3.3.2 JOURNAL PUBLICATIONS

Criterion: 3.3.2 Academic Year:2022-23

INDEX SHEET

3.3.2 : Number of research papers per teachers in the Journals notified on UGC website during the year 2022-23

Sl No.	Description	Year	Numbers
1	Number of research papers per teachers in the Journals notified on UGC website	2022-2023	188

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ILLUMINATION FACE RECOGNITION USING DEEP LEARNING TECHNIQUES

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Abstract
Within the realm of biometrics, facial recognition methods have emerged as one of the most promising areas of study in the previous decade. Lighting conditions that cannot be adjusted provide a significant obstacle to accurate face recognition, despite receiving a great deal of attention and study. In this research work, we recommend a facial recognition technique under illumination condition. The technique consists several stages in it. The strategies for face identification under variable lighting circumstances that are detailed in this work are broken down into a few different steps. Face detection using MTCNN, data normalization and pre-processing with random Gaussian noise, model development for face categorization, and authentication method are the key phases in this proposed technique.
Keywords: Face Recognition, MTCNN, Variant Illumination, Random Gaussian Noise

1. Introduction

Face recognition is a biometric practice for verifying the identity of an individual based on a video or photograph of that person [1]. There are several applications where it has proven useful. Facial recognition has many practical uses, including in the fields of virtual reality, retail, promotional activity, games, cybersecurity, forensics, teleconferencing, smart meetings, visual monitoring, and counter-terrorism [2]. What this means is that each person's appearance is compared to a database of preexisting face images to monitor which ones are most similar [3].

Face identification is a highly difficult study field since even photographs of the same person might appear different owing to alterations in occlusion, lighting, expression, and stance [4]. A lot of recent work has been done on face recognition, and some of it has shown that lighting conditions can affect how well certain face recognition algorithms work [5]. Conversely, training or testing any image data is sensitive, even under fluctuating levels of light. These aspects contribute to the difficulty of face recognition and have received a lot of study over the past several decades [6]. In order to account for the varying levels of light, a great many different algorithms have been suggested.

One of these methods makes use of image processing modelling approaches, which are effective when attempting to normalize faces that have been exposed to a variety of lighting conditions. Histogram equalization (HE) [7], Gamma intensity correlation [8], or logarithm transformations [9] are all effective methods for achieving this goal, and each one excels in a unique set of circumstances. To eliminate the impact of lighting on faces, several suggested models are currently in widespread use.

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Multi-view Face Recognition Using Novel Convolutional Neural Network-based Deep Learning Architecture

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Abstract:

Face recognition is an important research arena in the domain of human-computer interaction. For multi-view face recognition, algorithms resulting in more accurate outputs often pose a challenging bar. In this paper, a novel convolutional neural network (CNN) has been proposed and applied to multi-view facial recognition. In this proposed method, a large dataset of images is pre-processed, and raw data is altered as features. Different angles of the same image have been analysed with a deep learning model to overcome the clarity issues in the case of a multi-view domain. A CNN algorithm was applied to train the model with this complex dataset to gain an optimal output that has higher accuracy. With this applied dense layer of CNN model- training, the favourable features well suited to classify the data into separate categories were learned. The novel architecture of the model was developed using eight convolutional layers, four max-pooling layers, and a dropout layer. The Adam optimizer was used for the optimization of the performance of the proposed model. This novel CNN approach executed lower false positives and false negative outputs, yielding a high accuracy of this model. Hence, the proposed model can be used for efficient multi-view face recognition.

Keywords: *Convolutional neural network (CNN), multi-view face recognition, false positive, false negative, confusion matrix*

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I. INTRODUCTION

One of the ubiquitous things in this modern era of smart techs is facial recognition (FR). From various social networking sites to different types of cloud storage, biometric scans, and control systems monitoring, there is a rapid increase in demand for better facial recognition methods [1] [2]. FR aims to track and localize different human faces using captured or stored images [3]. This is a part of the broader domain of Man-Machine Interaction (MMI) which is getting more challenging in order to meet the requirements of user experience and accuracy. Face recognition is also a big part of face modelling techniques which is also growing parallelly with the advancement of technology [4]. Due to all of these, there is a high demand for systematic research on the improvement of techniques to recognize the face in efficient ways. With the fast development of computation and image processing technologies, FR has remarkably progressed in the last few decades. For real-world applications, advanced artificial intelligence and deep learning algorithms are used to get higher accuracy. The objective of such approaches is to simulate a similar learning process by human cognition and neurons to learn the patterns and rules for large image datasets [5]. These algorithms not only help out in getting successive results for image detection but also in other scientific and industrial application research. More research in different areas is needed to get better results that are more accurate and outputs that have more clarity. The current techniques face more issues in the case of real-time implementation. That is why various algorithm performances have yet to reach a satisfactory level because of the variance of the result. More precisely, actual applications of face angles, expressions, lighting effects, and

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A NOVEL FACE RECOGNITION APPROACH BASED ON MACHINE LEARNING TECHNIQUES

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ABSTRACT

In today's age of networked multimedia information access, face recognition has triggered a lot of curiosity. Although great progress has been made in the field of face detection and recognition for security, identity, and attendance purposes, there are still obstacles in the way of reaching human-level accuracy. Faces have the unique ability to aid human recognition, which is important in surveillance applications. Furthermore, the non-intrusive nature of these technologies leads to high collectability and acceptance, making them ideally suited for wider use. Machine learning algorithms play a critical role in facial recognition. Even if face methods focus more on face descriptor and feature extraction methods, classification techniques have an impact on recognition performance. There are various traditional classification techniques. Face detection in noisy scenes is the starting point for face recognition, which is followed by pre-processing, normalising the face samples data, feature extraction, and classification. Our experiments show that our face identification system is reliable, trustworthy, and durable, and that it can be employed in a real-world situation.

KEYWORDS: Face Detection, Face Recognition, Feature Extraction, Normalization.

INTRODUCTION

In today's networked environment, maintaining the security of information or physical property is becoming both more important and harder. The human face is a complex

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A NOVEL APPROACH FOR IDENTIFICATION OF FACIAL OCCLUSION

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ABSTRACT

In real world biomedical image processing, face detection with occlusions is a state a art task for researchers to resolve the diametric issues with security due to unavailable large facial data sets and facial cuts or expressions. The evaluative of facial identity detection with occlusion issues is a revolutionary task with deployment of CNN. Face acknowledgment system consists four components like face discovery, face standardization, and face feature extraction with matching. The face recognition technique is operated in face verification, face identification as well as face watch. In face confirmation, the question face picture is contrasted versus a layout face picture whose establish is being claimed. If truth be informed recognition a concern face image is compared against all themes within the details to see the declared determine. We resolved the issue of face recognition underneath occlusions triggered by headscarf's and also glasses. Our prepared strategy included preliminary carrying out share occlusion evaluation then acting face recognition from the no occluded regions. In contrast with previous approaches, CNN is an ideal from the system purpose of view the planning relies on the end-to-end concept and as a result the design operates straight on the picture pixels. We created large scale face occlusion information, including over ten thousand photos, with annotated facial components. In face tracking and cops work, face images square measure half-tracked as well as compared withhold on databases. Our study is targeting evaluation the varied face recognition formulas as well as explore to propose the face acknowledgment policy with its boosted performance.

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Forest Fire Detection and Wild Animal Health Monitoring

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ABSTRACT

Forest fires and animal health are major environmental concerns worldwide. Early detection of forest fires and monitoring the health of animals can prevent significant damage to ecosystems. In this paper, we propose a forest fire and animal monitoring system using an Arduino board and sensors. The system consists of temperature and smoke sensors, GPS modules, and a microcontroller board. The sensors collect real-time data on temperature and smoke levels, which can indicate the presence of a fire, and GPS modules track animal movement and habitat use. The system can be integrated with other systems for effective firefighting and preventing significant wildlife loss.

Keyword- *Internet of Things(IoT), Wireless Sensor Networks, Data Transmission, Temperature sensor and smoke sensor, Camera Trap.*

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1. INTRODUCTION

The development of the Internet has brought people closer together in a new way, but it has also enabled the connection of bias, creating a network of objects and effects with bedded intelligence and communication capabilities. This network, known as the Internet of effects(IoT), allows for flawless communication between bias and the gathering and analysis of data from the terrain. The IoT has surfaced as a result of a shift in the way the Internet is used, from connecting people to connecting bias. It involves billions of connected bias that are suitable to report their position, identity, and history over wireless connections. These biases interact with each other and with the mortal world through Internet norms and protocols for collecting and participating information. pall computing has made it possible to store and dissect the massive quantities of data generated by the IoT.

Communication between bias is automated, reducing the need for mortal intervention and saving time and trouble. In the history, wired communication systems were used for monitoring environmental parameters in diligence, but they were precious to install and delicate to maintain. To overcome these challenges, we propose an optimized system for timber fire discovery and wild beast monitoring using an Arduino board and detectors.

Temperature and bank detectors are stationed at specific locales in the timber to descry ignition and the range of carbon dioxide gas. These detectors shoot information to a microcontroller, which reacts automatically in the event of an exigency. still, this approach had some significant downsides. originally, the installation cost of a wired communication system can be veritably high, especially in large artificial installations. This is because cables need to be run throughout the structure to connect the detectors to the central garçon. also, the process of

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An Efficient method for Recognition of Occluded Faces from Images

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Abstract:

The detection of masked face is becoming an essential part of health care safetydue to the pandemic caused by the coronavirus and the surveillance systems. One of the most challenging problems in face recognition systems is the accurate identification of faces in the presence of occlusion like wearing of glasses and masks. The current study proposes a novel convolutional neural network(CNN)-based model for accurate detection of faces in the presence of mask and glasses.The novel architecture of the model was developed using ten convolutional layers, five max-pooling layers, and a dropout layer. The Adam optimizer was used for optimization of the performance our model. Early stopping criteria in conjunction with the ReduceLROnPlateau class was employed to avoid the overfitting problem. Our proposed model could achieve the accuracy of 99.71% on the test dataset suggesting its superiorityto its existing counterparts. Based on the results, the suitability of the proposed model for face detection in the presence of occlution in real-life application has been recommended.

Keywords: *Deep learning, convolutional neural network, facial recognition, image processing , Occluded Faces with Mask, Occluded Faces with Glasses*

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I. INTRODUCTION

Wearing a mask is extremely important during this pandemic since it has a high chance of preserving people from disease transmission[1]. Governments all over the world are taking the required steps to monitor and regulate persons who wear face masks. However, the traditional approach may struggle to monitor billions of people over time; in this case, technology can help society by upgrading the system by employing advanced facedetection algorithms[2].The process of matching a human face from an image or a video source against a database of faces is accomplished by a face detection system by identifying and quantifying facial characteristics from inside a given image. This process is known as "facial fingerprinting"[3]. Regardless of the fact that most humans are able to recognize faces with little to no effort at all, face recognition is a difficult pattern recognition issue in the field of computation. Face recognition systems aim to recognize a three-dimensional human face from a two-dimensional snapshot by analyzing how the face responds to different lighting conditions and how it expresses different emotions[4]. In order to solve this computational issue, facial recognition algorithms proceed sequentially through four phases[5]. In the first phase, the face is first extracted from the image backdrop. In the second phase, the picture of the segmented face is aligned to take into account factors such as the face's attitude, the size of the image, and photography qualities such as lighting and grayscale. In the third step, which is known as the extraction of facial features, the purpose of the alignment technique is to ensure that correct facial feature localization is possible. In order to portray the face, several characteristics inside the picture, such as the eyes, the nose, and the mouth, are found and measured. In the fourth stage, the extracted features of the face are compared against a

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AN EFFICIENT FRAMEWORK FOR FACE OCCLUSION RECOGNITION USING DEEP CONVOLUTIONAL NEURAL NETWORK TECHNIQUE

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Abstract: Face Recognition has become a major problem in order to identify the theft over surveillance systems, especially the occluded Face recognition technology has gain more importance now a days. there are lot of challenges faced by existing surveillance systems available even though various research works has been carried out still many of the existing machine learning techniques fail in identifying the occluded faces. By employing deep learning-based technique, the performance of face recognition tasks has been greatly boosted. The majority of cutting-edge methods still struggle with the verification and discriminating of faces with occlusions. In light of this, this research proposes a unique convolutional neural network that was created specifically for comparing occluded and non-occluded faces for the same identity utilizing CNN and BiLSTM approaches. Based on the architecture of multiple network convolutional neural networks, it could learn both the shared and distinctive properties. The training and testing of the proposed convolutional neural network incorporated the recently disclosed joint loss function and the accompanying alternating minimization strategy. The proposed deep convolutional neural network approach outperforms the state-of-the-art face identification algorithms by 10-15% in terms of several performance characteristics, according to experimental results on the publically accessible datasets (LFW 99.73%, YTF 97.30%, and CACD 99.12%).

Keywords: *Occluded Face Recognition, Deep Neural Network Technique, CNN, BILSTM, Image Processing.*

1. Introduction

In a number of industries, including finance [1, 2], public security [3, 4], and education [5, 6], face recognition has emerged as the go-to biometric technique for personal authentication and identification. Since the early 1990s, a wide range of computer vision-based methods have been suggested that have the ability to extract the low-dimensional representation under particular priors on the characteristics in facial images. Unfortunately, the performance of these methods would be constrained and the assumptions made might not hold true in real-world situations. Convolutional neural networks (CNN), in particular, have recently gained widespread acceptance as the most cutting-edge method for face detection and verification [7, 8]. As an example, Rajeev et al. [9] and Schroff et al. [10] stated that their suggested method obtained the accuracy of 99.78% and 99.63% on the facial dataset of Labeled Faces in the Wild (LFW) [11], respectively. CNNs have demonstrated great performance in a variety of face recognition

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A security model to protect the isolation of medical data in the cloud using hybrid cryptography

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ARTICLE INFO

Keywords:
Cloud computing
Robust S-box based advanced encryption standard
Bald eagle search optimization
DNA-based MECC algorithm

ABSTRACT

A cloud computing platform delivers a cost-efficient path for cloud users to store and access data privately over remote storage via an Internet connection. Medical data is stored in the cloud since it is scalable, secure, reliable, provides ubiquitous access, and is highly available. It is required to be isolated in terms of physical, network, and operational for protecting data from internal threats or external cyber-attacks. It can be achievable through hybrid cryptography in which symmetric, as well as asymmetric cryptosystem, is being utilized. To assure the confidentiality and integrity of medical data, an improved Robust S-box-based Advanced Encryption Standard (IRS-AES) is proposed with Runge-Kutta Optimization (RKO) algorithm. RKO generates an enhanced and secured RS-box through the computation of the Mackey-Glass equation. Initially, the medical data are compressed using Improved Huffman Coding (IHC). The Deoxyribonucleic Acid (DNA)-based Modified Elliptic Curve Cryptography (MECC) algorithm is introduced for key generation, and the best key is selected with Bald Eagle Search optimization (BES) algorithm. Finally, the medical data are encrypted IRS-AES algorithm and stored in the cloud. The proposed RS-box security strength is evaluated using non-linearity, Strict Avalanche Criterion (SAC), Differential Probability (DP), Bit Independence Criterion (BIC), and Linear Probability (LP) parameters. The efficiency of the proposed algorithm is evaluated with image, audio, and video dataset. The evaluation metrics such as communication overhead, file upload time, computational cost, Mean Square Error (MSE), encryption and decryption time, Peak Signal-to-Noise Ratio (PSNR), key generation time, and Signal-to-Noise Ratio (SNR) are used for validating the proposed approach. The performance of the proposed approach is enhanced with the communication overhead of 11.51 for the image dataset. MSE and PSNR obtained are 16.2 and 8.465 for an audio dataset, 75.21 and 3.5 for the video dataset.

1. Introduction

Cloud computing is the environment exploiting the association of remote servers distributed on the Internet for storing, progressing, and accomplishing the data [15]. It provides an effective way for storing and accessing data virtually from any place by utilizing devices connected to the Internet. Healthcare systems (HCS) are the benefits of technology, and automatic systems are developed to reduce healthcare services costs [1]. It can enhance the manual data management process through Electronic Health Records (EHR) [23]. EHR data contains personal and medical data in images, texts and video. The interoperability amongst patients' health information is increased with the requirement of privacy [29] and confidentiality. Intruders or unauthorized persons can access or modify medical data [16]. While transferring sensitive medical data over the Internet, data isolation is considered a research issue that has been addressed.

Encryption is one of the best solutions for data protection and privacy preservation. Encryption with an asymmetric cryptosystem uses two keys: one is for encrypting the plain text (public key), and another is for decrypting cipher text (private key). Researchers have recently created and developed several encryption algorithms for general and medical images. Since the size of the medical images is varied, it consumes more time for encryption [12]. Hence, additional approaches are required to deal with the encryption process of providing authentication and integrity. In real-time applications, public key cryptography is invoked through a hybrid system. The enhancement of asymmetric

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Cloud Multimedia Data Security by Optimization-Assisted Cryptographic Technique

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Tools Share

Abstract

Currently, the size of multimedia data is rising gradually from gigabytes to petabytes, due to the progression of a larger quantity of realistic data. The majority of big data is conveyed via the internet and they were accumulated on cloud servers. Since cloud computing offers internet-oriented services, there were a lot of attackers and malevolent users. They always attempt to deploy the private data of users without any right access. At certain times, they substitute the real data by any counterfeit data. As a result, data protection has turned out to be a noteworthy concern in recent times. This paper aims to establish an optimization-based privacy preservation model for preserving multimedia data by selecting the optimal secret key. Here, the encryption and decryption process is carried out by Improved Blowfish cryptographic technique, where the sensitive data in cloud server is preserved using the optimal key. Optimal key generation is the significant procedure to ensure the objectives of integrity and confidentiality. Likewise, data restoration is the inverse process of sanitization (decryption). In both the cases, key generation remains a major aspect, which is optimally chosen by a novel hybrid algorithm termed as "Clan based Crow Search with Adaptive Awareness probability (CCS-AAP). Finally, an analysis is carried out to validate the improvement of the proposed method.

Keywords: Data security · confidentiality · sanitization · data integrity · CCS-AAP approach

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Original Article

A Hybrid Cryptography Technique for Cloud Data Security

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Abstract *- Nowadays, data sharing and storage is one of the most frequent activities associated with cloud computing. Since cloud computing handles large-scale user data at a time, sometimes it contains confidential information or data of the user that needs additional security so that the user can store the information in the cloud storage over the un-trusted computing network. In this regard, cloud data security becomes the primary need for storing confidential information or data over the cloud. The symmetric encryption approach is considered one of the best cryptography techniques to secure cloud data. It provides more security to the cloud information or data than other techniques. This research paper proposes a hybrid symmetric encryption technique to offer additional security to the user's data stored in the cloud compared to the single symmetric encryption approach. The investigated techniques show high processing speed and secure data sharing over the cloud with others. In addition, the computation time associated with the encryption and decryption is also minimized even when multiple users access the same file over the cloud. The proposed method aims to improve the privacy policy by investigating new algorithms for extra cloud data security. There is a broad scope of cryptography techniques in cloud computing, not only for securing the cloud data but also for solving various security and privacy issues while dealing with confidential data.*

Keywords *- Cryptography, Cloud Data, Decryption, Data Security, Encryption.*

1. Introduction

Cloud computing presents a holistic approach to offering services by reorganizing diverse content developed for consumers based on individual needs. It is also crucial for next-generation cellular telecommunications, hacking, and social computation. Cloud storage substantially decreases customers' storage load and provides them access flexibility, making it one of the essential cloud computing[1]. However, cloud data protection, transparency, and trust have emerged as critical issues affecting the viability of cloud services and perhaps impeding the advancement of 5G (Fifth Generation) and cyber systems. To begin with, putting data in the cloud raises the danger of data leakage and fraudulent activity. Second, cloud computing services are increasingly emerging targets of assaults and breaches, posing a threat to cloud data security[2]. Database management activities in the cloud, such as information storage, restoration, migration, erasure, update, searching, querying, and accessibility, may not be fully trusted by their owners. Cloud providers should preferentially audit the dependability of data management. Any source of incursions and assaults should be detectable and trackable. The above criteria provide a significant security issue, particularly for ample data storage and processing. Data processing and computing on the cloud may expose data owners' or associated entities' privacy to unauthorized parties. Another intriguing and essential research issue is approving cloud data processes and safeguarding data processing results. Cloud data security, transparency, and trust are indeed becoming critical factors affecting cloud technology success[3].

Cryptography is frequently used in cloud technology to protect data, confidentiality, and integrity. Cloud cryptographic algorithms data encryption to safeguard data will be used or kept private[4]. It enables customers to quickly and safely use shared cloud storage since any data held by cloud service providers is encrypted[5]. Cloud cryptography secures sensitive information without slowing the flow of information. Cloud cryptography is centered on encryption, which involves machines and methods to jumble text into ciphertext. This ciphertext can then be turned into plaintext by deciphering it using a sequence of bits using an encryption key[29]. The encryption of data can take place in one of the following ways, listed in Table 1.

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DETECTION OF COVID-19 USING X-RAY IMAGES

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Abstract : From the year 2019 the many parts of the world have been a victim of the deadly virus Covid-19 especially Indonesia. This dangerous pandemic emerged as a massive outbreak since there is no known cure or vaccine available to it. To test this virus rapid test is preferred as it is cheaper than the SWAB test available in Indonesia. The increased number of covid patients resulted to inability of the hospital in providing the facilities for taking this test. As a result, there is emergency need for an advanced technology to diagnose and cure this pandemic. Therefore, the proposed system aims to evaluate 100 X-Ray chest images of the Covid-19 patients and 100 X-ray normal chest images. Here, the methods used to reach at the result are the application of Contrast Limited Adaptive Histogram Equalization (CLAHE) and Convolutional Neural Networks (CNN) method. The results show that the application of CLAHE impacts the covid 19 detection precision using CNN. Also, the CNN basic model produces significant results comparing with the application of VGG16 transfer learning.

