluid composition of enzyme-G with acid mixture together with corrosion inhibitor and selected additives is developed. Laboratory and field experiments endorse the effectiveness of the new fluid composition. Upon testing and analyzing the results with various treatment combinations, the procedure is optimized. Its efficacy is validated by treating various oil and natural gas operations. This communication provides a comprehensive description of the method for cleaning the oil and gas wells and their stimulation for improving the production. The novel enzymes-G composition developed, effectively removes the impurities from the face of the wellbore, improve pore formation and create additional artificial channels to enhance the production of oil and gas. The developed protocols could also be used in injection wells to improve the injection rates.*

**Keywords:** Well stimulation, Polymers breaking, Acidization, Fragmentation, Corrosion inhibitor, Enzyme

### **2.1 Introduction:**

The fundamental Production techniques are for supporting oil and gas wells recovery of non-operative wells, create more oil and gas with non-interruptive operation activities (Martin S. Raymond and William L. Leffler, 2006).

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### **3. Design, Synthesis, Molecular Docking and Biological Evaluation of 1-(Benzo[d]thiazol-2-ylamino) (Phenyl)methyl) Naphthalen-2-ol Derivatives as antiproliferative Agents**

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**Abstract:**

A novel class of 1-((benzo[d]thiazol-2-ylamino) (phenyl)methyl) naphthalen-2-ol derivatives (4a–t) have been synthesized in good yields through a three-component coupling reaction. The newly synthesized compounds were evaluated for their in-vitro antiproliferative activity against five cancer cell lines such as DU145 (human prostate cancer), MDA-MB-B231(human breast cancer), SKOV3 (human ovarian cancer), B16-F10(mouse skin melanoma) and CHO-K1 (Chinese hamster ovary cells) non-cancerous cell line. In vitro inhibitory activity indicates that compounds 4a, 4b, 4c, 4d, 4g, 4j, and 4o exhibited potent anti-proliferative behaviour. Among them, compounds 4g, 4j and 4o were

## 4. Synthesis and Biological Evaluation and QSAR Studies Of Novel Chalcone Derivatives

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### **Abstract:**

*Novel Chalcones is considered an important chemical for the synthesis of various physiological significance and pharmacological utilized molecules. Traditionally, chalcones are prepared by Claisen-Schmidt condensation. The structures of the newly synthesized compounds (5a-5o) were elucidated by IR, 1H-NMR, and Mass spectrometry.*

*All the synthesized compounds (5a-5o) were screened for their anti-fungal activity and QSAR analysis was applied to a data set of 15 obtained Novel Chalcones derivatives and the best model described a strong correlation between the anti-fungal activity and molecular descriptors as refractivity (MR), Ovality, HOMO energy (HE), LUMO energy (LE), partition coefficient (CLogP, LogP, Connolly accessible area (CAA), Connolly molecular area (CMA), Connolly solvent excluded area (CSEV).*

## 6. Hydraulic Fracturing Progress and Challenges Application

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### **Abstract:**

We have done research around 4-vinyl-2,6-Dimethoxyphenol is a dissolvable (canola oil), it was created from seed of a few assortments of the assault plant, those plants, specifically *Brassica napus L* (or) field mustard, turnip assault it is likewise utilized as a wellspring of Biodiesel. Canola oil is utilized as a dissolvable in direct frac focus. Hostile to settling specialists, killing specialists like sodium hydroxide (or) sodium acetic acid derivation (or) sodium bicarbonate will keep up with the pH, blended framed frac fixation. Thus, this review centres around the method for blending the cracking liquid, organizations of cracking liquid how to direct Straight (gel) and breaker test. These polymers are dry powders that hydrate or swell when blended in with a fluid arrangement and structure a thick gel. Corruption design saw from the breaker test showed that decrease in gel consistency relies upon time, temperature, and Breaker fixation. This straight gel will use in Oil and gas wells during cracking on-shore tasks for (CBM or Coal-Bed Methane gas zones) to improve the oil and gas creation.

**Keywords:** Degradation, Fracturing fluids, Breaker, Guar polymer gel, Oxidative agents

### **6.1 Introduction:**

In oil gas industry four kinds of fracturing are there, Pressurized-water frac, gel fluid, linear-gel, crosslinked gels. Instead of fossil diesel I used Vegetable oil as a base fluid (Poe, Cadena, & Kristopher, 2012). [Figure -6.1].

Conference Paper

# An Efficient Dielectric Resonator Antenna for Dual-Band Dual-Polarized RFEH Applications in Smart City Environment

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To read the full-text of this research, you can request a copy directly from the authors.

# Application of Synthetic Aperture Radar (SAR) based Control Algorithms for the Autonomous Vehicles Simulation Environment

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**Abstract**— The rise in popularity of self-driving cars can be attributed to advancements in modern technology. The surge in interest in self-driving cars has led to an increase in their development, but this has also brought some challenges. A large part of the solution to these problems is satellite remote sensing and GIS technology. Optical data remote sensing technologies alone have limited potential for long-term forest management sustainability. Active Synthetic Aperture Radar (SAR) remote sensing technology has grown in importance in forestry because of its uniqueness and rapid advancement. For example, SAR has an all-weather capability that is sun light independent, cloud and rain-resistant, and highly penetrating. SAR and optical, SAR and LiDAR, optical and LiDAR remote sensing have all been shown to be useful for accurate forest AGB estimation when compared to single sensor data. These types of sensor data integrations are becoming increasingly common. This is made possible by the fact that the scattering process heavily influences the polarimetric signatures that can be observed. The inclusion of SAR polarimetry improves classification and segmentation quality compared to conventional SAR with a single channel. Decomposition products' outputs have been classified.

**Keywords**— Synthetic Aperture Radar, LiDAR, Autonomous Vehicles,

## I. INTRODUCTION

Because it makes use of microwaves, imaging RADAR technology known as Synthetic Aperture Radar (SAR) creates images with a high resolution and is able to capture RADAR images regardless of the weather. The speckle effect, which is induced by the coherent processing of backscattered signals, is to blame for the noisy appearance of SAR images. Speckles are a type of background noise that are present in every single SAR image. Before utilising the photographs, remove the background noise. The elimination of noise is one method for improving the appearance of digital photographs. The objective of the method is to lessen the amount of noise while maintaining the integrity of small details like edges. Soft computing methods are being more and more frequently used for the purpose of reducing noise in SAR images [1]. We have conducted research into a variety of methods for filtering speckle noise in SAR images, and we have presented speckle noise filters that are based on soft computing. A device that can detect and find things is known as a RADAR, which stands for radio detection and ranging. Vision in humans can be improved so that it works better in low light, rain, and other adverse conditions. The foundation of a RADAR system is

comprised of the antennas for both the transmitter and the receiver. The transmitter is responsible for emitting electromagnetic waves into space so that they can be used to pinpoint the target. The energy that was diverted by the target is brought into the receiving antenna so that it can be processed. The quantity of energy that an item reflects can be affected by a number of factors, including its physical properties, its structural properties, and its chemical properties [2]. There is a correlation between the radiation's strength, wavelength, and angle of incidence. [3] The receiver is responsible for processing the reflected energy, also known as echoes, in order to retrieve target identifying parameters such as range, velocity, and angular location. It wasn't until the early 1920s that RADAR was first put to use to spot ships and aero planes in the sky.