I.INTRODUCTION

The covid-19 pathogen has spread around the world, resulting in its designation as a global pandemic. Covid 19 is scrutinized as an evolving shape of pathogen, which means that there is not even a single antibiotic which tend to stop it from spreading. As a result, most people rely on rapid testing to determine if someone has contracted covid 19.

It is possible to determine whether someone has been infected by the virus by looking for symptoms such as pyrexia, wheeze, and panting issues. A number of more severe conditions might also occur, such as pneumonia, septicemia, acute respiratory ailment, or even death. It can be seen that a person who was a victim of pneumonia in the past is having more chances of getting covid 19 virus infection compared to a person having no traces of breathing defects.

The rapid test, an alternative method of detecting covid19, is nowadays scrutinized troublesome to perform because the diagnostic machine isn't available nationwide. Alternate steps of diagnosis are immediately needed namely the curbs of covid 19 testing. An automated detection instrument is required to examine the lungs of the infected person and to determine regardless or not the patient is infected with the virus.

X-rays can be used as an opportunity diagnostic method since almost every hospital has a pneumoencephalogram. Therefore, the virus detection could be performed without using an exceptional kit.

II. LITERATURE SURVEY

During the crisis prevention and control era, this research might help with prediction, treatment, and screening for the virus infected patients based on respiratory characteristics. According to the most current clinical trial, the virus has a different respiratory pattern than flu and the common cold. One of the most common symptoms of covid-19 is Tachypnea. People infected with covid-19 have a quicker respiratory rate. This research may be used to discern diverse breathing patterns and can be put to preliminary use to aid in the accurate identification of unanticipated irregular respiratory patterns in humans in a distant and unobtrusive manner.

Merits:

Accurate identification of people's unusual irregular respiratory patterns

Demerits:

Different kinds of respiratory patterns have a lot of intra-class variance and a lot of out-of-class variation.

Patients' mortality risk might perhaps be anticipated before they become seriously sick. This is accomplished by developing and testing a disease - specific prediction model based on the XGBoost machine learning algorithm. From a pool of more than 300 characteristics, the model identified three essential clinical features: lactic dehydrogenase (LDH), lymphocyte, and high-

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Ethereum Blockchain based Complaint Registration system

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Abstract : In today's society, the availability of applications and numerous websites available on the digital market is given greater weight. People will complete their everyday tasks in a timely manner.precisely, quickly, and satisfactorily As a result, numerous technologies are utilised to do daily tasks There is no direct and indirect communication between India and the rest of the world.A productive channel of contact between the government and the public for the purpose of resolving a problem, i.e. for the purpose of resolving a problem People may have to wait three months in any location, but It will most likely be resolved sooner rather than later. The situation has changed recently.changed. There are numerous programmes available that allow users to register their grievances However, there are several issues with this because to its transparency The Ethereum blockchain is proposed in this paper a programme that will assist people Index Terms—DApp(Decentralized Application), Distributed hash table, Ethereum blockchain, Interplanetary file system.

IndexTerms **- Component,formatting,style,styling,insert.**

I. INTRODUCTION

Grievance redressal is a commonly used governance and management related process. It covers the receiving and processing of complaints and grievances from citizens. Blockchain technology can be used as a platform to build decentralized applications with no hierarchical ownership of user data and no central point of failure. This paper proposes a Blockchain-technology based web application that will help citizens under the jurisdiction of a municipality corporation and gram panchayat to register their complaints about the various problems they are facing in their ward, with transparency and security. It has an automated system that manages all the tasks that one has to face during his/her visit to the government offices for registering the complaint. One can register their valid complaint, wait for the validation, and be updated about the complaint status [1]. The application manages all the background processes like prioritizing complaint type, hosting complaints, notifying the user's status. It will provide a common person to deliver their complaint to government authority as well as let the authority address them on time. The application has a complaint form, complaint acceptance/rejection, complaint status, and report..

OUR CONTRIBUTION

The proposed system is as follows 1. A secured and transparent complaint redressal system is proposed using the Ethereum blockchain. The aim is to build a more connected digital world through the decentralized application. Hence, the best platform to develop a decentralized web application is Ethereum Blockchain. It provides tools to build a decentralized web application. 2. Each Complaint is a copy of a smart contract which gets executed in the Ethereum Blockchain. The process is initiated when a user registers a complaint. The complaint is registered by adding required details and hence it is stored in Ethereum blockchain. The complaint number will be assigned to the user to track the status. 3. Only when the data is stored in the blockchain, the officials can view the complaint and take necessary actions about the complaint. The complainer will be well-informed about every action performed on the registered complaint.

II. SYSTEM BACKGROUND

A. Blockchain Technology

Blockchain is an underlying technology used in bitcoin in which mutual trust is established between the two transacting parties without the intervention of a third party. Blockchain is a decentralized and distributed database that stores the transaction details where each record is stored in terms of blocks that are timestamped, and every block contains the data, hash of the previous block, and block number. The block creation takes around 10 to 30 seconds and the data retrieval is even faster than block creation. The data verification, security in data transmission, and trust between the entities are achieved through cryptography and consensus algorithms. These blocks are tamper-proof as they are time-stamped and verified before adding to blockchain. Computations of the corresponding data are also distributed throughout the blockchain network and each node in the network contains a copy of the transaction data [2]. Along with storing transaction details, blockchain networks can store self-executing scripts that describe the behaviour of the transaction and this helps to develop various blockchain applications without any intermediary

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Image Forgery Detection using Machine Learning

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Abstract

The prevalence of digital image forgery (DIF) is rising as more reliable image analysis tools become accessible. On a regular basis, a lot of photographs are shared online. They are exposed to these consequences because they utilize the Internet. One of the most well known passive photo fraud capability is a copy-move imitation. The foundations of copy-move forgeries are as follows: From one area of a document picture to another, copy and paste. The suggested image copy-movie forgery is examined in this essay. The first five operations include image pre-processing, divide the picture to an overlaying chunk, and detection (IC-MFDs). calculating each block's mean and standard deviation. The feature vectors are lexicographically sorted before being fed. The vector support device's feature vector (SVM). To evaluate if the image is real or not, use a classifier. To test the proposed method, studies will be done using a standard copy dataset and repositioning forgeries MICC-F220. The outcomes demonstrate the applicability of the suggested IC-MFDs. In accurately detecting precision, it has the ability to be quite precise. (98.44). We also evaluate a variety of state-of-the-art methods with the suggested IC-MFDs. It's worth noting that the outputs are preliminary. The results are superior to those achieved by these methods.

Keywords— Image copy-move forgery detection algorithms (IC-MFDs), Mean, Standard Deviation, SVM classifier.

I. INTRODUCTION

Pictures are important in innovation because they are effective information carriers. People often shoot and share enormous numbers of high-resolution digital images using different modern photography devices, such as smart phones. It is hard to distinguish all of the many types of adjustments that have been made to the images. Without giving any sign of the alteration, the modification may add, remove, or alter any aspect of the image. as a result, it has lately become a popular study subject to identify fake digital pictures. In general, there are two groups of DIF detection techniques. The active techniques are intimately related to the data from the original image, which is predicated on the availability of original image data.

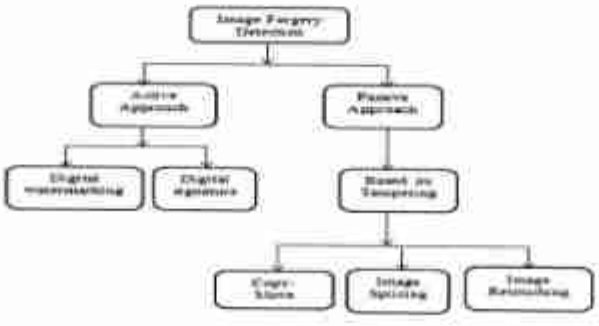

Fig1 - DIF detection procedures

It's common to use the words "water marking" and "steganographic" similarly.

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Malicious URL Detection Using Neural Model

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Abstract: **For the study and detection of harmful Uniform Resource Locators, a parallel neural joint model technique is developed (URL).The semantic and visual information will be retrieved by recognizing and analyzing the features of malicious URLs. To visualize the URL mapping to a grey image with textural characteristics, first a visualization method is used. Second, using word vector techno logy, the lexical and character features of URL are extracted and further processed. The final layer employs the attention method to refine the deep features retrieved from the total network, focusing on the most useful features to improve classification accuracy and identify harmful URLs. Based on the outcomes of the experiments, it can be concluded that this algorithm is more accurate than standard algorithms.**

IndexTerms – **Capsule Network (CapsNet), Independent Recurrent Neural Network (ind-RNN0), Attention Mechanism**

I. INTRODUCTION

In most circumstances, the attacker creates a website that looks similar to the official website or embeds an exploit code website. It persuades the victim to click on these links in order to collect personal information or seize command of the target computer. There is a multitude of proposed methods. To identify the malicious website, these approaches have been based on certain components of the webpage. One of the ML algorithms used to identify false datasets of the URL with distinctstatistical features is K-nearest neighbor, Decision Tre, Naive Bayes, Random Forests, and SVM.

Victims are frequently chosen because they typed in the URL of the attacker's phishing website. As can be seen, the structure of URLs created by similar organizations or by similar phishing tool is identical. As conclusion, we present a neural model for URL visual extraction. For visual texture features, use CapsNet, and for URL text characteristics, use indRNN. To improve classification accuracy, the attention mechanism is then deployed to merge and filter the two recovering features, emphasizing on the most useful method.

II. LITERATURE SURVEY

Identifying malicious URLs from benign URLs is the primary goal of malicious URL detection. Blacklist-, rules-, machine learning-, and deep learning-based detection are the primary categories under which previous researchers offered techniques for the problem of harmful URL identification. Blacklist is a method within which certain URLs are pre-pre-emptively blocked or blacklisted.In some cases, some identifiable keywords that are associated with possible threats can be blocked to be more secure. RuleMatching is a method wherein certain rules are considered based on the content where there exist filters based on rules of the URL.

A. EXISTING SYSTEM

Threat detection in the field of Malicious URLs has seen little to no success as current methods have resulted in a restriction to the attackers but not prevention. Current threat detection systems utilize an alarm system methodology to trigger a specific function upon the presence of an event. However, with spoofing and other new means of attacks, these methods have rendered obsolete and provide little to no security.

At the moment, the most popular malicious URL detection methods are Blacklist. Numerous public blacklist data sets are evaluated for Internet Protocol addresses and domain names. It is observed that a stored Blacklist can account for a number of blacklist entries, therefore they created an approach based on graphs for identifying blacklist keywords to identify malicious URLs, most businesses use a blacklist.

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ANOMALY DETECTION USING VIDEO SURVELLIANCE APPLICATIONS

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Abstract : Anomaly detection is a difficult computer vision topic that has received a lot of attention in recent years. In the present ATM systems, there is a need for automatic security alerting systems, which enables the safety of the people entering inside the ATM. Even though there are various steps taken by the government and the banking departments to enable safety, it is incurring additional charges for the human security system. The method proposed here is economical an actual-time-based mechanical ATM security system based on the video scrutiny detected by the system alone. The project aims at checking for multiple unusual events like entering multiple persons inside the ATM, checking if the cameras are removed from the system, even if some masking is done for the camera, and also detection of a person entering the system with a helmet. Once any of these conditions are occurring in the ATM then the system automatically sends an alert to the nearest station and door of the ATM automatic locks.

IndexTerms-Convolution neural network, Common objects in context, Masked region convolution neural network, Visual object classes.

1. INTRODUCTION

Unusual event detection is the process of detecting the abnormal activities, unexpected, unpredictable things around us which are not considered as normally occurring events in a pattern and also not regular items which are available in a dataset and dissimilar from accessible patterns. Anomalies deviate from standard patterns, and anomalies are also needy on the happening of interest.

In the present situation the use of video surveillance to protect personal property and personal safety is becoming increasingly crucial, and it plays a significant real-time role since these wants necessitate the installation of cameras at each turn. The cinematic scrutiny scheme recognizes the part and detects unusual activity repeatedly. The most important part is to comprehend the accomplishment and afterwards automatically notify the operative or users when any unpredicted or odd events occur.

The offender has had different degrees of success in the bulk of his attacks. Some ATM dependability facial appearance are established from time to time to protect against this type of cheater, however these security facial appearance are regularly breached by thieves. With the arrival of ATMs, roadside cheats and criminals were able to rob money from sufferers in remote locations by catching the beholder; nevertheless, they only found little amounts of money or no money from the sufferers. Because they discovered that all of the sufferers had ATM cards, they added the practice of forcing the sufferers to withdraw money from their ATM cards. Robbers either wait for the sufferer in ATM booths as if they were waiting to withdraw money in a deserted location, or they bring the sufferers to ATM booths and compel the sufferer to use his ATM card and withdraw money from the ATM using his ATM card and PIN.

ATMs are now equipped with a number of security mechanisms. Internal devices are either self-contained high-security modules or the safe's encryption and protection. Additionally, today's ATMs include a variety of security features such as shake sensors, gas sensors, and cameras. A software system constantly monitors the security state of an ATM in order to detect attacks and respond appropriately. Knowledge-based identification refers to threat classification that is based on a set of expert criteria that must be manually defined for each threat.

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A NOVEL METHOD FOR RECOGNITION OF FACE FROM OCCLUSION

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Abstract : **The COVID-19 pandemic has rapidly impacted our daily lives and disrupted global commerce and movement. Wearing a protective mask has become a new common sense. In the near future, many public service providers will require customers to wear masks properly to use the service. Therefore, mask detection has become an important task to support the global community. The proposed method accurately recognizes faces from images and determines if you are wearing a mask. As a surveillance mission, you can also detect faces with motion masks.You have chosen to use computer vision to monitor your activity and detect offenders (not wearing masks). This will attach a photo of the violator regarding the rule violation to the relevant authorities as evidence, triggering real-time alerts and emails.**

IndexTerms **- Euclidean distance algorithm , Haar Cascades , CNN, ReLU Layer , pooling layer.**

I. INTRODUCTION

Over time and space, technology is spreading widely around the world. It is used to facilitate our life skills in our daily lives. Technology has besieged surveillance systems for decades. In recent years, CCTV systems have become a major concern in the lives of people such as government agencies, businesses and private property. Nowadays, people are looking for better image quality, less expensive, better size and scalability. For security matters, cameras can monitor real-time events, collect data, and analyze people's behavior. Surveillance is usually done through sequential images extracted from video.

To take advantage of video surveillance, it is essential to come up with a simple and fast algorithm to detect human activities. It's an approach that combines market demand and simplicity. The world is currently moving towards mechanization due to the workload of workers. In addition, the world faces the problem of lack of security. So why not invent a new approach that meets the market's expectations? It doesn't have to be complicated, it's simple. The main idea of this is to provide an algorithm sufficient to solve the analysis of the video's content to classify events between normal and abnormal, using a simple algorithm.

Facial recognition is a technique to identify a person based on specific facial features by comparing stored patterns of each human face in a group of individuals. It's a simple and natural way to recognize and authenticate people.

A. EXISTING SYSTEM

In the current context, crime is increasing exponentially, hence the need for security. Security can also be described as a condition under which a person can develop and progress freely and with the belief that no harm can be done. Visually impaired people are generally more immune to such crimes. Cameras are now widely used and with the growth of content used in different applications. One of them is video surveillance which is in hot demand in today's market. This system can train a dataset of masked and non-masked people. After training the model, the system can predict whether the person is wearing a mask or not.

B. PROPOSED SYSTEM

The main requirement to pose this challenge is to use the python programming language with deep learning, machine learning, computational imagination and foresight, as well as with python libraries. The structure includes Mobile Network as the backbone, it can be used for computer scenarios and excessive coffee. We use CNN algorithm in our proposed system.

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Video Compression For Surveillance Application Using Deep Neural Network

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Keywords

Video Compression, Algorithm, Deep Learning , Motion Estimation, BitRate Estimation.

Abstract

A fresh comparison analysis on video compression technologies was offered in this study. Video streaming programmes are becoming increasingly popular as internet technology and computers advance at a rapid pace. **As a result, uncompressed raw video demands a lot of disc space and network bandwidth to store and deliver today. We describe a novel technique to video compression surveillance that improves on the shortcomings of previous approaches by replacing each standard component with a neural network counterpart. . We describe a novel technique to video compression surveillance that improves on the shortcomings of previous approaches by replacing each standard component with a neural network counterpart. It delivers a higher-quality video stream at a consistent bit rate (compared to previous standards). As a result, you must select the appropriate video compression technology to fulfil the requirements of your video application.. Our work is founded on a set of principles common method for reducing the bit rate while minimising distortions in decoded frames by using In video frames, there is spatial and temporal redundancy. We use a neural network to develop a video compression in the traditional sense strategy and encode redundant data with fewer bits. Experiments have revealed that our solution is successful and surpass traditional MPEG encoding while retaining visual quality at similar bit rates. Although our approach is geared at surveillance, it can simply be applied to other types of video.**

INTRODUCTION

Surveillance cameras are becoming more common in countries around the world. Approximately in There are 760 million security cameras deployed around the world, with the number expected to climb to 1 billion by 2020. Many existing standard for video compression, such as MPEG and H.264, which use mathematical techniques to compress video, are widely used. While they have been meticulously created and fine-tuned, they are intended to be utilised in a specific environment. They can only be general in their surveillance applications, which limits their potential to be specific.

The process of compressing a video file such that it takes up less space is known as video compression. It's smaller than the original file and easier to send over the internet. It's a compression technique of some sort. It minimises the size of video files by removing unnecessary and non-functional data. Encoding of video is the process of compressing and preparing your video file for playback in the appropriate formats and specifications. Machine learning has a subset called "Deep Learning" that uses algorithms that are influenced by data structures. Neural network architecture and operation are examples of brain structure. A convolutional neural network (CNN) is a type of neural network that uses deep learning to analyse vast volumes of data. The quantity pre-processing required by a ConvNet is significantly less than that of other classification algorithms.

OVERVIEW OF THE SYSTEM

Block-Diagram

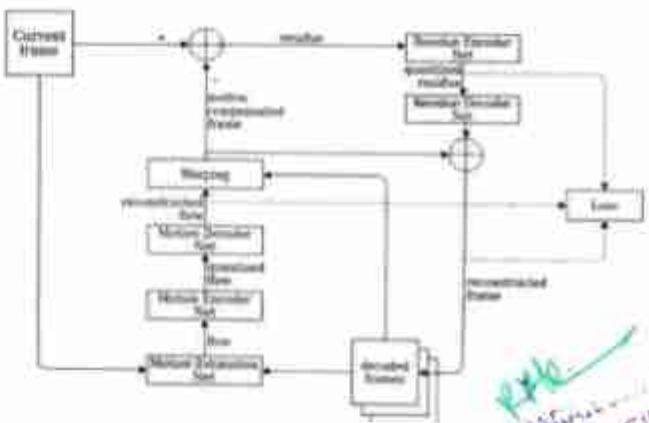

Fig 01-Block Diagram

TRUST BUT VERIFY A FRAMEWORK FOR THE TRUSTWORTHINESS OF DISTRIBUTED SYSYTEM

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ABSTRACT

Security and privacy concerns in computer systems have grown in importance with the ubiquity of connected devices. Additionally, cloud computing boosts such distress as private data is stored and processed in multitenant infrastructure providers. In recent years, trusted execution environments have caught the attention of scientific and industry communities as they became largely available in distributed systems. Developers have the luxury of creating heterogeneous systems that meet demands specific to the data thanks to the diversity of data management systems.

Keyword: *Trust but verify, Cyber security, Attribute Interceptor Algorithm*

1. INTRODUCTION

All around us is software. The need to support a growing number of domains has quickly increased the complexity of software systems, making them difficult to maintain and the training process for end users more challenging. As a result, it has become necessary to develop user-friendly application software with straightforward interfaces that make them simple to use, especially for nonprofessional personnel. The economy and society have been significantly impacted by the transformation brought about by digital technology, and they continue to be so. The key to this transition is data, and people are the principal generators of ever-increasing amounts of it.

It is vital to put people (again) at the centre of the process and to address the lack of standards and technical equipment that makes the exercise possible.

2. PROPOSED WORK

This study offers common RESTful interfaces to many data sources. Thus, it lessens the amount of custom code that application developers create specifically for various data sources.The Service Provider may

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OBJECT DETECTION & SEGREGATION USING R-CNN

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ABSTRACT

The Computer vision field of computer science recognizes the images and scenes from the images, video or live feed. Computer Vision has a number of solutions which include recognizing objects and images, generating images, resoluting images and more.The computer vision is widely used for recognizing faces, vehicles, human detection, mapping of networks, security of systems, and drivierless vehicle systems, etc. It can also be used for the detection of other sensible objects like different kinds of fruits, buttons, coins, etc. This system uses the correct object recognition algorithms like RCNN, FastRCNN, FasterRCNN, Mobilnet and other fast and correct methods like SSD. By implementing the Machine Learning and Deep Learning frameworks like TensorFlow, OpenCV etc., every single object can be recognized in the image with a highlighted box around it and each recognized object is assigned a label to it.

Keyword : *-Object Detection, Computer Vision, Tensorflow, Opencv, Python, R-CNN*

1. INTRODUCTION

Object detection has emerged as a crucial aspect of computer vision, finding applications in various fields such as driverless cars, robotics, surveillance, and pedestrian detection. The process of segmenting images to detect objects plays a pivotal role, requiring models to differentiate objects from backgrounds, body parts, or static elements. Traditionally, object detection relied on mathematical models based on prior knowledge. However, the introduction of Deep Learning has brought a revolution in this field. Deep learning methods for object recognition employs algorithms which can depict objects either in real-time or from images or video feeds. Image classification entails predicting the category of an object within an image, while object detection goes a step further, identifying and enclosing objects with bounding boxes. Object detection techniques are also employed to tasks like hair follicle detection, enabling individual localization of follicles. The process involves constructing object categories for training the system to detect specific objects, and efficiently loading the model for image partitioning and generating records. In our project, we aim to focus on everyday objects encountered in our daily lives, such as fruits, buttons, and coins. For object detection, we will utilize R-CNN, which employs a region proposal generation stage. The selective search algorithm is used to generate sub-segmentations of the image that correspond to different objects based on color and size cues. By leveraging these advanced techniques, our project aims to achieve accurate object detection, enhancing the capabilities of computer vision systems across diverse domains.

2. LITERATURE SURVEY

2.1 Debalina Barik, Manik Mondal ,"Object identification For Computer Vision using Image Segmentation" : Object detection is the main factor for scene understanding for computer vision. It is a complex task to determine objects from a chaotic background. This solution gives an image segmenting model for recognizing objects from blurry background. First the "feature set" is build from the original object and then the solution is trained using the

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IOT IN INDIAN AGRICULTURE USING WIRELESS SENSORS AND NETWORK

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ABSTRACT

Recently, farmers have shown a lot of interest in smart agriculture approaches. One of the main employment in India and a substantial contributor to the GDP of the nation is the agriculture sector. By enabling farmers to more effectively monitor and manage their crops and fields, the use of Internet of Things (IOT) technology in Indian agriculture has the potential to completely transform the sector. The installation of wireless sensors and network infrastructure that enable real-time data collecting and analysis will help achieve this. We go over the advantages of IOT technology for farmers, including higher agricultural yields, less resource use, and better decision-making skills. This includes effective resource management practises like reducing the amount of water needed for irrigation and the usage of harmful pesticides. Overall, the adoption of IOT in Indian agriculture has the potential to significantly raise farmers' profitability, sustainability, and productivity.

Keyword : - *Smart agriculture, Internet of Things(IOT), Relay.*

1. INTRODUCTION

The backbone of our economy is agriculture. India's agriculture generates almost 70% of the national income[1].In this study, we demonstrate how to deploy "smart agriculture," which uses wireless sensors and the Internet of Things.Smart agriculture is a cutting-edge strategy that makes use of the most recent technologies to enhance the productivity, efficiency, and sustainability of farming practises [2],[3]. By delivering real-time data on soil moisture, temperature, humidity, and other factors, IoT and wireless sensors have completely changed how we approach agriculture. Farmers can monitor and manage their crops and livestock remotely thanks to IoT-enabled sensors that wirelessly collect and transfer data.

Smart agriculture uses technology like the Internet of Things (IoT), sensors, drones, artificial intelligence (AI), and machine learning to increase farming's productivity, sustainability, and profitability[4],[5],[6]. Farmers may foresee weather patterns and natural disasters, obtain insights into crop growth and health, and make well-informed decisions about irrigation, fertilisation, and pest management by gathering and analysing data. Reduced waste, increased productivity, better crop quality, and reduced environmental impact are just a few advantages of smart agriculture. Farmers may cut expenses and increase yields by utilising resources like water, fertiliser, and energy as

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AN EFFICIENT VIRTUAL DRESSING ROOM OF AUGMENTATION REALITY

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ABSTRACT

Technology is gradually transforming the way we shop for garments in today's society. With the advent of e-commerce and online shopping, Companies are exploring novel approaches to enhance the customer purchasing journey. Virtual dressing rooms, which provide customers with an immersive and entertaining method to try on clothes and accessories without having to physically change into multiple ensembles, are one possible answer. The aim of my project thesis was to develop a functional virtual dressing room utilizing augmented reality technologies. Customers can use the virtual dressing room to visualize how various garments might look on them in a virtual environment. This technology has the potential to transform the way we shop for clothes by making it more engaging, fascinating, and efficient. The thesis will include a detailed account of the virtual dressing room's design and development process, including system technical details, software and hardware used, and challenges encountered during the development process. Furthermore, the thesis will evaluate the virtual dressing room's usability and user experience, as well as its potential impact on the fashion industry. Furthermore, the thesis will investigate both theoretical and practical issues.

Keyword : - *Virtual Dressing Room, Deep Learning, OpenCV and ComputerVision*

1. INTRODUCTION

The user's live video is taken by openCV in the virtual dressing room using augmented reality technology, and deep learning CNN (Convoluted Neural Network) algorithms are then utilized to evaluate the user's posture and calculate their skeletal position. The segmentation module uses Semantic Segmentation to distinguish between the background and the object (person), resulting in a color-coded image. The color coding added to the image's segments aids in the subsequent process of researching the region of interest. Using the content fusion matrix, the cloth wrapping module adjusts the target fabric to meet the item's dimensions. The fabric is then spatially altered before being mapped to the users' spatial points collected from the segmentation module. The missing body component parts are then synthesized by this module to fit the new fabric. By enveloping the altered cloth and the user image in the GAN algorithm, an output image of the user wearing the textiles is created.

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PREDICTION OF TRAFFIC SIGNAL VIOLATION FROM VIDEO USING AI TECHNIQUES

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ABSTRACT

According to WHO, 1.35 million people die in traffic accidents each year. Technology is improving every year, Rapid growth in the number of new vehicles on the road contributes to severely congested roads and gives people licence to break traffic laws.

This causes a significant number of traffic accidents. Computer vision-based traffic violation-detection systems are a highly effective instrument for tracking and penalising traffic infractions. The proposed system was put into practise using YOLOV3 object detection to find traffic infractions such signal jump, vehicle speed, and vehicle count. The system is also accuracy optimised. Signal jump is determined by using the vehicle's location and the region of interest for the period of frames. Vehicle count detection accuracy was 97.67% for this implementation, and accuracy for vehicle count detection and an accuracy of 89.24% for speed violation detection.

Keyword: - *traffic violation ,signal jump , YOLOV3*

1. INTRODUCTION

Artificial intelligence (AI) has made considerable strides in recent years and is now a crucial tool in a number of applications. Predicting traffic signal breaches using AI algorithms is one such application. The desire to increase traffic safety and lessen the amount of collisions brought on by irresponsible driving has given this field of study more traction.

Traffic signal infractions are frequent on roadways all over the world and can have terrible repercussions. These infractions may be the result of a number of things, including ignorance, carelessness, or insufficient visibility. The use of sensors or physical inspection by traffic officials are the traditional ways for spotting traffic signal breaches, and both can be expensive and time-consuming. The possibility for using AI methods to forecast traffic signal violations could lead to a more effective and affordable solution.

Video footage shot by traffic cameras placed at crossings is used to forecast traffic signal violations using artificial intelligence techniques. These cameras record traffic in real-time and offer a wealth of data for the creation of prediction models. The camera material can be examined using AI methods like deep learning algorithms to find instances of traffic signal infractions. To increase the accuracy and generalizability of these algorithms, massive datasets of traffic footages will be taken for training.

There are lot of advantages to utilising AI algorithms to anticipate traffic signal violations. Authorities can take proactive steps to prevent accidents brought on by reckless driving by anticipating probable violations. Using AI approaches can also assist traffic officers work less and concentrate on other elements of their jobs by reducing their workload. Insights into the reasons of traffic signal breaches can also be gained through the creation of precise-predictive models, which can then be used to enhance infrastructure and regulations for road safety.

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Online Smart Voting System Using Biometrics Based Facial and Fingerprint Detection on Image Processing And CNN

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ABSTRACT

Abstract A biometric technology that is gaining popularity in many applications, such as online voting systems, is facial recognition. With this technology, facial features of a person are analyzed and compared with those in a database using algorithms. The goal of using facial recognition in online voting systems is to increase voting process security and accuracy. When we vote online, a facial recognition technology records their facial characteristics and compares them to a database of registered voters. By ensuring that only legitimate voters are permitted to cast ballots, this technology lowers the possibility of fraud. By identifying voters' faces, the system can also spot and stop attempts to rig the voting process. To improve the security and accuracy of the voting process, online smart voting systems can incorporate fingerprint detection, a popular biometric authentication technique. Utilizing a database for comparison during the voting process, fingerprint data from authorized voters is collected in order to implement fingerprint detection. A voter's fingerprint is taken when they cast a ballot and authenticate their identify. It is compared to the fingerprints stored in the database. If the voter's fingerprint matches one of the fingerprints in the database, they are judged qualified to vote, and their vote can be recorded. The use of fingerprint detection can help stop fraud and unauthorized access to the voting while preserving the privacy of the voters.

Keyword: - *Facial recognition, Fingerprint matching, Har Cascade algorithm, etc.*

1. Introduction

In India, currently we are having two kinds of voting mechanisms first the secret Ballet paper and the second one is Electronic Voting Machines (EVM), but the process of voting has some demerits and drawbacks, that is, why is the present ongoing system not so much safe & secure. In our chosen study of the system, we are proposing three levels of verification which is very effective in reducing the false voting scenarios. The first includes the unique id generate at the of registration which would be given to the voter. After which, in the second level of security when given id to the Election Commission Officer where it would be cross-checked by the officer and now the new tier of verification through which the voter needs to go, will greatly enhance the security, here we would be matching the current facial features of voter with the one present in database, this would reduce the chances of false casting of voting and make the system safer and accurate. In this paper, we will discuss the one algorithm used in the field of facial recognition. We have also measured the accuracy of this algorithm by practically implementing it and evaluating it on the test set.

1.1 Face Detection

A biometric technology that is gaining popularity in many applications, such as online voting systems, is facial recognition. With this technology, facial features of a person are analyzed and compared with those in a database using algorithms. The goal of using facial recognition in online voting systems is to increase voting process security and accuracy. When we vote online, a facial recognition technology records their facial characteristics and compares them to a database of registered voters. By ensuring that only legitimate voters are permitted to cast ballots, this

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TRACKING AND MONITORING OF AGRICULTURAL FOOD DURING TRANSPORTATION USING IOT

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ABSTRACT

The tracking and monitoring of agriculture food stock throughout transportation using IoT is an expeditious growing field that aims to increase the protection and efficiency of food transportation. IoT sensors are acclimated to monitor abundant aspects of food transportation, for instances temperature, humidity, and location. This information is then transmitted to a central database in real-time, where it could be analyzed and acted upon if any issues are detected. By using IoT technology, using its resources, the agriculture sector can ensure food products are transported under optimal conditions, minimizing spoilage and reducing food waste. In addition, IoT technology will also help to detect and prevent food fraud and contamination, providing greater transparency and accountability throughout the food SCM.

Keyword: - *Arduino Uno, ESP8266 Wi-Fi Module, RFID Reader, Keypad, RTC Module, LCD Display, ThingSpeak IOT etc.*

1. INTRODUCTION

The transportation of agricultural food products is a critical part of the food SCM, with billions of tons of food being transported globally every year. Ensuring the security and quality of food products during transportation is essential to prevent spoilage and contamination, which can result in significant economic losses and public health risks. One of the deadlines in food delivery is maintaining the optimal conditions required for the specific food products being transported, for example temperature, humidity, and ventilation. The emergence of the Internet of Things (IoT) technology has revolutionized the way food transportation is monitored and managed. IoT sensors will be embedded in the transportation vehicles or cargo containers to monitor and transmit real-time data on the environmental conditions inside. This data will be used to trace and monitor the transportation of food material, ensuring that food products are transported under optimal conditions and any issues can be detected and addressed in real-time. This essay investigates the application of IoT technology in tracking and monitoring the agricultural food supply during transportation. We will examine the benefits of IoT-based monitoring, including reducing food spoilage, enhanced food safety, and preventing food fraud. We will also explore the various types of IoT sensors and gadgets that can be used to track the transit of food and the complication and considerations that is addressed to ensure the successful implementation of IoT-based food transportation monitoring systems, etc.

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FORECASTING OF SEISMIC TREMORS USING MACHINE LEARNING TECHNIQUES

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ABSTRACT

An earthquake is a type of natural disaster that is well-known for the devastation it causes to both naturally existing and artificial structures, including buildings, and residential areas, to name a few. Seismometers, which pick up vibrations caused by seismic waves moving through the earth's crust, are used to measure earthquakes. The damage caused by an earthquake is categorized in this work into damage ratings, which have values ranging from one to five. The damage grade of a certain structure, which is also known as Unique Identification String, is predicted using a previously gathered data set and a number of criteria. An analysis of current machine learning classifier techniques is being used to make the forecast of earthquake. In order to predict earthquakes, machine learning methods like KNN, Random Forest Classifier, and Logistic Regression are used. The best algorithm will be taken into consideration after reviewing all of the aforementioned previously employed algorithms. The approach employed to anticipate the property will be examined, and data analysis will disclose information that could help to mitigate the effects of future earthquakes.

Keyword :- *Earthquake Magnitude Prediction, Location Prediction , Deep Learning*

1.INTRODUCTION

A few years ago, the majority of each company's programmers were primarily focused on developing the user interface when developing software and hardware image processing systems. Since the introduction of the Windows operating system, when the majority of developers shifted their focus to addressing the issues with image processing itself, the situation has significantly changed. In solving common problems like identifying faces, car numbers, road signs, analysing remote and medical photos, etc., this hasn't yet produced the fundamental advancement. Through trial and error, various teams of engineers and scientists work to find solutions to each of these "eternal" problems. The task of automating the construction of software tools for tackling intellectual difficulties is formulated and vigorously tackled abroad because modern technological remedies are proving to be excessively expensive. The required toolset for image processing should make it easier to analyse and recognise photos with new material and guarantee effective application development by normal programmers. Similarly to how the Windows toolkit facilitates the development of interfaces for addressing many practical issues.

1.1 Existing problem

One of the methods recently used is seismogram. The scientist in order to measure how large the earthquake was use seismogram recording that are made on seismographs on the surface of earth. The size of earthquake is known as the magnitude which will be used a lot throughout this report. Here is a figure that shows some wiggly lines. These lines define if the earthquake occurred was large or small. If the line is short, it means that it is small earthquake and if it is long means it is of high magnitude. There is other method used to predict earthquake which is called triangulation method. In this method it takes three seismographs to find an earthquake.

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FACE RECOGNITION FOR ATTENDANCE MANAGEMENT

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ABSTRACT

The suggested attendance management takes footage from a webcam, detects faces, and compares them to a database of recognized faces using the OpenCV and face_recognition libraries. Arrays are used to store the names and known faces. The script examines the video feed and uses the face encodings of the known faces to compare each identified face to the known faces. If a match is discovered, the student's name and a message confirming their attendance are shown on the screen. A CSV file with the current date as the filename is also created by the script to store the attendance information. The 'q' key can be used to halt the attendance system. It can be applied to offices, institutions, and schools to speed up and save time on the attendance process.

Keyword :- *Face recognition , Image Encoding, OpenCV, Real-Time.*

1. INTRODUCTION

Facial recognition is swiftly overtaking other types of biometrics (Fingerprints, RFID, etc.) because facial recognition systems use a collection of attributes specific to one person. Image processing is now a very exciting issue that has only scratched the surface. For image processing and facial recognition, the project makes use of a number of open-source tools and the Python programming language. The project's primary goal is to develop an automated attendance system that makes use of facial recognition technology. Pen and paper attendance taking is a time-consuming process that can lead to mistakes, proxies, and manipulations. The suggested method intends to address these issues and improve the effectiveness and dependability of the attendance procedure. The task entails employing a webcam to capture photographs of students, processing the images to identify faces, then contrasting the identified faces with a database of known students' faces. The system records the identified students' attendance after which it saves the attendance information in a CSV file. Additionally, the system shows the real-time names of identified students on the screen. The project is adaptable and can be changed to fit the unique requirements of other institutions.

The proposed study underlines the value of investigating the potential uses of image processing and recognition in numerous industries and illustrates how facial recognition technology has the potential to revolutionize conventional attendance systems.

1.1 Existing System

Currently, most educational institutions track students' attendance manually using tools like pen and paper or attendance registers. Due to its reliance on the accuracy of the person marking the attendance, this procedure takes a long time and is prone to mistakes. Students can sign on behalf of their classmates in this system, which makes attendance records unreliable. Another widely used technique is the use of swipe cards or RFID-based systems, where students swipe their cards to log their attendance. This system is expensive to build and operate, and

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ABSTRACT

Due to the numerous application areas, including user authentication, targeted advertisements, video surveillance, and human-robot interaction, face recognition research has grown. Applications that combine the cutting-edge fields to determine age and gender as technology advances. In today's world, age plays a big role in whether you get a health checkup and interview. Numerous organizations in the public, private, and advertising sectors use age information perpetrators, employees who are qualified for the position, and potential customers for product promotion. However, determining a person's age is difficult, and there are limitations from determining the correct age from the collection of Images. A crucial task is locating the appropriate dataset for training the model. The real-time data is huge, requiring a lot of computation and time to prepare the model. After incorporating machine learning techniques, the task has been challenging, but accuracy has significantly improved. By mapping the face in accordance with the age that is found, age estimation in applications like biometric evaluation, virtual makeup, and virtual try-on applications for jewelry and eyewear. Focal point kart is such an application that gives the fake a stab at choice for their clients. Face recognition and face matching are both subfields of age estimation, both of which have the potential to predict an individual's health. This mechanism is used by numerous healthcare applications to monitor people's daily activities and keep track of their health. This face detection method is used to identify service drivers and jaywalkers in China. We employ a significant variety of machine learning algorithms to predict age and gender. One of the most common methods for determining an individual's age and gender is the CNN (convolution neural network). OpenCV and CNN will be used in this implementation to predict a person's age and gender.

Keyword : *Age-Gender Recognition, Cross-age ,Identity validation, analysis, face verification, facial recognition.*

1. INTRODUCTION

Face acknowledgment innovation has forever been compelled by its dependence on contrasting comparable highlights and limits. That is, as of not long ago. With its smart utilization of picture distinction includes, the imaginative Cross-Age Character Contrast Examination (CIDA) system is changing the game.

The Immediate Cross-age Confirmation Organization (DCVN) and the Character Contrast Component Extractor (IDFE) are at the core of CIDA. These two fountain networks work couple to explore and approve the errors in the IDs of the info picture pairings. However, CIDA's methodology recognizes it. Dissimilar to run of the mill facial acknowledgment frameworks, which depend on looking at qualities and characterizing limits, CIDA avoids all of that and depends entirely on picture contrasts for confirmation. With CIDA, the possibilities are endless. From identifying lost or missing children to catching identity thieves, this groundbreaking framework has the potential to transform the way we approach facial recognition. The future of face verification is here, and it's all thanks to CIDA.

1.1 Identity Difference Feature Extractor

IDFE represents Character Component Extractor. This state of the art programming has altered picture ID and characterization, making it quicker and more exact than any other time.

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A Method for Creating a Smart Classroom Based on IoT

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ABSTRACT

Students are more eager to adopt creative teaching techniques and demand innovative university campus life in this era of smart classroom technologies. IoT and cloud computing technologies can offer solutions for a smart and sustainable campus to enhance students' learning processes and boost the effectiveness of routine tasks carried out inside the institution. This project focuses on integrating the cloud into the educational process using the IoT paradigm. IOT in education enables students to study cutting-edge technologies that aid in the development of fresh concepts and rational solutions to societal challenges. The intelligence system, unified campus portal services, security, and maintenance system are all provided by IoT-based cloud computing technologies. The schools' increased digital connectivity improves both student learning and environmental sustainability.

Key Words: *Smart classroom, Camera-Based Detection, Automation.*

1. INTRODUCTION

Universities have recently begun to focus on the Internet of Things and cloud computing to create smart campuses. A Smart Campus connects many peripherals, infrastructure, and facilities to offer smart lighting, security, tracking, and effective use of resources like personnel, electricity, water, etc. According to the traditional classroom model, managing the classroom's daily operations and teaching must take up equal amounts of time. It gets tiresome to mentor and keep track of the student's academic activities. Obstacles must be overcome for faculty and institution administration to properly monitor student academic performance. Therefore, a new system is required to handle the workflow that greatly reduces the time of faculty not to stick with managerial tasks and to increase the time of teaching and interaction with students in order to achieve maximum utilization of the class hours. This project demonstrates a technique that uses cloud computing, IoT, and an application development platform to lessen secondary human labor. With this approach, teachers were able to concentrate more on what they do best—teaching—and less on running the classroom's daily operations.

2. RELATED WORK

Automation based on IoT has a significant influence on several industries today. Most of them use this method to track attendance and manage electric devices. Because there is more energy wasted in classrooms, those settings may be better suited to use this technique. Here, an energy-saving system was created utilizing IoT-based automation techniques, and multiple sensors, including LDR and LM35, were employed to identify the presence of human beings. When learning about various sensors, we discovered that they have several drawbacks, including a short lifespan, high cost, connection problems, and inconsistent results. We considered a few alternatives for getting around the limits of sensors and ultimately chose to utilize cameras to identify human presence. Numerous face detection-based attendance recording systems are available. In comparison, cameras will perform better compared to sensors because they are designed to detect human presence more precisely, while sensors must be customized to meet each user's needs and can be used for a variety of purposes, including disease prediction, weather forecasting, and healthcare infrastructures. We may also prevent energy loss by using this IoT-enabled technology.

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DEEP NEURAL NETWORK MODEL FOR AUTOMATIC DISEASE DETECTION IN CITRUS FRUIT AND LEAVES

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ABSTRACT

Illnesses of the citrus fruit are the main reason for drastic decreases in citrus fruit supply. It is essential to have an automated approach to identifying citrus plant diseases. Because a variety of artificial intelligence issues, and deep learning approaches have lately demonstrated promising solutions, we chose to use them to address the problem of identifying citrus fruit and leaf diseases. This study uses an integrated technique to provide a convolutional neural network (CNN) model. The proposed CNN model intends to differentiate between fruit and leaf types with healthy citrus diseases including black spot, canker, scab, greening, and Melanose, and those that do not. The suggested CNN model incorporates complementary discriminative properties by integrating various layers. The CNN model performed well on the Citrus and PlantVillage datasets.

Keywords: - *Citrus leaf diseases, citrus fruit diseases detection, convolutional neural network, deep learning.*

1. INTRODUCTION

Fruit trees are crucial for a state's economic success. Among the most well-known types of fruit plants is the vitamin C-rich citrus plant, which is well-liked throughout the Middle East, Africa, and the Indian subcontinent. In addition to their many health advantages, citrus trees are used as a raw material in the agricultural industry to create a variety of different Agri-products, including jams, sweets, ice cream, and confectionery, among others. Citrus, Pakistan's most extensively cultivated fruit crop, makes up the majority among country's horticulture exports. In Pakistan, 2.5 million tons of citrus are expected to be produced annually in 2018. However, citrus fruit plants are vulnerable to several diseases, including such as greening, melanose, black patches, cankers, and scabs. Citrus trees are susceptible to the highly infectious canker, which mostly affects the leaves or fruit.