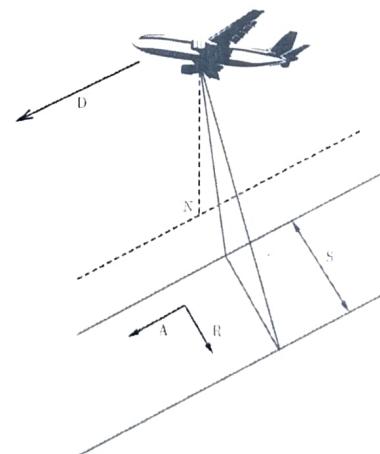


Fig. 1. Geometry of SAR viewing

In the 1970s, search and rescue (SAR) technology was made accessible to the general population. The majority of the time, a SAR system will be mounted on either a spaceship or an aero plane [4]. It illuminates the surface being scanned in a direction perpendicular to its plane by means of a beam of coherent electromagnetic pulses. When the illuminated surface sends back an echo, the SAR receiver is able to pick it up, file it away in its memory, and then use it as input for image processing to produce an image of the target surface. Because it is impractical for a spaceship to carry a very large

# Dual-Facet Loaded Dual-Polarized Quad-band Dielectric Resonator-Rectenna for RF Energy Harvesting in Smart City Applications

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**Abstract**— The most widely used approach for replacing traditional batteries and extending battery life is radio frequency energy harvesting (RFEH). However, the power density in the immediate environment is low thus the antenna with multiband features is essential to gather a huge amount of RF power from the low-density atmosphere. This paper presented a multiband dual-polarized dielectric resonator antenna for smart city applications using RFEH technology. The proposed DR antenna covers the frequency bands of WLAN 5.2 GHz, Wi-Fi 5.8 GHz, and future 6 GHz Wi-Fi bands of 6.2 GHz and 6.6 GHz. A rectangular dielectric resonator (DR) is fabricated using a K10 material and it is designed on a low-cost epoxy FR4 substrate (having  $\epsilon_r=4.4$ ). A coaxial probe feeding approach is used for excitation purposes. The substrate and DR material dimensions are 66 mm×68.2 mm×1.6 mm and 13.6 mm×11.4 mm×6.35 mm respectively. A spiral metallic coil is stuck on two faces (front and bottom) of a DR material to operate the antenna in the desired band of frequencies. The proposed technique is used to bring down the axial ratio (AR) value below 3dB level in two resonant bands. The maximum gain of 6.72 dB is observed experimentally at 5.2 GHz frequency.

**Keywords**— Radio frequency energy harvesting (RFEH), single-band antenna, circular polarization (CP), spiral facet, smart city

## I. INTRODUCTION

A smart city brightens the city's efficiency and sustainability structurally and functionally, which assures the quality of citizens' health and life. To establish a smart city, widespread deployment of wireless networks that are integrated with sensing elements is essential to monitor our breathing surroundings, e.g., smart lighting system, health condition of the structural buildings, or the condition of weather report [1-5]. Besides, closely associated sensor nodes in the wireless sensor networks (WSNs) also helped in monitoring the sound, temperature, localization, and so on [6]. The most important task of the sensor nodes is monitoring the information from the ambient environments and sharing that information with an associated network [7]. These sensor nodes are depending on conventional batteries for powering themselves. The energy consumption increases with increasing sensing nodes connected in the WSN to perform various functions of the smart city. The lifetime of the conventional batteries is limited, and thus these batteries

are to be replaced periodically. However, frequent replacement of batteries may not be practicable all the time. To afford sustainable monitoring by maintaining an adequate energy supply for these sensing elements of a WSN in the smart city is an important issue [8]. To release this problem of driving the sensors in the WSNs of a smart city, green technology or energy harvesting techniques have been employed.

In energy harvesting (EH) technology, energy is collected from various ambient energy sources such as sun, wind, acoustic, motion, and electromagnetic (EM) energies, etc., and this collected energy is converted into a suitable form of electrical energy for energizing small electronic devices [9-10]. Among various EH approaches, RF energy harvesting approach has gained more popularity due to the creation of more radiating renewable resources [11]. Rectenna, also known as rectifying antenna, are specialized types of equipment used in the RFEH technique to gather electromagnetic (EM) energy from environmental sources and transform it into a form that can be used to power electronic devices. The antenna and a rectifiers are the main elements of the rectenna system. Electromagnetic energy from the environment is collected using an antenna or aerial, and alternating energy is converted to direct current (DC) using a rectifier circuit. The rectenna's aerial gathering capability largely determines how well it performs.