1.1 *Existing problem*

Creating and Quickening Advanced Tools Scanning has been made simpler by computer-aided technologies. Automatically discover genuine crop irregularities. This was accomplished using conventional machine learning approaches, with notable success in plant recognition and illness detection.

1.2 *Proposed System*

India produced, according to estimates, about 2.5 million tons. As opposed to that, citrus fruit plants are susceptible to a variety of illnesses, such as black spots, cankers, scabs, greening, and Melanose. Citrus trees can develop the canker, which is usually on the leaves or fruit and is very contagious. Extreme citrus fruit yield drops are primarily brought about by illnesses, which ultimately reduce fruit quality and result in losses for the growers.

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AN EFFICIENT PROGRAMME FOR A STUDENT ATTENDANCE TRACKING SYSTEM WITH A GEOGRAPHIC FOCUS

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ABSTRACT

A software solution created to make tracking student attendance easier is called An efficient programme for a student attendance tracking system with a geographic focus. The tool tracks students' locations in real-time using Face Detection Based technology, doing away with the necessity for manual attendance taking. Students can quickly check-in to their classes using this software on their mobile devices, which have GPS capabilities. Their presence is automatically tracked by the programme, which also sends the information to a central database that teachers and administrators may see immediately. Overall, the Face Detection Based Student Attendance System Mobile Application is a dependable and effective method for taking attendance that streamlines the procedure and saves time and money for schools. This application is a must-have for any school wanting to update their attendance tracking system due to its user-friendly interface and robust capabilities.

Keyword :- *Real-time, Check-in, Automated, Alerts, Notifications, Analytics, Reports etc..*

1. INTRODUCTION

The traditional paper-based attendance system has been widely used by educational institutions for decades. However, it can be prone to errors, time-consuming, and often difficult to manage, especially for larger institutions. With advancements in technology, a more efficient and accurate way of tracking student attendance has emerged - the Face Detection Based Student Attendance System Mobile Application.

This application leverages the power of Face Detection Based technology to track the real-time location of students and automatically record their attendance when they arrive at school. By using the GPS capabilities of mobile devices, students can easily check-in to their classes, and the application will automatically send the attendance data to a centralized database. This enables teachers and administrators to monitor attendance in real-time and take appropriate actions to improve student attendance.

The Face Detection Based Student Attendance System Mobile Application offers several features that make it an essential tool for any educational institution. These include automated alerts for parents, real-time notifications for absent students, and the ability to generate reports and analytics on attendance data. By providing this information, the application helps teachers and administrators identify patterns and trends and take proactive measures to improve attendance.

1.1 Existing Problem

One of the main problems with the traditional paper-based attendance system is the lack of accuracy and reliability. The manual process of taking attendance can be prone to errors, such as misspelled names, incorrect recording of

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A BLOCKCHAIN-BASED DECENTRALISED FRAME FOR UNBIASED DATA PROCESSING

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ABSTRACT

A brand-new decentralized computing frame that utilizes blockchain innovations to satisfy various computing requirements. In order to alleviate some of the prevailing issues with centralized data processing, such as data abuse and sequestration violations, and ameliorate data protection and security for individuals. The proposed result adopts decentralized agreement algorithms to ensure transparency and fairness in data processing. In our framework, tasks require different amounts of resources, and workers have different processing capacities. Workers initially obtain task information from the blockchain, do tasks locally and then compete for a scheduler based on instructions that are used for data processing through proof of beneficial work consensus. The scheduler communicates task data into the blockchain network. The fundamental aspect of our decentralised frame is that workers choose their jobs rather than passively obtaining them as in a centralized system.

Keyword: *Blockchain, Decentralised Framework, MF-Q, Fair-CA, POUW*

1. INTRODUCTION

At present, the majority of data computing architectures such as MapReduce, Storm, and Flink use a centralised framework where the master knot centrally controls and monitors a large number of slave nodes. We redesign the transaction recording blockchain architecture to become a data-computing frame with decentralised control for a personal network where enticement mechanisms are not necessary. Our paradigm promotes fair data computing and works on the POUW agreement in our approach. Jobs and workers are heterogeneous. In our approach, task transactions are stored through the POUW consensus.

Workers and schedulers are the two functions that each blockchain block performs. Before performing POUW to strive for a scheduler, workers first receive jobs from the pool accommodating task in accordance with the information related to task on the blockchain. They are then processed locally and returned to the pool. Information about tasks is sent by the scheduler onto the blockchain.

In general, a frame is a creative design that has the implicit ability to revise the way data is reused and managed. By using the power of blockchain technology, the intimidated framework can provide a more safe, clear, and fair medium for data forwarding, which helps address some of the challenges relating to traditional data computing systems.

1.1 EXISTING SYSTEM

The current approach utilizes sole master knot and multitudinous slave knots. Within a centralised data processing structure, the slave nodes are managed and under the sole control of master knot. With respect to the master knots instructions the slave nodes carry out the tasks and procedures. The system includes a numerous benefits alongside the drawbacks.

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SIGN LANGUAGE RECOGNITION USING NEURAL NETWORKS

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ABSTRACT

In current society, there is a lack of communication with the deaf. The origin of Sign Language (SL) helped to break down this barrier. Sign language uses visually transmitted sign patterns to communicate meaning to non-sign language users. The use of sign language is beneficial for those with autism spectrum disorder (ASD). Normal people are unable to interpret the signs used by the deaf since they are not familiar with their meaning. This system's aim is to find a solution to this issue. This device makes use of camera to record different hand motions. The image is then processed using a variety of techniques. In this study, an enhanced convolutional neural network (CNN) called MobileNetV2 has been used to design the SLR. The primary step is pre-processing the image. Then, an edge detection algorithm is used to determine the edges. The text is displayed once the sign is identified by a template-matching algorithm. Since the output is text, it is simple to determine what a particular sign means. Once logged into the system, users can choose to use the sign language translation and recognition features, capture images using OpenCV, and then process them using the trained CNN neural network. Additionally, it makes it easier to interact with the deaf. OpenCV-Python is used in the system's implementation.

Keywords: - *Sign Language Recognition, American Sign Language, Deep Learning, CNN.*

1. INTRODUCTION

Technologies like gesture and facial recognition have gained significant traction in the sign language field in recent years. Different movements known as gestures are used during communication. Hand or body movements are used. Gestures used in sign language typically involve visually communicated patterns. The estimated number of people with hearing difficulty worldwide is 4,94,93,50,000. Some existing systems for translating sign language taking into consideration hand orientation, hand shape, and hand movement. Every sign in sign language has a specific meaning ascribed to it so that one can easily understand and interpret it. The people create distinct and unique sign languages depending on their native tongues and geographic locations so no sign language that is widely recognized. Around the world, different sign languages are adopted by people.

In India Sign Language uses both the right and left hands to depict a variety of hand gestures. The suggested project focuses on hand position and shape while utilizing American Sign Language. One hand is all that is required for ASL. The system's implementation is therefore made simple. ASL has its own growth path and is independent of all spoken languages.

In a nutshell, the procedure involves utilizing a camera to obtain photographs. then pre-processing the sample, that involves changing the RGB-model image that was acquired to a grayscale image. Afterward, use a clever edge detection algorithm to follow the edges. Finally, this produces the result as text after applying a template-matching technique to find the pattern. This technology eliminates the need for a middle translator by bridging the

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HUMAN FACIAL ACTIVITY RECOGNITION

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ABSTRACT

In various real-life scenarios, human detection and activity recognition (HDAR) in videos is crucial. This study focuses on detecting humans in aerial video sequences captured by a moving camera mounted on an aerial platform, which encounters dynamic events such as changing altitudes, illumination shifts, camera jitter, and variations in viewpoints, object sizes, and colors. The UCF-ARG aerial dataset, unlike conventional datasets with frames taken by a static ground camera featuring medium or large human regions, presents a greater challenge due to the significant distances between humans and the camera in the frames. Human detection methods described in existing literature often experience performance degradation when video frames are affected by noise, blur, illumination changes, and similar factors. To overcome these limitations, the object detection techniques used in this research were trained on the COCO dataset and assessed on the publicly accessible UCF-ARG dataset. The detectors were compared based on detection accuracy, and five human actions (digging, waving, throwing, walking, and running). Experimental results revealed that EfficientDetD7 outperformed other detectors with an average accuracy of 92.9% in detecting all activities and various conditions, including blurring, Gaussian noise addition, lightening, and darkening. Furthermore, deep pretrained convolutional neural networks (CNNs) like ResNet and EfficientNet were employed to extract valuable features from the detected and cropped human patches. Long ShortTerm Memory (LSTM) utilized the extracted spatial features to account for temporal relations between features for human activity recognition (HAR). Experimental findings showed that the EfficientNetB7-LSTM surpassed existing HAR methods in terms of average accuracy (80%) and average F1 score (80%). The result is a robust HAR system that combines EfficientDetD7, EfficientNetB7, and LSTM for human detection and activity categorization.

INDEX TERMS - *Aerial captured video, convolutional neural network, human activity recognition, human detection, long short-term memory, transfer learning.*

1. INTRODUCTION

A computer job for human detection has been developed for at least two decades. Search and rescue, law enforcement, pedestrian detection for traffic management and automated driving assistance, fall detection, and many more tasks, such as the ensuing decision-making, have all benefited from the use of this technology. Unmanned aerial vehicles (UAVs) are frequently used to deploy the technology because of its flexibility, increased tracking range, and capacity to capture photos and videos in circumstances when doing so would be impossible for cameras on the ground. Because of this, it appears that the use of human detecting technologies by UAVs will fundamentally alter in the future. a discussion on human activity. Although the concept of HAR. The problems that come with the UCF-ARG aerial dataset that was used in this paper have not been addressed by other datasets that have been employed in HAR applications. Frames from static ground cameras that were used to acquire traditional datasets reveal humans in medium-sized or big portions of these frames. Therefore, current research only suggests methods to

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ON-SOFT BIOMETRIC PHOTO ENCRYPTION AND DECRYPTION

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ABSTRACT

With the rapid pace of technological growth, it is very important to secure user data. A robust technique which not only secures data but prevents it from various attacks is necessary. Such a technique is proposed within this article. Biometric authentication is one such practice seen today. Contrast to other forms of authentication, biometric recognition provides a strong link between a data record and an individual and it guarantees high level of accuracy and security. But this biometric data can be used by attackers to get illegal access. In order to prevent such acts, a robust technique known as zero-bit watermarking is proposed through this paper.

Keywords: *Face recognition, Soft-biometrics, Encryption, Decryption, Data Privacy.*

I. INTRODUCTION

Biometric is a reliable, secure authentication tool where controlled access is given by identifying the individual using the physiological or behavioral characters . Physiological properties are contained in the physical parts of the body such as fingerprints, fingerprints, iris, face, DNA, the shape of the hand, retina, etc. The commonly used physiological characters are iris, signature, voice, fingerprint, DNA, and Iris is a significant piece of the natural eye. The two eyes have autonomous and uncorrelated iris designs . No two irises of a person are alike; Indeed, the indistinguishable twins have distinctive iris designs . Even though the irises of a similar individual appear to be comparative yet they contain exceptional examples . Iris acknowledgment is an interaction of perceiving an individual dependent on textures and patterns in an iris . Watermarking is a strategy for biometric confirmation in which the highlights of the iris of an individual eye are extricated. The Iris acknowledgment framework gets the picture, extricates the iris region to decide the extraordinary texture for distinctive identification during the check interaction, and matches it with the database made during the enrolment cycle. It is quite possibly the most exceptional and dependable quick access biometric framework. Iris acknowledgment is a promising arrangement because of its dependability, soundness, uniqueness, and wide scope of utilizations .

The main aim of our project is to check about security of data and maintain the good quality of data. This paper deals with zero-bit watermarking of the biometric behavioural images in order to secure the confidential data for the sake of authentication. It mainly involves generation of an encrypted unique ID by embedding the watermark. The watermark which is the person's details is being stored in the database memory while the generated encrypted ID/master share is given to the user. Every time, the user has to scan unique ID number which is given to him. The encrypted unique ID number undergoes the process of extraction in order to extract the watermark. If the extracted watermark matches with the watermark stored in the database storage system then we can say that the user is successfully authenticated. The advantage of sharing the encrypted unique ID number is that even if the attacker gets the encrypted unique ID, it is useless to him because the data is stored in the manner of unique ID number.

II. PROBLEM STATEMENT

Extract unique different qualities from the original iris image,fingerprint image and integrate it with the fingerprint which is the watermark in the embedding process to generate unique secret key which is given to the user. Extract the watermark for biometric authentication, the master share or unique secret key given to the user is scanned along with the iris(eye) of the user. Design an authentication system which validates a user on successful match of the extracted

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ARTIFICIAL / SYNTHETIC HUMAN FACE GENERATOR USING GENERATIVE ADVERSARIAL NETWORK (GAN)

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ABSTRACT

Noise, Structure, and Elements to produce high-quality pictures, vector transport must be properly represented in graphics algorithms. Although currently available algorithms are extremely effective at this, creating and formatting virtual environments is expensive and time-consuming. As a result, there is an opportunity to automate this tedious procedure by using recent improvements in computer vision. Recent advances in complex generative models, notably GANs, have inspired a significant deal of interest in the field of computer vision for creating realistic images. Backpropagation is coupled with the assistance of an adversarial method that consists of two networks, The generating system allowed G, while the discriminator allowed D, with G creating erroneous images and D categorizing them into genuine or phony image categories. Backpropagation is combined with an adversarial approach that makes use of two networks, Generator G and the discriminator D, where Generator G generates fictitious pictures and Discriminator D assesses whether they are real or false. As the training goes on, G develops the capacity to create images that are plausible to deceive D. [1]. In this study, a model capable of producing high-quality photographs of human faces at scale was trained using the Deep Convolutional Generative Adversarial Networks (DCGAN), a kind of convolutional architecture based on GAN. The DCGAN model was trained using the Celebrity Faces Attributes Dataset. The Architectural analogies Index (SSIM), which analyses both structural and spatial coherence between two pictures, was used to objectively evaluate the trained DCGAN model. According to the data acquired, the image quality is equivalent to the top-tier photographs in the Celeb dataset.

Keyword: - *Artificial/Synthetic face generation, Generative Adversarial Network, Structural Similarity Index, Convolutional Neural Network (CNN), Artificial Intelligence(AI), Deep learning Computer Vision(CV).*

1. INTRODUCTION

Every learning strategy—supervised and unsupervised—tends to be undermined by the generative adversarial network (GAN), also known as a GAN. Due to the natural modelling of multidimensional data patterns, this is possible. The GAN hypothesis was first created in 2014 and was conceptualized as a contest between two neural networks to see which one might perform better. Think of one network as an unauthorized intellectual owner and the other as a reliable resource for visual data analysis. In order to produce authentic images, a copycat, also known as a generative structure and denoted in literary works as variable G, creates duplicates. The discriminating D gathers both real and fake samples in an effort to ascertain if samples are valid (as shown in Figure 1). The Generator Network lacks access to actual images. The discriminator is trained using both samples obtained from the real world dataset and fake images. The discriminator's fault is determined using the base fact picture dataset, which comprises both false and genuine photos. As the produced oversight gets transmitted across the network, each epoch leads to higher-quality photos. When seen as an operative mappings from an apparently arbitrary, high-dimensional

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A SURVEY ON GRAPE FRUIT DISEASE DETECTION AND MONITORING SYSTEM

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ABSTRACT

Due to the ongoing demand for food and food products, agro-based industries are evergreen. It is essential to cultivate crops effectively and efficiently to boost overall yield due to the rising demand for agro-based industrial products. We must keep an eye on the crops during their growth and development in order to accomplish this goal. One of the main issues facing farmers in the agricultural industry is crop disease. Therefore, efficient disease detection and prevention techniques must be created. The development of a precise and economical framework for crop monitoring and early disease diagnosis makes use of deep learning algorithms and image processing techniques.

Keywords – *Detection of disease, Monitoring System, Illnesses that affect grapes, Deep Learning, Convolutional Neural Networks (CNN), K-Means Clustering, and Image Processing Powdery mildew and downy mildew.*

1. OVERVIEW

It is well known that agriculture is the foundation of our nation and that it provides a living for around 90% of Indians. In India, agriculture accounts for around 19.9% of the country's GDP. For crop selection and production, farmers have access to a wide range of options, including fruits, vegetables, paddy, legumes, and others. In the current climate, it is crucial for farmers to be aware of the illnesses harming their crops and the preventative steps that should be done. For field monitoring, farmers should also be knowledgeable about contemporary farming techniques. After citrus fruits and bananas, grapes are one of the most significant crops grown in India; they are also exceptionally nutrient-dense and high in vitamin C. One of the most often used commercially

2. THE METHODOLOGY

2.1 Artificially intelligent systems

By "artificial intelligence," we mean the use of computers to do tasks that would normally need human intellect. Any artificial system having cognitive capacities on par with the human brain might be called a "cognitive machine." AI's strength is in its capacity to calculate and choose actions that have the highest chance of success. The foundation of artificial intelligence is the hypothesis that machines may learn to think and reason like humans. The purpose of AI research is to develop computer programs with cognitive abilities comparable to those of the human brain. Progress is being made in accurately replicating cognitive processes including

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FAST AND LIGHTWEIGHT HUMAN POSE ESTIMATION

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ABSTRACT

Although achieving significant improvement on pose estimation, the major drawback is that most top-performing methods tend to adopt complex architecture and spend large computational cost to achieve higher performance. Due to the edge device's limited resources, its top-performing methods are hard to maintain fast inference speed in practice. To address this issue, we proposed the fast and lightweight human pose estimation method to maintain high performance and bear the less computational cost. Especially, the proposed method consists of two parts, i.e., the fast and lightweight pose network (FLPN) for pose estimation and a novel lightweight bottleneck block for reducing computational cost, which can integrate the simple network and lightweight bottleneck into an efficient method for accurate pose estimation. In terms of lightweight bottleneck block, we introduce the structural similarity measurement (SSIM) to refine the appropriate ratio of intrinsic feature maps and reduce the model size. Furthermore, an attention mechanism is also adopted in our lightweight bottleneck block for modeling the contextual information. We demonstrate the performance of the proposed method with extensive experiments on the two standard benchmark datasets by comparing our method with state-of-the-art methods. On the COCO keypoint detection dataset, our proposed method attains a similar accuracy with these state-of-the-art methods, but the computational cost of these top-performing methods is more than 7 times that of ours.

Keyword : *Human pose estimation, structural similarity, cheap operation, lightweight block.*

1. INTRODUCTION

Pose estimation is a computer vision technique that predicts and tracks the location of a person or object. The goal of estimating human pose based on input images can be simplified to precisely localize human anatomical keypoint like elbow wrists knees etc. Human pose estimation aims at predicting the poses of human body parts and joints in images or videos. Human pose estimation which is a fundamental task in computer vision is

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DEVELOPMENT AND ANALYSIS OF POTHOLE DETECTION AND ALERT BASED ON NODEMCU

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ABSTRACT

The system is implemented using an ultrasonic sensor to detect the presence of a pothole and uses NodeMCU for data transfer to send the information of the potholes detected. When a pothole is detected, the GPS module captures the potholes' location, and the Global System for Mobile communication (GSM) module sends a message to the user's phone, alerting them about the pothole's presence and providing the location information. This information can help road users to avoid the pothole and decreases the risk of accidents. This system is an innovative solution to the problem of potholes on roads. By alerting road users about the presence of potholes, the system helps to improve safety of roads, decreases accident rate, and save lives. The system is also cost-effective and can be easily implemented on existing roads without any significant modifications.

Keyword : - *Pothole.*

1. INTRODUCTION

Roads are an essential part of our transportation infrastructure, connecting people and goods across long distances. However, road maintenance is a very critical issue, as the degradation of roads may lead to numerous problems, including increased accidents and damage to vehicles. A major problem faced on the roads is the formation of potholes, which causes severe accidents and damage to vehicles. Potholes are formed due to various factors, which includes weather changes, heavy traffic, and poor road maintenance. To address this issue, the proposed system uses an IoT-based approach to detect potholes on roads. In the system we use an ultrasonic sensor for the detection of potholes on the road. When a pothole is detected, the system sends an SMS alert to the user's mobile phone, including the location of the pothole using GPS technology. The system can help in reducing accidents and vehicle damage caused by potholes, ensuring safer and smoother journeys for people and goods. The system consists of an ultrasonic sensor, a GSM module, a GPS module, and a NodeMCU development board. The ultrasonic sensor detects the presence of a pothole on the road, and the GSM module sends an SMS alert to the user's mobile phone, including the potholes location. The GPS module provides the location of the pothole, ensuring accurate identification of the pothole's location.

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SMART STREET LIGHT IMPLEMENTED USING LoRaWAN TECHNOLOGY

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ABSTRACT

Systems for intelligent street lighting are a part of smart cities.. In addition to providing lights, they also make real-time monitoring, energy management, and other intelligent applications possible. In this situation, LoRa(Long Range) technology offers a practical and affordable approach to connect and control a numerous street lights. We offer an abstract of a LoRa chip based smart street lighting system. A LoRa gateway has various LoRa nodes connected to street lights, and a central control unit make up the system. The LoRa nodes use sensors to track environmental variables including traffic, ambient light, and other environmental factors. This information is gathered by the LoRa gateway and transmitted to the central control unit for the processing to establish the ideal timing and lighting settings for each street light. Additionally, the system permit for remote control and observation of specific street lights, allowing for quick troubleshooting and resolution of problems. Applying LoRa technology for smart street light has a various benefits, including improved energy efficiency, reduced maintenance costs, and increased protection.

KEYWORD : - *Street light, LoRa.*

I. INTRODUCTION

IOT is the interface of physical devices that permits the devices to contact each other and be sensed and controlled remotely. These advanced automation and analytics systems use artificial intelligence technology to provide automated and advanced products and services. IOT-based systems permit better transparency, control, and great performance.

A street lighting system is extremely important for all types of road users, whether they are drivers, cyclists, or pedestrians, because it determines the safety of both life and property of all people who are on or near the road. So, street lighting must be optimal and reliable to reduce the risk of accidents happening on the street at night. Street lighting system designs also need to have acceptable power consumption and have good energy-saving systems.

Implementation of smart street lights using LoRa chips by remotely controlling and managing through wireless communication technology. Remote management is the basic function of smart street lights. According to people's needs, smart street lights are equipped with other intelligent functions, including automatic brightness adjustment based on road conditions, detection of faulty street lights, and automatic ON/OFF LED lights.

The traditional design of streetlight systems lacks adequate maintenance, leading to the consumption of large amounts of energy and financial resources. It also lacks reliability. Streetlights are found to be one of the major components of power consumption worldwide. Hence, it is essential to give more attention to improving the

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SELF-WOUND ANALYSIS USING MACHINE LEARNING AND IMAGE PROCESSING

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ABSTRACT

Strong surgical wound care is crucial, and this cannot be understated. Surgical wounds that are not properly cared for might lead to serious consequences. It therefore rises. The need to expand a user-friendly self-care tool that may help both patients and medical professionals to guarantee the Nation is free of surgical wounds without the need of specialized medical equipment. A surgical wound assessment device for self-care is suggested on this publication. The suggested device is made to enable patients to take images of their own surgical wounds using a mobile device and then contribute these pictures for analysis. The suggested technique, which combines image-processing and gadget-learning algorithms, has four tiers. First, images are divided into super pixels, with each super pixel containing the pixels with a similar distribution of shades. Second, the region of skin associated to these super pixels that correlate to the pores and skin is identified. From this comes Super pixels. Based on the assertion of the textural difference between skin and wounds, surgical wounds may be removed from this area in around 1/3 of cases. In the end, the country and surgical wound symptoms and signs may be evaluated. Effects from full-scale experiments are run. More than 90% of the national evaluation findings are accurate using the suggested approach, and more than 91% of the symptom evaluation results agree with the actual study.

Case studies are also provided to demonstrate the advantages and disadvantages of this equipment. These outcomes show how this gadget ought to function.

Keywords— Artificial intelligence (AI), classification, health care service system

1. INTRODUCTION

Powerful surgical wound care is crucial and cannot be undervalued. Poorly managed surgical wounds can result in symptoms of infection, the healing of chronic wounds, or even the possibility of existence. To ensure First class surgical wound care, patients are required to live in a health institution under supervision, which is a significant burden. For clinical professionals to properly use constrained clinical resources, One of the most promising ways is patient self-care. Medical personnel can periodically check the state of surgical wounds, and patients are educated by scientific specialists to increase engagement in the care process. This approach not only easily relieves the workload of scientists, but it also guarantees outstanding surgical wound care efficacy. An easy linguistic contact between patients and medical professionals is essential to achieving successful self-care. This way, patients may readily inform medical personnel about the status of their surgical wounds and request their assistance as needed. Patients would thus need a

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HOUSE PRICE PREDICTION USING AIML WEB BASED

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ABSTRACT

One of the basic requirements of human society is a place to live. Houses are considered to be pleasant and quiet environments where people feel at home. People must therefore select a decent house model in order to live a pleasant and happy life. This article focuses on utilizing machine learning algorithms to reliably estimate home prices. People can choose the right home for their needs using this concept. People will primarily consider the neighbourhood, house type, cost, location, and a few other amenities. To determine the necessary house for habitation. Since most people are very concerned with staying within their budgets when buying a home, it is crucial that the prediction of home prices be accurate. Additionally, it aids people in selecting homes based on. House prices have a big impact on the economy, and customers and real estate agents are quite concerned about the price ranges. Every year, housing prices rise, which ultimately highlights the necessity for a method or plan that could forecast house prices. Physical conditions, locations,bedrooms, and other elements might affect a home's price. Historically, forecasts have been based on these variables. However, these prediction techniques need the right expertise and knowledge in this field. A substantial source of cutting-edge opportunities for housing analysis, prediction, and visualisation is machine learning approaches. A middle-class family cannot support his family while paying for rent, food, water, and power. The cost of apartments in the city is rising, and estimating the final price of a home is extremely risky. As we can see, when a customer wants to buy a property in the city, he looks at three things: location, area, and the resources that are accessible in the community. Our research paper will assist clients in understanding the true cost of a home as well as builders in determining the selling price that will best meet client requirements.

Keywords: - *House Price Prediction, House Rent Prediction, Machine Learning etc...*

1. INTRODUCTION

Currently, forecasting house prices is a hot topic. The goal of house price prediction is to give buyers and sellers a foundation for pricing. Buyers can determine if they paid a fair price for a home by reviewing transaction records, and sellers can determine the price at which they can sell a home along a certain stretch of road. Financial technology systems that use a suitable evaluation method for mortgage calculation and real estate auctions also use house price prediction. House price prediction is the process of predicting the future price of a residential property using statistical modelling approaches and machine learning algorithms. Making informed financial decisions, buying or selling a home, investing in real estate, and other things can all benefit from this. Diverse aspects of a home may be of interest to various buyer groups. For their children, nuclear families, for instance, could prioritise parks and neighbouring schools. As a result, a residence can be recommended to a potential buyer if its key attributes, as determined by an attention mechanism, meet their needs. House price forecasting that requires consideration of a number's of variables, including location, size, age, and condition of the property, The regional real estate market trends, economic indicators, and other pertinent information. On the basis of previous data, machine learning algorithms can be trained to spot trends and estimate future home prices with accuracy . Different methodologies, including regression analysis, time series analysis and ANN algorithm can be used in house price prediction models. These models may be trained using substantial.

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Environmental Monitoring using wirelessDevelopment Module with LoRaWAN

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ABSTRACT

This paper proposed the prototypes of a Long Range (LoRa) WAN network for environmental monitoring a air qualitysensor, soil moisture sensor, a temperature and humidity sensor, a raindrops sensor, and a LDR sensor. The different levels of soil depth with respect to the ground surface. As compare to Wi-Fi module, mobile communication, Bluetooth another wireless technique a LoRa esp32 sx1276 acts as a LoRa wireless communication module for long-range environment data transfer. The proposed network that operating with two wireless communication frequency bands, 925.2MHz for node-to-gateway communication and 2.4GHz (WLAN) for gateway-to-cloud communication. Furthermore, the proposed network with three wireless sensor nodes and a single LoRa gateway was experimental. As a results, the sensor node able to environmental sensing and transfer data to the gateway. The environmental data of soil moisture under the ground surface 20cm, 40cm, and 60 cm more than 90% accuracy compared to the standard instrument. Additionally, the LoRa transceiver range is approximately 600 meters (Non-line-of-sight: NLOS) and the LoRa gateway automatically transmits environmental data to the cloud storage every 15 seconds.

Keywords: - *ESP32,LoRaWAN, Soil moisture, IOT, Rain drop, LDR sensor sensor,Temperature and Humidity sensor etc....*

1. INTRODUCTION

Environment Monitoring system are generally used to regularly observe and routinely collect data, and they have been used in this modern era being affected by various environmental phenomena and conditions. The popular environment monitoring system at the moment is wireless sensor network because its performance and easy to use in sensing and transferring data. LoRaWAN (Long Range Wide Area Network) is a technology that is capable of transmitting long distance data using a energy efficient radio frequency so that it is very good when applied to areas. The use of LoRaWAN for sensor data acquisition in environment monitoring can be applied system peer to peer connection that is sensor node and gate way for storing data.IOT supports the growth of several applications by using the theoretically massive amount and diversity of data collected by devices, subsequently providing different services for the people and communities. A wide variety of IoT applications exist to date, including smart cities, smart homes, smart streets, air and water quality monitoring systems, and healthcareapplications. More interestingly, IOT has redesigned the route in which users usually communicate with applications, subsequently supplying them with advanced networking and intermediate interfaces with socializing capabilities and sensors are used to detect and take the input from the surrounding environment the input can be light, heat, motion, moisture and pressure.

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SMART HOME AUTOMATION, SECURITY& ENERGY OPTIMIZATION

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ABSTRACT

For almost 10 years, the home automation industry has attracted some academics' interest. Any automated system's main selling point is its reduction of manual labor, effort, time, and mistakes brought on by human error. Smartphones have become a must for every individual which results in the advancement of contemporary technology. There is an urgent need to save energy in every aspect due to the rise in population and energy usage. The main causes of energy loss is the inert to access and manage applications in remote areas. This article provides a review for these systems.

Keyword Smart Home, phone, Voice Control, wireless technology.

1. INTRODUCTION

Up until quite recently, only bigger commercial structures and affluent houses had computerized the control for all systems throughout the building. Building automation, which often just involves lighting, heating, cooling systems, seldom offered more complex management, monitoring, and scheduling features and was only available for distinct power locations in the building. We have pushed for omnipresent computation of many aspects of life since the 'Internet of Things' emerged in the past ten years.

Therefore, making it easier for people to communicate within technology is crucial. One such topic that seeks to attainsimplicity while boosting efficiency is automation. A voice-activated s m a r t home seeks to further automation to attain simplicity. The point at which home automation truly "smart" resides in Internet-capable hardware that connects to the network which manages it. The smart home, by which many of the early smart home were created, is the standard control device. The panel which controls the security system, forexample, a app t h a t drifts can be examined through an Internet-enabled PC, smartphone, tablet are more frequently used in today's smart home to spread program and monitor control. To compare the characteristics offered the existing systems, this study will conduct a analysis of all of them. The essay will also contrast and analyze each system, examining its many merits and downsides. Smart home come with a wide range of possibilities.

1.1 BACKGROUND

Home automation" is a concept that has been for a while. The words "Smart Home" and "Intelligent Home" were used to introduce the idea of networking gadgets inside the home.

Home appliances automatically gather electrical information, analyses it, and manage it using intelligent interactive interfaces, smart sockets, and other smart devices. Home appliances also accomplish economical operation and energy control. The system may remotely operate home and other services by phone, mobile phone, internet, and other channels. We can also achieve tasks like smoke, gas leak detection, anti-robbery, extremity assistance. We can also automatically collect and manage information from water, gas meters, support systems, and daily oversight of residential. Your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work.

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Environmental Monitoring using wirelessDevelopment Module with LoRaWAN

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ABSTRACT

This paper proposed the prototypes of a Long Range (LoRa) WAN network for environmental monitoring a air quality sensor, soil moisture sensor, a temperature and humidity sensor, a raindrops sensor, and a LDR sensor. The different levels of soil depth with respect to the ground surface. As compare to Wi-Fi module, mobile communication, Bluetooth another wireless technique a LoRa esp32 sx1276 acts as a LoRa wireless communication module for long-range environment data transfer. The proposed network that operating with two wireless communication frequency bands, 925.2MHz for node-to-gateway communication and 2.4GHz (WLAN) for gateway-to-cloud communication. Furthermore, the proposed network with three wireless sensor nodes and a single LoRa gateway was experimental. Aso results, the sensor node able to environmental sensing and transfer data to the gateway. The environmental data of soil moisture under the ground surface 20cm, 40cm, and 60 cm more than 90% accuracy compared to the standard instrument. Additionally, the LoRa transceiver range is approximately 600 meters (Non-line-of-sight: NLOS) and the LoRa gateway automatically transmits environmental data to the cloud storage every 15 seconds.

Keyword: - *ESP32,LoRaWAN, Soil moisture, IOT, Rain drop, LDR sensor sensor,Temperature and Humidity sensor etc....*

1. INTRODUCTION

Environment Monitoring system are generally used to regularly observe and routinely collect data, and they have been used in this modern era being affected by various environmental phenomena and conditions. The popular environment monitoring system at the moment is wireless sensor network because its performance and easy to use in sensing and transferring data. LoRaWAN (Long Range Wide Area Network) is a technology that is capable of transmitting long distance data using a energy efficient radio frequency so that it is very good when applied to areas. The use of LoRaWAN for sensor data acquisition in environment monitoring can be applied system peer to peer connection that is sensor node and gate way for storing data.IOT supports the growth of several applications by using the theoretically massive amount and diversity of data collected by devices, subsequently providing different services for the people and communities. A wide variety of IoT applications exist to date, including smart cities, smart homes, smart streets, air and water quality monitoring systems, and healthcareapplications. More interestingly, IOT has redesigned the route in which users usually communicate with applications, subsequently supplying them with advanced networking and intermediate interfaces with socializing capabilities and sensors are used to detect and take the input from the surrounding environment the input can be light, heat, motion, moisture and pressure.

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DRIVER BEHAVIOR-BASED VEHICLE ACTIVATION SYSTEM WITH DROWSINESS DETECTION

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ABSTRACT

Our project aims to develop a cutting-edge system that can identify and alert the driver's drowsy or sleepy state while driving. To identify patterns in driver behavior and drowsiness, the suggested method employs computer vision and machine learning algorithms. The framework uses a Raspberry Pi microcontroller unit for equipment execution. The system's three main modules are as follows architecture: data acquisition, recognizing facial landmarks, identifying drowsiness, and activating the vehicle 68 facial landmarks from the driver's face were extracted by the facial landmark detection module using the OpenCV and dlib libraries. The drowsiness detection system makes use of a machine learning algorithm module to classify the driver's state as either active, drowsy, or sleepy based on eye aspect proportion (EAR). The system utilises the Raspberry Pi platform, a camera module, as well as other necessary hardware elements. Modules for obstacle and lane detection, along with facial landmark classification, are comprised of the software implementation. Real-world data was used to evaluate the system's effectiveness, and the results showed that it was able to accurately detect driver drowsiness and prevent accidents. The vehicle's acceleration and braking mechanisms are controlled by the vehicle activation module through H-bridge circuitry. The feasibility analysis of the proposed system suggests that it is a low-cost option that can be easily integrated into automobiles. The framework's practical and non-useful prerequisites have been plainly characterized to guarantee its proficient activity and dependability. To make the system more effective, easier to use, the steps for assembling the hardware and installing the software have been improved. In conclusion, the proposed system offers an effective method for avoiding collisions brought on by impaired driving. The system's ability to accurately detect drowsiness is demonstrated by the project's outcomes. Obstacle detection and lane detection are two potential future additions that could increase driver safety.

Keywords: - *Drowsiness Detection, Driver Behavior, Computer Vision, Machine learning, etc....*

1. INTRODUCTION

The "Driver Behavior-Based Vehicle Activation System with Drowsiness Detection" is a sophisticated driver assistance device designed to enhance road safety by detecting the driver's drowsiness and preventing accidents caused by driver fatigue. The system uses facial landmarks drowsiness in the driving, and it can alarm the driver if necessary and activate self-driving if the driver is becomes sleepy. Python, OpenCV, and DLib modules are utilized in the Raspberry Pi implementation of the apparatus. A is a Raspberry Pi low-cost, small, and energy-efficient computer that serves as a flexible platform for software development and hardware interfacing. Popular open-source computer vision libraries for image processing, feature extraction, and machine learning are OpenCV and DLib. The device is designed to run in real-time, using a camera installed in the vehicle to capture images of the driver's face. The facial landmark detection algorithm identifies 68 specific points on the face, such as the eyes, nose, and mouth, and measures their position and orientation. The system then uses these measurements to detect the driver's drowsiness by monitoring their blinking frequency and head position.

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MALWARE DETECTION AND PROVIDE REMEDIES USING COUNTERMEASURE SELECTION

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ABSTRACT

These days, cloud computing is used by both suppliers and users in the majority of businesses, including the public sector. Cloud computing has, however, become a target for hackers and criminals who want to take advantage of its weaknesses as a result of its increasing popularity. The Distributed Denial-of-Service (DDoS) assault is one such attack that can be carried out by compromising virtual computers within the cloud system. This comprises a number of procedures, including vulnerability scanning and compromising weak virtual computers to produce zombies that are subsequently utilized to launch DDoS attacks. It might be difficult to identify these attacks within the cloud system, especially in Infrastructure-as-a-Service (IaaS) clouds. We offer NICE, a multi-phase distributed mechanism that uses analytical models and customizable virtual network-based countermeasures to identify vulnerabilities, assess threats, and choose the best countermeasures, to address this problem. Through system and safety evaluations, our suggested solution has proven to be effective and efficient in preventing the cloud's vulnerable machine virtualization from being compromised.

Keyword: - *Intrusion Detection, Network Security, Counter-Measure Selection*

1. INTRODUCTION

Security is the top concern for users moving to cloud computing, according to recent research. According to a recent survey by the Cloud Security Alliance, which was (CSA), the misuse and malicious usage of cloud computing pose the biggest security risk. Attackers can use cloud resources to launch assaults by taking advantage of weaknesses in cloud systems. The host machines have centralized identifying vulnerabilities and patching capabilities. Patching known security flaws may not be as efficient as well may even be in violation of the Service Level Agreement (SLA) in cloud data centers where cloud users have the ability to control software on their managed virtual machines (VMs).

Furthermore, cloud users installing vulnerable software on their virtual machines (VMs) can create security holes in the cloud. The main difficulty is to create a system that is efficient at identifying vulnerabilities and assaults, reacting to them, and minimizing the effects of security breaches on cloud users. Protecting "business continuity and service availability" from service disruptions is one of the top challenges in cloud computing systems, M. Armbruster et al. emphasized in a prior study. Attackers can more effectively leverage shared resources in a cloud system, whose infrastructure is shared by potentially millions of users, by abusing them and using them maliciously. This allows them to take advantage of cloud vulnerabilities. Due to the common practice of cloud users sharing computing resources, cloud-based settings are particularly susceptible to such assaults.

They frequently connect via the same switching and share file and data storage, which leaves them open to potential attackers. It is also tempting for attackers to compromise many VMs due to the similarities of VM installations in the cloud, including virtualized methods, VM operating systems, installed sensitive applications, networking, and other elements.

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CNN BRAIN TUMOUR SEGMENTATION AND IMAGEPROCESSING

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ABSTRACT

Brain tumor detection is one of the hardest tasks in medical image processing. Because brain tumors can have a wide range of shapes and textures, the images are very diverse, which makes the detection task difficult.

A brain tumor's diverse cell types can reveal information regarding the tumor's nature, severity, and rarity.

Tumors can originate in a variety of locations, and the tumor's location can provide clues about the types of cells that gave rise to it, aiding in further identification. The difficulties that practically all digital photographs have, such as illumination issues, can make the process of detecting brain tumors more difficult. It is possible for tumor and non-tumor pictures to have overlapping image intensities, making it

Keyword: - *Brain Tumor, Deep learning, Convolution Neural Network*

1. Introduction

A brain tumor is a tissue mass where cells proliferate uncontrolled. It develops from several cells, both inside the brain and outside of it. Initial tumors those that emerge from within the brain itself, whereas secondary tumors spread to other areas of the body. Based on the cells of origin derived from various forms of tumors, tumors can have many sources. For instance, grade I or low-grade tumors, such as gangliogliomas, the ones that include neoplastic neurons and are often slow-growing and well-differentiated . Meningioma, which grade I, grade II, or grade III and originates from the meanings (the group of three membranes protecting the spinal cord and brain), is another example.

1.1 Problem Statement

Typically, malignant brain tumors are in the form of blood clots accompanied by fat surrounding it. Detect the location and size of brain cancer required brain tumor pictures. MRI images can help differentiate brain tissue, brain tumors, edema, and spinal fluid-supported differences in color contrast in each tissue. The problem in radiological remains analyzing the results from an MRI brain tumor manually in order that it takes an extended time to seek out the diagnosis from the doctor.

1.2 Existing System

Tumors are the development of unusual cells in our brains. Our skull, which encloses our brain, is very rigid. Any increase inside this type of constrained space can cause issues. According to studies and research, if the tumor is detected in an early stage, the patient can be cured by appropriate treatment. So, it is crucial that you detect and treat the mind tumor in the early stage.

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EYERIS: AN AID FOR BLIND ASSISTANCE

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ABSTRACT

There is little aid for blind assistance, Therefore, it is necessary to put into action a tool that helps them with their daily tasks. There are existing systems and software that provide visual assistance for reading and accessing a few devices, but these systems lack when the disabled person wants to do some basic tasks like identifying the surroundings in front of them such as a person or object. Therefore, very few mechanisms are invented that aid communication between the blind person and the deaf-dumb person. This project is designed to aid and help a blind person or partially impaired eyesight. This system is developed to aid blind persons without a guardian needed. The software and hardware are designed in a way that helps to detect objects, people, and gestures in vision and recognize them. This is a method that implements object detection and person recognition. For communication between dead-dumb and blind people, we use Sign language which is detected and recognized, and the same is notified to the user. The object or sign is transmitted to a blind person in the form of audio. The idea is to make blind people's lives independent and affordable by offering them affordable solutions.

Keyword: -*Real-time Object detection, Face Recognition, Text-to-Speech, Deep Learning, Visually impaired, Gesture-to-voice.*

1. INTRODUCTION

Eyeris is a project that is developed to aid visually impaired people. Blind people lead a difficult life and they rely on others to know about their surroundings or things. They cannot experience the world as we do and it is difficult for them to do basic activities in day-to-day life. Most existing systems only provide a way to do activities such as reading and writing [1]. So to help them Eyeris will perform activities to aid and make them independent.

Eyeris uses different modules to achieve the desired system. It has different modules supporting different operations. The input is captured by the camera as live video and every frame is broken down into frames. The deep neural network processes each frame, marking the appropriate enclosing boxes with various aspect ratios. Then, the best-fit box is selected for the object depending on the prediction score of each enclosing box. For Facial Recognition, each box is compared to an increasing set of facial features. If it fails to analyze even one feature then the box is discarded and determined to not be a facial region [2]. If it is found as the face region then, based on the algorithm, the face is compared with the datasets of faces to see if it recognizes the face or not. The result of any object detection, sign language, or gesture detection is translated into audio using Python gTTS (Google Text-To-Speech) for the person to hear.
The object detection model is trained using YOLO (You Only Look Once), which suggests an end-to-end neural network that predicts bounding boxes simultaneously and class probabilities [3]. The model for detecting objects was trained using the COCO dataset which is large-scale object detection, segmentation, and captioning Dataset.