The dielectric resonator antennas (DRAs) exhibit a wide bandwidth, flexibility in shapes and feeding techniques, and also exhibits a large radiation efficiency over microstrip patch antennas. A multilayer configuration of DRA's has been investigated for RFEH applications in [12-13]. Here this, the designed antenna operates at a single band of frequencies. A single band antenna can only receive a finite amount of ambient power, and because of its particular operating frequency, its biggest drawback is interoperability with all geographical regions. Thus, designing a multiband antenna with an enhanced harvesting ability is an important issue for energy harvesting applications. Agrawal et al. [14] have proposed a slot-loaded DRA with dual-band characteristics. The designed antenna suffers from a large antenna dimension, and it is a LP antenna. The polarization diversity approaches are more demanded over single polarized antenna

Daasari Surender, Md. Ahsan Halimi , Taimoor Khan , Fazal A. Talukdar, Nasimuddin, and Sembiam R. Rengarajan

# 5G/Millimeter-Wave Rectenna Systems for Radio-Frequency Energy Harvesting/Wireless Power Transmission Applications

*An overview.*

In this article, we present an overview of the 5G rectifying antenna and its primary elements for applications in millimeter-wave (mm-wave) energy harvesting (EH) and wireless power transmission (WPT). The wide spectrum available for 5G communication bands have attracted significant attention for extensive applications. The power received by the harvesting antenna relies on the size of the antenna. Hence, the realization of antenna and rectenna systems with good efficiency at 5G mm-wave is a challenge. This review article highlights the recent advances in 5G rectenna systems for different applications at the component and structure levels. The primary objectives of the article are 1) to explore the potential advances of mm-wave rectenna systems and the feasibility of

their designs to attain desired characteristics and 2) to present a comparative assessment of performance parameters of existing rectenna systems.

## INTRODUCTION

Demands for extremely high data rates, large network capacity, and flawless connectivity have increased globally as wireless technologies, such as 5G cellular systems, the Internet of things (IoT), and machine-to-machine, machine-to-human, and human-to-machine communications, have advanced. 5G communication has been considered an appealing approach for meeting energy demands. The prime objective of 5G communication systems is to supply cellular consumers with higher data rates, lower power consumption, and better quality of services consistently. The frequency spectrum of 5G communication has been divided into several bands, including lower-band 5G

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(57) Abstract :

The present invention is an enhanced communication for mobiles comprises of, a receiver is used to collect the data from various a mobile node thereby, it is for a specific location, thereby, assessing the entire signal to that vicinity, therein, which increase the strength on that particular location. It provides the improvement in getting prefect signal in particular location. It assesses the signal strength at each location. So, location based tracking is easier. Specific location may have multiple nodes thereby, it segregates the each node. Node based assessment is specific feature is enabled herein. Individual strength at the vicinity is gathered even from the multi receiving points. So, node analysis and segregation is unique identity in this technique.

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(54) Title of the invention : ECO-FRIENDLY BRICK & PAVER BLOCK