Eyeris is also made to achieve portability and an easy-to-use interface. This program separates itself into major aspects like object detection, face recognition, gesture recognition, and text-to-speech.

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INTERNET OF THINGS-BASED INTELLIGENT FARMING FOR SOIL CONDITION TRACKING AND WATER CONTENT MANAGEMENT

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ABSTRACT

The way we farm could be dramatically altered by a new Internet of Things-based technology called intelligent farming. This study recommends an Internet of Things-based system for managing agricultural water content and monitoring soil quality. The system is made up of IoT sensors that are placed on a field to collect data on the water and soil levels. After that, the data is transferred to a platform that runs on the cloud for analysis and interpretation. The platform analyses the data processed by machine learning to build a dashboard that shows current data on the state of the levels of the soil and water. This helps farmers decide on irrigation methods wisely, cut down on water waste, and increase crop yields. The suggested technique is a viable and economical option that may be used in both large- and small-scale farming operations. Farmers can optimise irrigation practises, enhance soil health, and boost profitability by utilising the potential of IoT. By minimising water waste and increasing the effectiveness of irrigation techniques, the technology has the possibility to lessen the negative environmental effects of agriculture. Overall, the suggested Internet of Things-based intelligent agricultural system has the power to transform agriculture and offer a long-term answer to feeding an increasing population.

Keyword :- *Intelligent Farming , Irrigation, farming, and agriculture etc..*

1. INTRODUCTION

Agriculture, which is the most significant sector of the global economy, is essential for feeding the planet's rising population. Conventional farming practises, however, face a number of challenges, such as a lack of water, unpredictable weather patterns, and a decline in soil fertility. New technologies, such as the IoT, can be utilised to enhance farming practises, increase production, and lessen the environmental effect of agriculture. This paper proposes an intelligent agriculture system for regulating water content and monitoring soil condition based on the Internet of Things. The suggested approach uses field-installed IoT sensors to collect data on soil quality and water levels. The data is then transferred to a cloud-based platform for analysis and interpretation. In order to create a dashboard that displays up-to-date information on the condition of the soil and water levels, the platform examines the data using machine learning techniques. This aids farmers in making informed irrigation decisions that reduce water waste and boost crop yields.

1.1 Existing Problem

Traditional farming practices are facing numerous challenges such as water scarcity, unpredictable weather patterns, and declining soil fertility. In addition, traditional farming practices rely heavily on manual labor and visual examining the soil and crop conditions, which can take a lot of time and prone to errors. This can lead to overwatering or under watering crops, which can reduce crop yields and waste water resources.

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SMART BANDAGE USING RFID TAG

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ABSTRACT

The population of several nations, including China and India, is ageing. The ageing population need domestic health care systems that can monitor seniors' health over time. In this research, a brand-new wearable platform called the smart-clothes platform is proposed for long-term health monitoring. Five different types of sensors for health monitoring are incorporated into smart clothes using newly developed electronic textiles. The platform has. Based on the smart-clothe, a platform for computing that uses an embedded gateway, a smartphone, and back-end cloud servers to gather and analyse long-term sensor data. A wide range of applications for health services based on cellphones and cloud services are made possible by the platform.

Keyword - *Smart Bandage, IoT, Health-Care, Remote Monitoring*

1. INTRODUCTION

In this study, the smart-clothe platform, a revolutionary wearable device and computer platform for long-term health monitoring, is proposed. The smart bandage is a bandage equipped with multiple sensors for monitoring health conditions, using newly developed electronic textile technology. The smart clothing's inbuilt gateway sends sensor signals to a smartphone for signal processing. On the smartphone, numerous applications can be created for tracking health data, making diagnoses, and handling emergency situations. Furthermore, for long-term sensor data collection, the smartphone links the t-shirts to the back-end cloud service platform. Long-term sensor data mining can be used for cutting-edge medical research and diagnostics. The application scenario and platform prototype for the smart-bandage are presented in this study. Smart bandages, often known as "modern dressings," are used to treat patients more comfortably and conveniently while also shortening the length of their hospital stays. This medical tool generates the ideal environment for complicated and dynamic wounds to heal more quickly and securely. The Internet of Things (IoT) is transforming how we live, increasing our productivity and simplifying our daily activities. Businesses may benefit from the Internet of Things, which may boost productivity and collect more customer data.

1.1 Problem Statement

A vital physiological mechanism that helps injured tissues heal is wound healing. The blood can clot and the bleeding can be controlled with the aid of a pressure bandage. A pressure bandage must not be too tightly wrapped. Handling stiff bandage material is difficult. Most inexperienced people use too little pressure when applying inelastic bandages.

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SHOPPING TROLLEY WITH CONTROLLED MOVEMENT AND AUTOMATIC BILLING SYSTEM

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ABSTRACT

Shopping in large malls has become a common occurrence in major cities. On holidays and weekends, there is a tremendous crowd in the malls, and as a result, there is a long queue of people waiting to pay. An intelligent and secure trolley prototype for a retail store is now required in order to solve this issue. Hardware, software, and data transfer layers are this system's three primary components. A RFID reader, an ESP32 microcontroller, an OLED display, a buzzer, and an ultrasonic sonar are all included in the hardware system. As software, this project utilises embedded C and the Arduino IDE (Integrated development environment). The information from the microcontroller is kept on Google Fire Base. The trolley is controlled using a mobile app. To write and upload the programme, use the Arduino IDE, which is pre-made software . The programme was developed using embedded C. It took five processes to design and build the intelligent trolley system. The first phase is designing the system architecture, the second is creating the flowchart for the smart trolley, the third is creating the software system, the fourth is creating the database, and the fifth is testing the hardware and software system together. The created rfid-based smart shopping system improves business productivity and decreases consumer wait times at the billing counter.

Keyword : - *ESP32,RFID ,OLED, Ultrasonic sonar, Buzzer, DC Motor*

1. Introduction

The Internet of Things (IoT) has made it possible for physical items to interact with one another. Now that everyday products are capable of having computational power and communication capabilities, anything can be connected to one another. This has resulted in a new revolution in the systems that govern industry, finance, and the environment, as well as significant difficulties in data management, wireless communication, and real-time decision-making. IoT research focuses on a variety of applications. One of the most popular Internet of Things applications is the smart cart.. The Smart Shopping system includes the Smart, an embedded device with an RFID reader for reading product RFID tags. A wi-fi module is included into the esp32 microcontroller to allow for data manipulation and wireless communication with a server. When they are shopping at a large shopping centre, people frequently go over their allotted spending limit. Additionally, they experience lengthy lines at the checkout as they wait for the merchandise to be scanned and billed. The aforementioned issues are easily solved by the Smart Shopping Cart. It assists the consumer in making sure that he stays within his predetermined budget and only purchases the necessities that he actually needs. It also works to reduce long lines at the payment counter. As the items have already been scanned and the customer only needs to pay the bill through the mobile application, it also helps to eliminate lengthy lines at the billing counter.

The Google Firebase Cloud stores the information about the product scanned by the RFID scanner on the Smart Shopping Cart and transmits it to the mobile app. The customer then pays the bill using one of the available methods. The system offers a feature that allows customers to delete any item from their cart in addition to seeing the entire cost of the goods they have in their cart. The tiresome process of scanning the items at the counter is also

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VEHICLE TRACKING SYSTEM USING IOT

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ABSTRACT

Global System for Mobile Communication (GSM) and Global Positioning System (GPS) based vehicle location and tracking system provides effective, real time vehicle location. The GPS based vehicle tracking system is designed to find out the exact location of any vehicle and intimate the position to the concerned authority through SMS. The system includes a GPS modem that is retrieves the location of a vehicle in terms of its longitude and latitude. The system uses geographic position and time information from the GPS. This hardware is fitted on to the vehicle in such a manner that it was not visible to anyone. The system automatically sends a return reply to that particular mobile indicating the position of the vehicle in terms of latitude and longitude when a request by user is sent to the number at the modem. It also monitors the temperature of the engine. A program has been developed that it is used to locate the exact position of the vehicle and also to navigated track of the moving vehicle on Google map. The system allows to track the target anytime and anywhere in any weather conditions. This system is user friendly, easily installable, easily accessible and can be used for various other purpose.

Keyword :- *ESP32, WEB cam, MIT App inventor , and LCD*

1. INTRODUCTION

Internet of Things (IoT) describes networking of physical objects that contain electronics embedded in order to communicate and exchange the real time data among each other. In the upcoming years, IoT-based technology will offer advanced levels of services and practically change the way people lead their daily lives. Advancements in medicine, agriculture, smart cities, and smart homes are just a few of the examples where IoT is strongly established. IoT is network of interconnected computing devices which are embedded in everyday objects, enabling them to send and receive data[1]. Vehicle monitoring is believed to reduce the risk of accidents, improve safety and enhance overall comfort and performance for drivers. There has been enough reason to assume that more automated automobiles relieve the driver from many undesirable routines of driving task. It has also been known that many of the car accidents are due to human errors. Therefore, the conclusion has been that with a robust automated system the chance of car accidents can be reduced. Based on all these potential benefits of automation, research on automating some or all aspects of driving task has been going on for decades now[2].

These day's vehicle robbery cases are higher than any other time, it has gotten to be fundamental to give a vehicle a superb security with the main solid hostile to burglary gadget. Vehicle focal locking framework guarantees the best ensure to secure your vehicle from various types of burglary cases. It is a vehicle security gadget that offers fantastic insurance to your vehicle. However, this framework couldn't demonstrate to give complete security and openness to the vehicle in the event of burglary. So a more created framework makes utilization of an inserted framework focused around GSM innovation[3]. The outlined and created framework is introduced in the vehicle. Whether one is holder of single vehicle or in excess of 1000, Vehicle Tracking System

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CROSS AGE IDENTITY VALIDATION ANALYSIS USING FACE VERIFICATION

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ABSTRACT

Due to the numerous application areas, including user authentication, targeted advertisements, video surveillance, and human-robot interaction, face recognition research has grown. Applications that combine the cutting-edge fields to determine age and gender as technology advances. In today's world, age plays a big role in whether you get a health checkup and interview. Numerous organizations in the public, private, and advertising sectors use age information perpetrators, employees who are qualified for the position, and potential customers for product promotion. However, determining a person's age is difficult, and there are limitations from determining the correct age from the collection of images. A crucial task is locating the appropriate dataset for training the model. The real-time data is huge, requiring a lot of computation and time to prepare the model. After incorporating machine learning techniques, the task has been challenging, but accuracy has significantly improved. By mapping the face in accordance with the age that is found, age estimation in applications like biometric evaluation, virtual makeup, and virtual try-on applications for jewelry and eyewear. Focal point kart is such an application that gives the take a stab at choice for their clients. Face recognition and face tracking are both subfields of age estimation, both of which have the potential to predict an individual's health. This mechanism is used by numerous health care applications to monitor people's daily activities and keep track of their health. This face detection method is used to identify service drivers and jaywalkers in China. We employ a significant variety of machine learning algorithms to predict age and gender. One of the most common methods for determining an individual's age and gender is the CNN (convolution neural network). OpenCV and CNN will be used in this implementation to predict a person's age and gender.

Keyword : *Age-Gender Recognition, cross-age ,identity validation, analysis, face verification, facial recognition.*

1. INTRODUCTION

Face acknowledgment innovation has forever been compelled by its dependence on contrasting comparable highlights and limits. That is, as of not long ago. With its smart utilization of picture distinction includes, the imaginative Cross-Age Character Contrast Examination (CIDA) system is changing the game.

The Immediate Cross-age Confirmation Organization (DCVN) and the Character Contrast Component Extractor (IDFE) are at the core of CIDA. These two fountain networks work couple to explore and approve the errors in the IDs of the info picture pairings. However, CIDA's methodology recognizes it. Dissimilar to run of the mill facial acknowledgment frameworks, which depend on looking at qualities and characterizing limits, CIDA avoids all of that and depends entirely on picture contrasts for confirmation.With CIDA, the possibilities are endless. From identifying lost or missing children to catching identity thieves, this groundbreaking framework has the potential to transform the way we approach facial recognition. The future of face verification is here, and it's all thanks to CIDA.

1.1 Identity Difference Feature Extractor

IDFE represents Character Component Extractor. This state of the art programming has altered picture ID and characterization, making it quicker and more exact than any other time.

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Women Surakshate: A Customizable Android and UI Watch App for Enhanced Personal Safety

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ABSTRACT

The developed Android application utilizes Jetpack Compose for the purpose/aim of ensuring women's safety. It is coupled with a WearOS watch application and provides features such as panic mode, emergency mode, location sharing, image sharing, and others that can be beneficial during dangerous situations. Firebase has been implemented as a backend for the application, and mobile functions have been utilized/implemented for its smooth functioning. The WatchOS documentation has been followed closely to ensure seamless functioning of the watch application. This application offers a practical solution for women's safety in a world where this has become a pressing issue. Panic mode enables the user to alert pre-selected contacts instantly during an emergency, while emergency mode uses location sharing and image sharing to provide quick assistance to the user. Real-time location sharing offered by the application can provide peace of mind to the user's family and friends. The Firebase backend provides scalability as per user requirements, while the WearOS watch application provides quick access to the application's features.

Keyword: - *Android Development, Jetpack Compose, Panic-Mode, Firebase.*

1. INTRODUCTION

Ensuring women's safety has become a pressing concern in modern times. In this regard, we have developed an Android application using Jetpack Compose, coupled with a WearOS watch application, to provide advanced safety features. The application provides features such as panic mode, emergency mode, location sharing, and image sharing, and others that can prove helpful during dangerous situations. We have integrated mobile functions and watch features by creating two interfaces, one for the mobile device and the other for the WearOS watch. Firebase has been implemented as the backend for the application, providing scalability as per user requirements. The application can be a significant contribution to the field of women's safety, offering advanced features with the use of modern technologies. The panic mode feature enables the user to instantly alert pre-selected contacts in case of an emergency, while emergency mode uses location sharing and image sharing to provide quick assistance. The application's real-time location sharing can provide peace of mind to the user's family and friends. The development process has closely followed the WearOS documentation to ensure seamless functioning of the watch application. In this paper-journal, the application's technical details, implementation, and advanced features, with the aim of contributing to the field/domain of women's safety.

2. EXISTING SYSTEM

Existing systems for women's safety lack advanced features and often do not provide a comprehensive solution to the issue. Some of the features that are missing in the current system are:
The following mechanisms/techniques are used in existing systems in women safety:

Currently, there is no universal Android application that can be used across different watches. This can make it difficult for users to find an app that suits their needs and can be used/implemented with their watch.
There are no dedicated watches available in the market that have been developed/designed specifically for women's safety. This can limit the number of options available to women who are in need for a watch that can offer advanced safety features. Many existing systems lack advanced safety features such as panic mode, emergency mode, real-

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ENHANCED LSB REPLACEMENT ALGORITHM IN APATIAL DOMAIN OF STEGANOGRAPHY

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ABSTRACT

Most common methods used in steganography to hide information in digital photos is the east significant bit algorithm. Poor ability to encrypt sensitive data, lack of robustness against attacks, and obvious deformation of stegoimages are some of its drawbacks. In the spatial domain of steganography, an extended LSB replacement innovation was developed to circumvent these limitations. The proposed algorithm adopts a hybrid strategy that combines the advantages of the algorithm with some additional techniques to increase the embedding capacity, improve flexibility, and reduce visual distortion. The suggested method is to first divide the cover image into non-overlapping blocks and then use the private key to generatea random sequence of pixels in each block. The hidden data is then embedded in the tiny selected pixels, making it difficult for an attacker to detect the embedded data. In addition, the algorithm uses a dynamic threshold to determine the number of bits that need to be replaced. This reduces visual distortion and increases attack strength

KEYWORD : - *Steganography, LSB, Embedding, Detection, Block selection*

1. INTRODUCTION

As internet usage increases, it's important to be cautious when sharing personal information and ensure that it's transmitted securely. There are various methods to transform data to make it unrecoverable, but a more effective solution is touse stegonography technology to hide the data intransmission channels, preventing unauthorized access. Stegonography techniques can help to enhance security and privacy by concealing critical information in seemingly harmless ways. TheLSB (least significant bit) substitution algorithmis a popular steganographic technique, where the least significant bits of the cover media are replaced with hidden message bits. In the basic LSB replacement method, a pixel in the middle of the cover is selected, and its least significant bit is altered, followed by the next pixel until the entire message is integrated. This approach ensures that the hidden message is not detected and protects against plagiarism.

1.1 Existing System

The current LSB replacement algorithm works in the spatial domain and consists of directly modifying the LSB of the cover image pixels to integrate the clandestine message. However, this basic algorithm has several limitations including low capacity, low robustness and poor visual excellence of the stegoimage. The current LSB replacement

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LANE DETECTION AND SELF DRIVING APPLICATIONS FOR ADAS

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ABSTRACT

According to the WHO, 1.35 million people die in traffic accidents each year. Technology is improving every year, which has made it possible to integrate artificial intelligence even into cars. Significant development has occurred in recent years in creating lane detection algorithms that can precisely identify and track lane markings in a vast variety of driving situations, including low light and bad weather. The deployment of self-driving vehicles based on ADAStechnology has been carefully examined. Autonomous Vehicles are another name for Self-Driving Cars. This vehicle has the capacity to perceive its surroundings. The various components in the car will operate according to these processed sensed characteristics without the need for a human operator. An autonomous vehicle functions similarly to a regular vehicle but has no human driver. The software section that makes up autonomous vehicles is essential. Between Hardware Components and Applications, the Software Architecture serves as a link. Self-Driving Cars include two vital components. These automatic functions, which operate without human intervention, are Lane Detection and Traffic Signal Detection. In this paper, a machine learning algorithm is proposed. This algorithm is mostly used to create shape algorithms to assist in lane detection and traffic sign detection by detecting shapes and lanes. Both of these applications were developed in Python utilizing the OpenCV2, NumPy libraries, and CNN algorithm for Edge detection. Overall, lane detection is an important technology for the creation of ADAS and self-driving applications. Ongoing research aims to increase the precision and robustness of these systems to guarantee their safety and dependability in actual driving situations.

Keywords: - *Self-Driving, ADAS System, CNN, OpenCV, Lane Detection.*

1. INTRODUCTION

There is now a way to deal with the problems of traffic congestion, accidents, and the rising demand for mobility thanks to the quick development of autonomous driving technology. Self-driving automobiles have different needs in terms of real-time behaviors and computation speed compared to other robots. They must be effective under a variety of circumstances, from precise path-finding in parking scenarios to accelerated highway driving. To make the best driving decisions, the deployed computer systems must accurately perceive multiple varieties of traffic scenarios. Due to their close proximity to drivers, passengers, pedestrians, and other road users, self-driving cars must make sure to carry out all these jobs while maintaining a very high level of functional safety.

Self-driving cars use a variety of sensors, including cameras, LiDAR, and radar, to detect their surroundings and make decisions based on the information they have gathered. Lane detection has been shown to be difficult because of a variety of environmental conditions, such as poor lane visibility and unstructured roads. However, guaranteeing that autonomous driving technology can function safely and effectively in complex and dynamic contexts is one of the biggest problems facing its development. In this research, we provide a method for detecting the lane for self-driving mode automobiles using real-time camera data.

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5. CONCLUSIONS

By adding this feature, we might enhance the usability, security, and lack of vote fraud of our current voting system. Face recognition is used more reliable and safe way of authentication. One algorithm—the Har cascade—is discussed in this article. We also evaluated the participants' performance depending on how well be able to identify faces in the images. In our training set, we used 2316 pictures. To stress the training set's peculiarities even more, the photographs were enhanced. There were 4 more samples for every image in the enhance set. The batch has 9264 photos in all, or 2316*4.

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EFFECTIVE APPROACH TO PREDICT CHRONIC KIDNEY DISEASE USING MACHINE LEARNING

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Abstract

— People now commonly suffer from chronic kidney disease (CKD). By detecting and treating those who are at risk for this condition as soon as feasible, a variety of serious problems, such as end-stage renal disease, elevated risk, and cardiovascular disease, may be prevented. Medical researchers can get a lot of help from the machine learning algorithm in accurately diagnosing the disease at the very beginning. Algorithms for machine learning and Big Data platforms have recently been combined to improve healthcare. This work presents hybrid machine learning methods that integrate extraction of the feature strategies and various algorithms of machine learning under classification technique related to massive data platforms to identify chronic kidney disease (CKD). In this study, logistic regression (LR), random forest (RF), decision tree (DT), support vector machine (SVM), Naive Bayes (NB), and gradientboosted trees were employed as six ensemble learning strategies for machine learning classification tasks (GBT Classifier). The results were validated using four evaluation techniques: accuracy, precision, recall, and F1-measure. The results demonstrated that the chosen features had helped SVM, DT, and GBT Classifiers operate at their peak levels.

Keywords— Chronic kidney, Naive Bayes (NB), decision tree (DT), logistic regression (LR), Gradient-Boosted Trees (GBT Classifier) and Random Forest (RF).

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"INVESTIGATION INTO THE EFFICACY OF ADSORBENT FORTHE TREATMENT OF WASTE WATER"

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ABSTRACT

In treatment of Waste water adsorbents such as Rice husk and activated carbon are commonly used to remove contaminants , impurities and pollutants from water. Thestudy of this experiment is to compare the Chemical oxygen demand (COD),Total suspended solids (TSS),Total dissolved solids(TDS), suspended solids (SS) reduction in wastewater using Rice husk and Activated carbon . Rice husk, a by product of rice production, is rich in cellulose and lignin,which are natural adsorbents. Activated carbon, on the other hand, is a highly porous material that has been treated with oxygen to increase its adsorption capacity. Together, they can effectively remove pollutants such as heavy metals, organic compounds, and bacteria from waste water. The activated carbon is then mixed with the waste water to adsorb the impurities.The treated water can then be reused or discharged safely into the environment. This method is cost-effective, sustainable, and environmentally friendly.

Keyword- *Chemical oxygen demand (COD),Total suspended solids (TSS), Total dissolved solids(TDS), suspended solids (SS), Rice husk and Activated carbon.*

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1. INTRODUCTION

Carbon and rice husk are two materials that are commonly used in wastewater treatment. Both of these materials have unique properties that make them effective at removing pollutants fromwaste water . Carbon is a highly porous material that has a large surface area. This makes it an excellent adsorbent for organic and inorganic pollutants in wastewater. When wastewater is passed through a bed of activated carbon, the pollutants are trapped on the surface of the carbon particles. Activated carbon can remove a wide range of contaminants, including heavy metals, volatile organic compounds (VOCs), and pesticides.Rice husk, on the other hand, is a byproduct of rice processing that is often considered a waste material. However, it has been found to be an effective adsorbent for pollutants in wastewater. Rice husk contains silica, which gives it a high surface area and makes it effective at adsorbing heavy metals, dyes, and organic compounds .In wastewater treatment, carbon and rice husk can be used in a variety of ways. They can be used as a fixed bed or a fluidized bed in a reactor, as a filter medium in a sand filter, or as a component of a mixed media filter.

2. OBJECTIVES

- The primary objective of the treatment of waste water is to effectively remove contaminants from the water.
- By using activated carbon and rice husk in wastewater treatment is used to reduce the concentration of pollutants in the wastewater to a level that meets to gardening , domestic purpose ,flushing.
- In addition, the use of activated carbon and rice husk in wastewater treatment is asustainable solution that can help to reduce the environmental impact of wastewater treatment. By using these natural materials, we can reduce the amount of chemical additives that are needed in the treatment process, which in turn reduces the amount of waste generated from the treatment process.

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Studies of AL 1100 /SiC Nano composite for building construction

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Abstract

Based on the application prominent choice of material is essential the development and end use. Aluminium nano composite can be used to replace the conventional aluminium alloy due to its considerable strength. Normally aluminium undergoes corrosion and the corrosion rate can be reduced by reinforcing suitable fillers in nano level. This attempt was made to study the influence of chromium addition to the corrosion behavior of AL 1100/SIC composites. A stir casting technique used to prepare different % at 0 2 4 6% composite of nano sic when it was immersed in 3.5 wt % from the Nyquist plots and equaling circuit fitting results. The charge transfer resistance values was observed to change from 10 to 3.7 30 to 9.5 19 to 2.8 for 0.3 and 6 wt % chromium content respectively after 72 hours of exposure . The increase in the charge of transferred resistance has obtained with an increasing chromium content has a clear indication of improved resistance to corrosion

Introduction

Research and development (R & D) has shifted to the use of monolithic alloys to Nano matrix composite in response to the growing demand in industry for light weight, low cost and high performance materials for structural application. A tremendous progress has been made in the development and characterization of Nano matrix composite for various engineering application (1-4). According to (3), the potential advantages of Nano matrix composite over monolithic alloys may be attributed to the reason for activated research interest in the past years. Aluminum metal matrix composite have been found to offered superior combination of profile properties in such manner that up to date no existing monolithic material rival (5,6) This class of composite has been used extensively in numerous structural nonstructural and functional application. The use of Nano metal composite for building and construction purpose in shipping aerospace automotive defense and warfare common nuclear transportation and petroleum industries has attracted more considerable interest in the recent time (7-14). The numerous application of Nano metal composite can be trased to its high strength to weight ratio improved stiffness moderately high temperature properties controlled thermal expansion coefficient, enhanced and tailored electrical performance improved abrasion and wear resistance as compared to monolithic aluminum alloys (15-20). Although Nano matel composite has demonstrated excellent physical mechanical and tribological properties, the challenge of corrosion remain a consistent treat in sea water environment for modern building and construction purposes and host of other state of the art structure application except on very few resistances use of ceramic reinforcement particles in Nano metal composite have been found to experience high corrosion

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STUDY ON STRENGTH PROPERTIES OF MUNICIPAL SOLIDWASTE ASH IN CONCRETE

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ABSTRACT:- Waste control might be a critical environmental problem in the world. As urbanization and industrialization are adding further and further day by day, there is an exaggerated and extremely high volume of Municipal Solid Wastes (MSW) produced. On a common base, the major amount of waste generated in the terrain is MSW, and this needs to be controlled. The common and the foremost system for abating the amount of the waste generated might be burning, indeed though it produces ashes that want any assessment. The other volition or common disposal system of these wastes is by landfills or the wastes are left through the runoff water bodies. Getting relieve of MSW is getting a agitated problem in the present script. Once the MSW is burned it needs to be disposed of, where this is inclined directly into runoff water bodies or landfilled in the empty places. Where these lands can't be further reused, as they lose some of the mainland parcels. And indeed the charges of operative tips, and also the inadequacy of mesa spots. Municipal Solid Waste Incinerated ash is the maturity outgrowth which is attained by the burning approach and has the capability to be used within the improvement position. Accordingly, the Strength parcels of concrete grade M30 with the aid of using MSW ash in the place of M-sand are studied. The performing outgrowth vindicated that using MSW ash as an volition to M-sand will increase the Flexural Strength, Split Tensile Strength and the Compressive Strength of concrete.

Keywords - External Solid waste ash, Flexural Strength, Split Tensile Strength, and Compressive Strength.

I. INTRODUCTION

Muncipal Solid Waste (MSW) is generated primarily through industrial waste and metropolitan cities which causes pollution and speculative health problems if not tackled properly and coping with it is one of the challenging factor India is facing. MSW also comprise paraphernalia that are thrown away in daily life like domestic, marketable, institutional ventures. For tackling the waste problem, few countries are administering advanced environmental initiatives. Still, because of the rise and increase in urbanization, MSW is adding dramatically. According to the survey, few countries are relieved of MSW in landfills itself. Imperfect MSW operation ends up in theemigration of hot house feasts that contribute to concerning five- megahit of worldwide emigrations which triggers pollution and global climate change. Recently, the COVID- 19 has developed few challenges for coping with MSW management, wherever improvement needs to be done in the system for managing the pandemic. Two main accessible strategic treatments of MSW are landfilling and thermal treatment. Landfilling, the commonest fashion of managing MSW. Problems that arise due landfilling include soil contamination and groundwater pollution. Contrarily, thermal treatment includes an correction of the organic and chemical structure of MSW by tropical temperature. In some countries like Japan, Swiss, and so on, half of MSWs are reduced to ash. Burning is predicted to cut back the amount by 90%. Reduction in bottomland areas is an added advantage for incineration but, ashes should be discarded rightly. Since, the topmost portion, the burning system by-product is municipal solid waste burning cover ash (MSW ash), there are several researches been done to find alternative methods rather landfilling. MSW ash is principally reclaimed in road base operations. As an illustration, MSW ash was vindicated to be an respectable difference for materials in hill road operations. Contribution has been made to reduce the infrastructure prices. Natural aggregates (NA), comprises sand and complexion, represent more than 75% concrete (vol). Because of the exaggerated concrete demand, excess percentage of NA are pulled out, driving hefty environment detriment. This involves dangerous diversity, water provides, and topographies. Main idea of the paper is to focus on developments made on the strength parcels of MSW ash in concrete.

II Materials

A. **COARSE AGGREGATE** Coarse summations are irregularly broken monuments or naturally being round gravels that are used to make concrete, coarse summations for structural concrete correspond to broken monuments of hard gemstone- suchlike determinedness and limestone (angular summations) or aqueduct gravels (round

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Improving Seismic Resistance Of The Structure Using Concrete Jacketing

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Keywords

Retrofitting
Concrete Jacketing
Pushover Analysis
Capacity Spectrum
Displacement Coefficient
Concrete Jacketing

Abstract

Earthquake is one of the most calamitous occurrence experienced on earth that takes thousands of lives and destroys the structures partially or fully worth millions. Recent earthquakes in the Indian subcontinent have led to an increase in seismic zoning factors in many parts of the country [1]. This has produced a need to improve the present safety levels of the existing structures. Therefore, the seismic rehabilitation of structures not designed according to the current zoning factor has become very important. Seismic rehabilitation eventually leads to the retrofitting of the weak structures. To evaluate the seismic performance Pushover analysis of structure using Capacity Spectrum Approach or Displacement Coefficient Method are increasing used. The purpose of this study is to analyse an existing structure by pushover-analysis and strengthening the vulnerable and weak components by concrete jacketing and then comparing the results.

INTRODUCTION

Earthquakes are a critical problem around the world because they lead to catastrophic damage such as failure, building collapse, loss of human life and loss of homes. In addition, the earthquake leads to a huge economic loss including the loss of built structures and the costs of recovering damaged buildings and infrastructure. Over the years, investigations have been carried out into the ability of buildings to cope with seismic impacts, showing damage to buildings that do not meet the requirements of sustainable structures for earthquake-resistant design. Therefore, regulations and standards have been developed to improve the behaviour of buildings with regard to softness and rigidity, to resist seismic work. Retrofit is necessary today because most buildings have been designed in the past with different regulations according to each country. Old ways of designing buildings against earthquakes may not be entirely effective because technology is evolving. New types of structures and applications arise as well as regulations are updated. Moreover, since the earth's geomorphology and climate change over the years, this can affect the level of earthquakes.

Pushover Analysis

Pushover is a static, non-linear analysis method where the structure is exposed to gravity load as well as the repetitious displacement-controlled lateral load pattern, which constantly increases through flexible and inflexible behaviour until the final state is reached [2]. It can help show how progressive failure really occurs, and determine how the final failure occurs. Lateral load may represent the primary shear range caused by earthquake loading, and its composition may be proportional to the mass distribution along the height of the building, mode forms or any other practical means. Simply put, PA is conducting a non-linear analysis to estimate the strength of the structure beyond its flexible limit until its final strength in the post-flexibility range. There are two types of Pushover analysis currently available, both methods depend on the contrast of side load deformation obtained by non-linear static analysis under gravity load and ideal lateral load due to seismic action.

Seismic Retrofitting

Seismic retrofitting is to modify existing structures to make them more resistant to seismic activity, ground motion or soil failure due to earthquakes. This goal can be achieved by adopting one of the following strategies, such as reducing seismic demands on members and structures as a whole, by increasing the rigidity, strength and softness of members, which are the basic seismic response criteria taken into account during the retrofitting. However, the choice of technique to be applied depends on locally available materials and techniques, cost considerations, business duration and architectural/functional and aesthetic considerations/limitations. Seismic retrofit schemes can be either global or local, depending on the number of members of structures for which they are used. Global retrofit

NCVCS 23-036

DISTRACTION AND DROWSINESS DETECTION OF VEHICLE DRIVER USING OPEN CV

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Anusha SG & Yashas S M

Abstract

Drivers are meant to concentrate on driving, but they pay more attention to their surroundings, and driving abilities and underestimate the impact of distraction activities on driving performance. In this paperwork, the driver's head posture is examined to know whether the driver is concentrating on his frontal view. This system works by analyzing the eye movement of the driver and alerting the driver by activating the buzzer when he/she is drowsy. The Convolutional neural network model is best suitable to detect driver distraction more reliably than the training model. The application was implemented using Open CV in a PC environment with a single camera view. In case, if the driver does not wake up the vehicle automatically slows down and moves toward its left, and stops.

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IoT based Smart Shoes for Blind people

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P. Ebby Darney ; A. Essaki Muthu ; K. Jeyakumar ; R. Santhana Krishnan ; K. Lakshmi Narayanan ; Y. Harold Robinson All Authors

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Abstract:
India stands third among the world's blind people population. They cannot see what is happening around them. They are facing numerous problems while moving from one place to another. Due to loss of eyesight, they hurt themselves while travelling to many places. Sometimes they even find it difficult to trace the route back to their home. Hence a novel system is required to facilitate them while travelling and to help them to find their way to home when they lost their route to home. To deal with this, the proposed study has designed a novel system called IoT based Smart Shoes for blind people. This can solve aforementioned problems and facilitate blind people to a huge extent.

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I. Introduction

India encompasses nearly 120 million [illegible]

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AN EVOLUTIONARY COMBINATORIAL APPROACH TO STUMPY CMOS TRANSCONDUCTANCE OPERATIONAL APEX AMPLIFIER DESIGN AND OPTIMIZATION

R. Santhana Krishnan[1], P. Ebby Darney[2], V. Bharathi[3] and Sincy Elezebeth Kuruvilla[4]

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[2,3,4]*Department of Department of Electrical and Electronics Engineering, RajaRajeswari College of Engineering, India*

Abstract

In recent years, operational amplifiers (op-amps) have become an integral part of numerous electronic systems, ranging from communication devices to medical instruments. The pursuit of high-performance, low-power op-amp designs, particularly in Complementary Metal-Oxide-Semiconductor (CMOS) technology, has been a central focus of research and development in the field of analog integrated circuits. To address the growing demand for efficient and reliable op-amps, this paper proposes an innovative evolutionary combinatorial approach for designing and optimizing CMOS transconductance operational apex amplifiers (TOAA). In this study, we introduce the concept of stumpy CMOS op-amp, wherein we prioritize reduced transistor count and employ efficient topologies to minimize the op-amp's footprint without compromising performance. The integration of stumpy features enhances the algorithm's capability to produce compact, power-efficient op-amp designs suitable for modern, space-constrained applications. The proposed approach is extensively validated using various benchmark circuits and compared against conventional design methods, demonstrating superior convergence efficiency and consistently providing competitive solutions. Furthermore, the impact of various design constraints and trade-offs on the optimization process is thoroughly analyzed, offering valuable insights for designers seeking to balance performance with area and power consumption. Through experimental results, we showcase the efficacy of the evolutionary combinatorial approach, substantiating its potential to revolutionize the design and optimization of CMOS TOAA circuits. The proposed method empowers circuit designers to efficiently explore the design space, leading to the creation of highly tailored, application-specific op-amps that cater to the demands of the rapidly evolving electronics industry.

Keywords:

Evolutionary Algorithms, Combinatorial Optimization, Operational Amplifier, CMOS Transconductance, Stumpy CMOS, Genetic Algorithm, Electronic Design Automation

1. INTRODUCTION

Operational amplifiers (op-amps) have emerged as essential building blocks in modern electronic circuits, catering to a wide range of applications, including signal processing, communication systems, medical devices, and control systems [1]. The relentless drive towards higher performance and lower power consumption has spurred significant research efforts in the design and optimization of op-amps, particularly in the domain of Complementary Metal-Oxide-Semiconductor (CMOS) technology [2,3]. As electronic devices become smaller and more power-efficient, the demand for compact, high-performance op-amps has intensified [4].

Conventional design approaches [5] have relied on manual or automated trial-and-error methods, where designers iteratively modify individual parameters of the op-amp circuit and simulate their performance to achieve desired specifications [6]. While effective for simpler designs, these methods quickly become infeasible for the increasingly complex and diverse requirements of modern electronic systems [7]. Moreover, the sheer size of the design space for op-amp circuits, defined by a multitude of design variables, poses a significant challenge in systematically exploring and identifying optimal solutions [8].

The proposed method introduces the concept of stumpy CMOS op-amp design, emphasizing reduced transistor count and efficient topologies to achieve compact and power-efficient op-amp solutions. The idea of stumpy circuits entails streamlining the design by employing a judicious combination of components, reducing complexity while preserving essential performance characteristics. This not only facilitates the synthesis of high-quality solutions but also paves the way for practical implementation in today's space-constrained integrated circuit technologies.

The primary objective of this research is to devise an automated approach capable of efficiently searching the design space to identify op-amp configurations that satisfy given performance specifications. By employing evolutionary algorithms, the proposed method capitalizes on their ability to exploit parallelism and rapidly converge towards optimal solutions. The combinatorial representation of the op-amp design space allows for a structured and efficient exploration, enabling a comprehensive analysis of diverse design configurations.

This paper presents a novel evolutionary combinatorial approach to tackle the design and optimization of CMOS transconductance operational apex amplifiers (TOAA). By harnessing the power of evolutionary algorithms, specifically the genetic algorithm, and leveraging combinatorial representations of the circuit components, this approach aims to overcome the limitations of conventional methods and automate the exploration of the vast design space.

To assess the effectiveness of the proposed evolutionary combinatorial approach, we conduct extensive experiments on benchmark circuits, comparing the results with those obtained using traditional design methodologies. Through rigorous evaluations, we demonstrate the convergence efficiency and robustness of the method, while highlighting its capability to yield competitive designs that balance performance, area, and power consumption.

2. TOAA

The TOAA (Transconductance Operational Apex Amplifier) is a specific type of operational amplifier architecture that offers advantages in terms of bandwidth, slew rate, and power consumption. It is designed to achieve high gain and linearity

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PEDELEC-THE PEDAL ELECTRIC CYCLE

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Abstract : The paper presents innovative idea of implementation of sensor in pedelec collectively called as electric bicycle for the safety and convenience of rider. Normal cycle is converted to e-bicycle by adding electric motor for moving and sensors like ultrasonic sensor for obstacle sensing and infrared sensor for obstacle sensing and infrared sensor for compulsion of both hand on handle bar. The e-bicycle are echo-friendly as there is no release of harmful gases to environment and economic friendly.

I. INTRODUCTION

Pedelec is a type of electric vehicle based on traditional bicycle to which an electric motor is added. Nowadays electric bicycle began to play important role in transportation market because they are economic and simple in operating and have environmental benefit. The batteries used is rechargeable and it is a sealed lead acid battery which is a spill proof. In case of cycling at night time or cycling by elderly people it Is helpful if a pedelec includes an obstacle sensor which is done by a low-cost ultrasonic sensor which works on the principle of sonar. Infrared sensor which is electronic device which senses certain characteristics of its surroundings by either emitting or detecting infrared radiation. IR sensor is very basic and popular sensor and it is one of the common applications in the real time , here this sensor is used detect hands on the handle bar. The output of the sensor is, given to Arduino uno which compares and give the results to control unit which makes the cycle move. in addition, mobile charger is provided to charge a mobile phone. the objective of the project comprises the economic, eco- friendly and rider safety vehicle for transportation.

II. OBJECTIVES.

The main objective of the project is eco-friendly and economic friendly vehicle for the transportation.

The proposed system is capable of sensing obstacle and it requires presence of both hands on the handle bar so the safety of rider is concerned

The pedelec shows the balanced interest in both safety and convenient riding for the rider.

III. COMPONENTS

BATTERY: The battery is used to store the electrical energy and this electrical energy will be taken from the battery to power up the cycle, the battery will be charged once after using by a battery charger, the acid used in the battery is sulphuric acid and it issued as an electrolyte. The battery used here is a sealed lead acid battery which is a spill proof battery which avoids acid spillage and prevents harmful impacts, the specified here is a 12V 7Ah battery hence the operating voltage of battery is 12V DC and the capacity of the battery is 7Ah.

BATTERY CHARGER : Battery is used for charging purpose, a proper charging voltage is applied to the battery, here for a 12V battery a voltage of around 14V is applied to charge the battery. Charger will charge the battery until the battery reaches the desired voltage value and capacity, the charger has an inbuilt safety feature which prevents over charging of the battery, Connectors are provided with battery charger to connect to the battery terminals, the charger used here can charge the battery of capacity upto 40Ah, the supply voltage for the battery charger is 230V 50Hz AC supply, the charger provides an output voltage of 14V DC and an output current of 1A.

CONTROL UNIT : The control unit consists of various components and connections , the components present in the control unit are DC-DC converters, fuses and relays.

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Variable Frequency Pulse Control of Llc Resonant Dc-Dc Converter Using Rbfn-Ann Algorithm for Low Voltage Application

Pdf (https://www.publishoa.com/index.php/journal/article/view/1397/1193)

R. Arul Jose, P. Ebby Darney, Bharathi V, Udhyami M B

Abstract

For front end DC/DC conversion in a distributed power system, an LLC resonant converter is proposed in this paper. LLC resonant converters show good efficiency, soft switching and high frequency operation over the traditional conventional converters. The proposed converter has its own advantage of inherently isolated by a high frequency transformer. Also due to high frequency operation, the cost and size of the magnetic components and resonant components are decreased. A robust neural network controller-based LLC resonant converter is used to control the nonlinear phenomenon and to generate low voltage (24V, 192W) for wide range of load by applying variable frequency control. The resonant converter is subjected to Fundamental Harmonic Approximation (FHA), an analysis tool to obtain the DC voltage transfer function. The operation and salient features are discussed and a comparison of the efficiency of this converter with conventional and RBFN controllers shows a prodigious improvement.

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Section

Articles

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BLADELESS WINDMILL USING PIEZOELECTRIC PLATES

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Abstract— **At present India is venturing towards turning into a worldwide super power. This means the energy necessity of the nation would increment in quick rate. At present there is existing sharp edge windmill to deliver energy, yet its capital expense, support cost is high. So in our bladeless windmill we can produce power by utilizing piezo- electric plates. Our bladeless windmill utilizes drastically a new approach of catching wind energy. The goal of developing a bladeless windmill is to stay as far away from nonrenewable energy sources as possible, because nonrenewable energy sources will lead to the depths of the earth. We are going to remove the rotating blades from the windmill and develop a new type of windmill called a bladeless windmill so that we can use renewable resources and form the windmill. This new approach is when the high velocity wind strikes the mast, it starts to vibrate and this vibration is transmitted into piezo-electric plates which in turn convert's this vibrational energy into electrical energy.**

Keywords—Blade windmill , Piezo-electric plates

I. INTRODUCTION

Nowadays everyone is turning towards the energy generated from a renewable energy sources. But presently the production from these renewable energy sources is very low. So new techniques are being introduced to solvethese problems and one of these techniques is by producing electrical energy by harvesting wind energy.

There are two different ways of delivering the energy from windmill which trough conventional windmill and wavering windmills. Conventional windmill are only the traditional windmill. Currently, the widely used way of harvesting this wind energy is by the conventional windmill. These conventional windmills are made of huge blades and huge stands and they can produce energy they are subjected to strong wind in a specific direction. But these problems can be overcome by using a bladeless windmill. The piezoelectric bladeless windmill captures wind energy in a novel way. It does so due to the vortex shedding effect's streamlined instabilities. The wind changes its flow and creates an alternating pattern of vortices as it passes around the structure, which is later absorbed by the turbine's mast structure and creates resonance through its oscillating motion. The Tacoma Narrow Bridge in Washington, which collapsed four months after its opening due to the vortex shedding effect,is a classic example. Whereas all engineers and specialists

strive to avoid and reduce vibrations in their technologies, we rely on it as our primary source of energy.