(51) International classification	:E04C0001400000, C04B0028020000, C04B0033132000, B28B0003020000, B28B0011240000	(71)Name of Applicant : <b>1)Er. BASAVA VAMSI KRISHNA</b> Address of Applicant :Associate Professor, Department of Civil Engineering MALLA REDDY ENGINEERING COLLEGE (Autonomous), HYDERABAD. --- ----- <b>2)Dr.M.Veera Reddy</b> <b>3)Dr. V. Mallikarjuna Reddy</b> <b>4)Dr K Chandrasekhar Reddy</b> <b>5)Dr V Srinivasa Reddy</b> <b>6)Mr. P.Sudheer Kumar</b> <b>7)Mr. E Rakesh Reddy</b> <b>8)Mr.C Vivek Kumar</b> <b>9)Mr. Vanukuri Siva Ravi Sankar</b> <b>10)Mr. Bhagath Dama</b> <b>11)MALLA REDDY ENGINEERING COLLEGE (Autonomous)</b> <b>12)GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY</b> Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : <b>1)Er. BASAVA VAMSI KRISHNA</b> Address of Applicant :Associate Professor, Department of Civil Engineering MALLA REDDY ENGINEERING COLLEGE (Autonomous), HYDERABAD. --- ----- <b>2)Dr.M.Veera Reddy</b> Address of Applicant :Professor , Department of Civil Engineering Kakatiya Institute of Technology and science Hanamkonda, Warangal-506015 ----- ----- <b>3)Dr. V. Mallikarjuna Reddy</b> Address of Applicant :Professor, Department of Civil Engineering Gokaraju Rangaraju Institute of Engineering and Technology Hyderabad ----- <b>4)Dr K Chandrasekhar Reddy</b> Address of Applicant :Professor of Civil Engineering & Principal Siddharth Institute of Engineering & Technology, Puttur, Chittoor Dist ----- <b>5)Dr V Srinivasa Reddy</b> Address of Applicant :Professor, Department of Civil Engineering Gokaraju Rangaraju Institute of Engineering and Technology Bachupally, Hyderabad ----- ----- <b>6)Mr. P.Sudheer Kumar</b> Address of Applicant :Assistant Professor, Department of Civil Engineering Balaji Institute of Technology and Science (Autonomous), Narsampet,Warangal-506331 - ----- <b>7)Mr. E Rakesh Reddy</b> Address of Applicant :Assistant Professor, Department of Civil Engineering Vaageswari College Of Engineering Ramakrishna Colony, Karimnagar ----- ----- <b>8)Mr.C Vivek Kumar</b> Address of Applicant :Assistant Professor, Department of Civil Engineering Gokaraju Rangaraju Institute of Engineering and Technology Bachupally, Hyderabad ----- <b>9)Mr. Vanukuri Siva Ravi Sankar</b> Address of Applicant :Deputy Manager JMC Projects (India) Limited ----- ----- <b>10)Mr. Bhagath Dama</b> Address of Applicant :Quantity Surveyor Flynn Management & Contractors Ltd., Dublin, Ireland -----
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(57) Abstract :

7. ABSTRACT A method (1) for preparation of eco-friendly brick & paver blocks is disclosed wherein the said method (1) comprises of mixing clay (2) in various proportions combined with waste rubber (3) or dry grass (7) or bagasse waste (4) or tree bark (5) or egg shells (6) or in other ecological wastes (8). Further said bricks shall be removed from mould and air dried for 1-2 days, thereafter, air dried bricks should be water cured for a minimum period of 14 days wherein curing is carried out by sprinkling water manually or by other means. The said eco-friendly bricks have been observed to show a more inferior performance than conventional cement bricks in compression, water absorption, falling weight and efflorescence, but showed an encouraging result in compression. The Figure associated with the Abstract is Fig 1.

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(57) Abstract :

IoT based Automated Toll gate Tax Collection System using Cloud Database Abstract: Every region of our planet has a system of automatic smart toll gates. As a result, human intervention is reduced, and there is less room for error. The most important benefit of automation is that machines and hardware become more reliable and trustworthy, while humans become less reliant on them. This development disproves the notion that incorporating automation into our daily routines will make life easier and simpler. Rather than relying on an automated system, the operator takes the driver's money and issues a receipt at modern toll plazas. Because of the sluggishness of this method, we frequently experience traffic delays at toll plazas along major routes. Toll collection that is automated can save money, time, and resources. In this study, a low-cost and efficient system called Electronic Toll Collection (ETC) is proposed. Tolls are collected mechanically from moving vehicles after they have passed through a toll booth using RFID modules. Toll plaza issues can be resolved, and a car identity device can be implemented, allowing for the RFID registration of both stolen and coincidental instances.

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