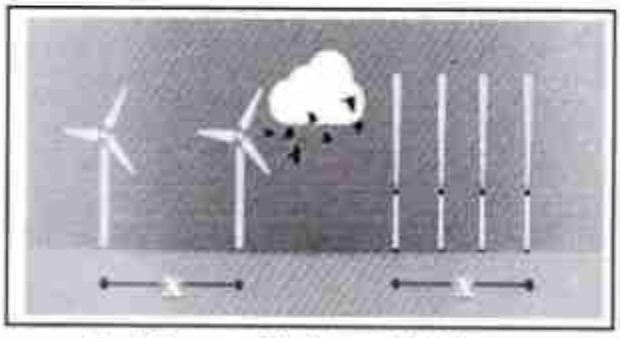

Fig.1 Concept of bladeless windmill

As the name tells these windmill does not require any blades to harvest energy from wind. These windmill With the help of a phenomenon known as vortex-induced vibrations [VIV], these windmills take a novel approach to generating electricity. These vibrations produced by the

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Document Security within Institutions Using Image Steganography Technique

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Abstract: ***The art or practise of hiding a message, image, or file within another message, image, or file is known as steganography. This essay examines how images on the institution's network can be used to hide papers within that organisation. The C programming language was used to create this free, self-contained, and user-friendly application. Before the document is delivered through the institution's network to the intended recipient, the encryption procedure is carried out on the user's computer. Images are encrypted and decrypted during this procedure, preventing hackers or casual users from reading documents that weren't created for them.***

Keywords: steganography, image, encrypting, decryption, image

1. Introduction

The majority of information is now stored and exchanged electronically as a result of advancements in information and communication technology (ICT). As a result, everyone is now concerned about and vulnerable to threats to information security. The number of people switching to this e-platform is steadily rising. Modern communications' expanding potential necessitate the use of sophisticated security measures, particularly on computer networks. With more data being transmitted over the internet, network security is becoming more crucial. Since unauthorised access and use must be prevented, confidentiality and data integrity are necessary [1]. As a result, the field of information security has grown tremendously. One of these security methods that is used to conceal information is the usage of images. This study examines how institutions might safeguard their internal data as they transition to electronic management. The steganography approach conceals information from the user while also disguising it as an image to divert the intrusive party from their intended goal.

2. Steganography Vs Cryptography

Different techniques and instruments have been used to safeguard information, particularly on the internet. Because of its simplicity and haziness, cryptography is used the most frequently. This strategy, however, is evidently ineffective because it invites intruders to target such secret information by openly declaring the so-called secured information to them. Additionally, a variety of effective methods have been developed to unlock information protected by this kind of information security instrument. Steganography is a contemporary information security tool that must be used in order to stop this unauthorised access to such sensitive data. Steganography, according to Bender [2], is a method of concealing information in digital.

3. Information Hiding

A new field of study called information concealing includes applications like steganography, digital media copyright protection, fingerprinting, and watermarking. For instance, in watermarking applications, the message includes data like owner identity and a digital time stamp, which are typically used for copyright protection [2]. Regarding fingerprints, the data set's owner inserts a serial number into the data that specifically identifies each user. This enhances copyright data to enable the user to be identified in the event of any unauthorised use of the data collection. [3].

Information can be protected using steganography in addition to cryptography. According to Moerland [4], steganography conceals the existence of the communication by embedding the plaintext or encrypted message in a digital host before transmitting it over the network. This kind of information hiding can be applied to copyright protection for digital media, including audio, video, and photos, in addition to data hiding for secrecy.

With more people participating in the cyberspace revolution, steganography becomes more crucial. According to Silman [5], "steganography is the technique of disguising information so that hidden messages cannot be detected. A variety of covert communication techniques, such as steganography, prevent the message from being seen or found.

Steganography concealed the private message within the host data set, made its presence undetectable, and was designed to be reliably transmitted to a recipient. The host data set is

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Design of a Customized Intelligent Electronic Device for Power Circuit Safety

P. Ebby Darney

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Abstract

The Intelligent Electronic Devices (IEDs) are widely used to control the power circuits through an automated control device. The main motive of IEDs is to monitor the power flow, enable the control process and meter the changes. In some cases, the IEDs are employed as an electronic circuit breaker for providing a reliable operation. It is achieved by operating the relays through digital signals. The traditional methods have been

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using a mechanical system for operating the circuit breakers, which requires a manual operation for resting the breakers. The modern IEDs are developed to reset the operation by its own but such systems are heavily affected through data intrusions. Therefore, a programmed IED is developed in the proposed work to analyze if the decisions made by the IEDs are original or fake in a simulated observation. It is done with a mathematical averaging algorithm with respect to time for estimating a threshold. The experimental outcome indicates that the performance of the customized IED is better over the traditional IEDs. Moreover, the proposed device saves the energy distribution in a power system by avoiding the fake operations created in the IEDs through external intrusions.

Keywords

Remote terminal unit   cyber-attacks   false data injection   power circuit analysis

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Evolutionary Swarm based Optimization Algorithm for Power Loss Minimization in Distributed Generation System

P. Ebby Darney

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Abstract

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The electrical energy requirement is increasing day by day as many of the mechanical systems like motor vehicles and industrial engines are compensated with electrical equipment due to its environment friendly nature. However, most of the design of electrical power generation units do not seem to be eco-friendly as that of the electrical motors and drives. Therefore, the concentration has moved towards the non-renewable energy generation possibilities. Power stations that are operated by wind, solar and hydro stations attract the developers due to their minimum maintenance cost and higher operational efficiency. Hence, the combinations of two or three renewable energy sources are clubbed in many places to form a Distributed Generation (DG) setup. Such DG system requires an efficient switching operation for managing the power outcome from different generating stations to meet the load requirement. To meetup such requirement, a combination of Genetic Algorithm (GA) with the Particle Swarm Optimization (PSO) based technique has been developed in this work. A simulated experiment is also conducted in the work to prove the efficiency of the proposed hybrid model over the traditional GA and PSO approaches.

Keywords

Power optimization grid system control energy balancing

power loss management energy storage model

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Power Flow Optimization of a Hybrid Energy System with Salp Swarm Algorithm

P. Ebby Darney

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Abstract

Electric energy has become more essential in the recent year for all human activities. Therefore the demand for electricity is increasing to an extreme. The non-conventional energy generation methods are attracting the energy suppliers as its design and implementation is comparatively simple than the conventional energy generation. However, the non-conventional energy sources are widely dependent to the nature. Hence the power supply regularity has become a questionable one for non-conventional energy systems. The design of

hybrid power system allows addressing this issue by connecting more than one non-conventional energy system together for making a reliable power supply. To regulate the power supply generation on connecting more than system several optimization algorithms were implemented in the present hybrid energy systems. The proposed work aims to study the performances of the hybrid energy system connected with 5KW wind power generation with each 1KW power generation with solar system and battery backup of using salp swarm optimization algorithm. The experimental work is also extended to prove the efficiency of the proposed algorithm with the traditional particle swarm optimization and genetic algorithms.

Keywords

Energy optimization hybrid energy system renewable energy swarm optimization energy flow design

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Fault detection in an interconnected power system using optimal number of phasor measurement unit

Kirthika Krishnan, Srivani Iyengar

Abstract

Fault identification in a power system is crucial. In recent days, there have been multiple microgrids connected to the power system. And if many buses are connected, then there is a need for an increase in the phasor measurement unit. By using an optimization technique, the number of phasor measurement unit PMUs can be reduced by placing them optimally. In this paper, the fault detection algorithm is implemented using a reduced number of PMUs with the help of the particle swarm optimization (PSO) algorithm. The optimal locations of PMUs are identified using the PSO algorithm. Here, the reduction in the count of PMUs and the PMUs are designed in MATLAB as a model. This is done using the Simulink and dashboard block sets. The IEEE 9 and IEEE 30 test systems are used here for the analysis and tests. The IEEE 9 bus system is constructed in simulation and then the PMU is constructed using the data taken from the phasor measurement blocks. The data is used in the dashboard block set to represent the PMU-based fault detection system.

Keywords

Fault detection algorithm; IEEE-9 bus bus; MATLAB dashboard; PMU; PSO algorithm

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BIOMETRIC START TO HYBRID VEHICLE

Prutha G[1], Neha raj VG[2], Sanjay Yadav N[3]

[1]Professor

[2]Student

[3]Student

Abstract: *In India due to Environmental hazards, nowadays internal combustion engine is changing with Electric Vehicle. Efficacy of hybrid vehicle will be more compared to EV or internal combustion vehicle as it is charged through renewable resources as well through Plug in and the fuel is used as a one more input as a fuel. Ultimately Hybrid Vehicle starts giving more efficient compared to internal combustion engine or Electric Vehicles. It also helps to travel across city with less consumption of fuel. In our concept we are providing customer safety on vehicle by introducing thumb start on our Hybrid vehicle. This process will provide safety for parking in any of places in city as it has thumb start, vehicle as a advanced mode of safety it intends to safe vehicle. Vehicle has two ways of charging one through plugin and another through a Solar panel to run the vehicle in green energy mode. Vehicle has hybrid input such as fuel engine and electric motor that intends to give more efficacy. This technique is used using the DC choppers, AC to DC conversion and sensors to support our project.*

Keywords: *BLDC motor, Renewable sources, Fingerprint Module.*

Introduction

Oil prices are rising daily, owing to the widespread belief that oil will be depleted within next 50 years. During same period, total number of vehicles is expected to rise from 700 million to 2.5 billion. Alternative solutions are required and are currently being proposed.

Electric vehicles (EVs) and hybrid electric vehicles (HEVs) proposed by major manufacturers reveal a shift in the urban mobility paradigm. Furthermore, several organizations and energy experts have proposed new policies to encourage EV-related research, development, and demonstration projects. When it comes to EV research, generality is associated with new and revolutionary vehicles. Low-cost solutions based on reliable off-the-shelf components, on the other hand, can be proposed.

Objectives

To convert IC engine vehicles to electric vehicles, To reduce the cost of maintenance, To achieve two-way charging, To achieve battery efficiency, To provide safety for consumers.

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WIRELESS CHARGING TO EV THROUGH RENEWABLE

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Abstract: *Currently, electric vehicles are utilized efficiently everywhere. As a result, charging stations are emerging to provide sites for recharging electric vehicles and to be used efficiently when travelling. As a part of charging vehicle, we are introducing a new technique of charging lane through renewables in highways to charge electric vehicle during travelling. One restriction that is used in our project is time management. In this technique, renewable resources are used in charging lane to provide power to transmitter coil. Solar energy is converted to electrical energy, which is then stored in battery. When the battery gets charged the stored DC power is given copper coils that are used for wireless energy transmission through transmitter and receiver coil. By this electric vehicle battery gets charged during travelling on road in our project. In this work we are considering solar panels for charging electric vehicles. This project shows that vehicle charging in highways during motion of vehicle in a slow lane or a green lane. With the use of transmitter and receiver coils, this result is shown in real time.*

Keywords: *Transmitter coil, renewable, wireless, receiver coil.*

Introduction

Two significant obstacles to a widespread use of electric vehicles are inconvenience of continually having to remember to plug in and an enormous, unwieldy cords. Due to energy efficiency and environmental protection are now top priorities, there are more electric vehicles (EVs) on a road every day. Increasing e-mobility is a crucial step toward reaching CO2-neutral balance. One of main reasons cause more EV models are being produced by different companies is due to government regulations that support the use of EVs.

A number of EV models being released by automakers is rising quickly over time. There is a clear indication that gas-powered cars will soon be phased out and replaced by mostly electric cars. In 2017, new electric vehicle sales in the world surpassed one million units for the first time. By 2025, it's anticipated that annual passenger EV sales will surpass 10 million. Energy systems will need to be ready to provide the extra power needed as electric charging networks expand to give electric vehicle drivers access to a vast and dependable infrastructure.

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Abstract:	Security is an important aspect of computing and networking technology. The first and most important aspect of any network design, planning, construction, and operation is the significance of a solid security strategy. Network security is becoming increasingly critical to personal computer users, businesses, and the military. With the introduction of the internet, security has become a big problem. Many security threats were made possible by the internet's structure. Because of the ease with which intellectual property can be obtained via the internet, network security is becoming increasingly important. When an attack is sent via a network, it can take several forms. Knowing the attack mechanisms enables adequate security to evolve. Many businesses protect themselves from the internet by using of Firewalls and encryption methods are examples of security measures. On global networking infrastructures, there is a vast number of personal, commercial, military, and government information, all of which necessitates different security procedures. In this research, we attempt to investigate numerous types of assaults as well as various types of security mechanisms that might be applied based on the network's needs and architecture.
Keywords:	Network Security, attacks, hackers, Cloud-environment security, zero-trust model (ZTM), Trend Micro internet security.
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Small rate DDoS Violence Documentation and Protection by SDN built on Machine Learning Technique

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Abstract- **Application defined networking architectural framework eases the life of the network administrators by isolating the data plane from the control plane. This facilitates easy configuration of the network, provides a programmable interface for developing applications related to management, security, logging etc. and the centralized logical controller gives more control over the entire network, which has the total visibility of the network. These advantages of SDN also expose the network to the vulnerabilities and therefore the impact of the attacks are much severe in comparison to standard networks, where the network devices in itself provided protection against different attacks and limits the scope of the safety threats. During this paper, we explore various attacks which will be launched on SDN controller at different layers and secure the SDN against threats. A Distributed Denial of Service (DDoS) Violence may be a DoS Violence utilizing multiple distributed Violence sources. Increase in randomness causes decrease in vulnerabilities of system. To extenuate this threat, this paper proposes to use different techniques for the central control of SDN for various Violence detection and introduces an answer that's effective and light-weight in terms of the resources that it uses. More precisely, this project shows how DDoS attacks can exhaust controller resources and provides an answer to detect such attacks supported the variation of the destination IP address. Gridlock characteristics through statistical flow table information and uses the support vector machines (SVM) method to identify the Violence gridlock. The experiment is conducted using KDD99 dataset.**

Keywords- **Application Defined Network (SDN), Distributed Denial of Service (DDoS), Machine Learning (ML), Support Vector Machines (SVM), security threats.**

I. INTRODUCTION

Security has been regarded as the dominant barrier of the development of Internet service. Denial of Service (DoS) attacks and Distributed Denial of Service (DDoS) attacks are the main methods to destroy availability of Internet service. DDoS attacks refer to the use of client/server technology to combine multiple computers as an Violence platform to launch a DoS Violence on one or more targets. Thus, the power of DoS attacks mainly used IDC is multiplied to forge source IP attacks. DDoS attacks are common in these years. These Violence incidents incurred heavy downtime, business losses, to name but a few. There are some noted Violence examples. In 2015, Lizard Squad attacked cloud-based game services of

Microsoft and Sony, leading to the decline of QoS on Christmas day. Cloud service provider, Rackspace, was targeted by a massive amount of DDoS Violence on its servers. Amazon EC2 cloud servers were attacked by a massive DDoS attack [1]. Thus, strengthening DDoS Violence detection and defense isan urgent task. The security of the campus network is paid much attention by the government [2]. Denial of Service (DoS) attacks and Distributed Denial of Service (DDoS) flooding attacks are the main methods to destroy availability of campus network. In traditional networks, hardware and application applications based on DDoS Violence detection and defense are expensive and difficult to deploy [3]. Application Defined Network (SDN) has attracted great interests as a new paradigm in the network. In SDN, the control planes and data planes are decoupled. Network intelligence and Network state are logically centralized. The underlying SDN infrastructure is abstracted from the specific applications. SDN can improve network manageability, scalability, controllability and dynamism [4]. Thus, SDN can dynamically modify forwarding rules to defend DDoS gridlock and improve network security. To mitigate the DDoS attacks and reduce the restrictions, gridlock classification needs to be performed to identify Violence gridlock. Machine learning technology based network gridlock classification

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BAYMAX: A PERSONAL HEALTHCARE COMPANION ROBOT

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Abstract : Nowadays most of the adults are left alone with minimal attention to their health. This has led to the use of robots to aid the elders. The gap between the numbers of care takers and the world population is in the rise has given a huge relevance to the care robots. Researchers all around the world striving to solve this problem to create these robots that can do similar tasks as the care takers. This paper presents the use of robotics and A.I in health care i.e., a robot that can be used to aid elderly people in their day-to-day activities and monitor their health by diagnosing their vitals. In case of emergencies the respective family members and the Doctors can be alerted with the vital conditions of the user.

IndexTerms - Sensors, Health Care, Soft Robots, medicine.

I.INTRODUCTION

Advances in the technology has provided a wide range of possibilities in the robotics. The biggest breakthrough for robotics has been the reliability of the A.I and Machine Learning. Robots can be programmed to do various things that humans can't do and can do. One such sector where the robotics can be a great help is in the Medical Sector. There are lot of robots that help the doctors while diagnosing the patients and during the treatment of the patients. These robots are called Surgical Robots. Unlike these, robots can also be used to monitor health conditions remotely in the home. These robots are known as care robots or companion robots.

These robots are developed to function as an interface for the elderly with digital technology, and help increase the quality of life of the elderly by providing companionship. This robot is like an extension of the hospital medical system where the vital body state is monitored remotely. The companion robot can be designed to analyse, N-number of parameters it detects. In certain instance, by detecting one parameter several readings can be calculated. These can be used to compare the health parameters of a average human and determine the health issue corresponding to the data analysed. The data analysed can be stored and can be used by the doctors to monitor the patient's health condition. This is done by uploading the data to the cloud data base. For a wide implementation of these robots a health monitoring system can be implemented in the hospital through which each patient's health condition can be monitored by using the unique ID numbers provided to the patients. The unique identity number enables the doctors to identity the patient's biography and their past health conditions. These robots can be used in hospitals to do primary health check-ups. The accuracy in the measurements of the data can predict the health situation before it goes out of hand.

Care robots can be helpful in keeping company of the patients. They have the capability to engage emotionally with the users keeping them active and alerting them in their medication and also if there is a problem in the health. These robots give elderly and children cognitive support, providing them encouragement and demonstrate patients how to perform certain activities. Our approach is to create a robot which can do all these. Reducing the efforts taken by the doctors to complete simple tasks like taking blood samples or checking the patients' vitals and instead make them put all the effort to complicated tasks which can't be achieved by robots. By doing this not only the time of the doctors will be saved but also the time of the patients. There are many evidences where robots have been developed to aid elders, which has been the base justification of the project to be successful. From working as a helper in the home to an assistant during surgery there are endless possibilities of the medical Robots.

Baymax is a humanoid soft robot that is designed to take care of people. It is capable to do all the activities that can be done by care takers. Soft robotics are robotic systems made using soft materials just like cushions or airbags on the outside, but have their core body just like other robots including motors, gears, actuators etc. Soft materials, with their properties, enable easy and safe interaction with human body. This also helps in the maintenance as it requires less time to repair due to its simple design with no complicated mechanism or complicated User interface. Baymax can also monitor food habits, lifestyles, lack of physical exercise.

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TRACEBILITY OF THE CROP FOOD SUPPLY CHAIN USING SMART CONTRACT

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Abstract
Today's farm food systems include a number of significant flaws, including a large number of attendees, an awkward correspondence brought about by lengthy production network cycles, information doubt among members and the incorporated framework, particularly for the essential rural food supply chains. The development of blockchain innovation actually tackles the trouble spot issue existent in the clearly arranged rural agricultural networks. In this paper, a system is proposed in light of consortium and smart contracts are designed to monitor and trace the agricultural food supply chains' operations, deploy tracking and shareability, and reduce the expertise divide among businesses as much as possible conceivable to dispense with the requirement for the focal establishments and organizations and work on the uprightness of the exchange records, unwavering quality and security.

Keywords: Smart Contract, Block Chain, IPF,

Introduction

The inventory network interfaces numerous substances, for example, suppliers, retailers, machines, retailers, and sources of services and customers, framing an interconnected network structure. This perplexing inventory network might go through handfuls or even many stages, prompting extensive time utilization it spanning all kinds of regions.Therefore,in this case,the partner proofreader planning the survey of the composition and endorsing it for distribution was assuming the item has security or quality issues, the recognizability cycle is very difficult. Particularly in agrarian chains of supply for food, the procedure assures product traceability, which further ensures the health and well-being of consumers, yet additionally, further develops client trust in the item and endeavor. As of late, pervasive food handling mishaps have made individuals dedicate more thoughtfulness regarding food handling and quality. However,the farming nutrition systems at the moment are characterized by a lengthy life cycle, numerous, intricate relationships, and dynamic data, and so forth, so it is difficult to follow issues in a specific connection. Rural food varieties are food varieties crops including ragi, grains, peanuts as wheat, and maize and whose importance can be seen and They act as the base for people's everyday meals. So it is vital to lay out and further develop the horticultural food inventory network discernibility framework "from ranch to fork" [1].

Statement of the Problem

The key obstacles with the current agrarian food supply chains are that the production network has a large number of participants, and their communication near to one another isn't effective leading to a lengthy pattern across they're all stock network. Then, because of the issues enormous number of members and circulation in various connections, the poor exchange of data, and information isn't trusted among members. The small-town food store network is now at last a cohesive system with control placed on the key supervisor and information successfully regulated. Even if the focal head is supervised by government divisions, there are reasonable provisos in human management [2]. Given this present circumstance, to really follow item data, guarantee item well being and quality, and subsequently for protection of buyers, the exploration on cutting edge detectability technology and its systems uses major studies to ensure the security and efficacy of farming produce. Todate, numerous scientists have contemplated and created inventory network discernibility frameworks in picture scanner tags, music meets QR tags recurrence identification gadgets (RFID), yet a large several among them machines continue with some issues. First off, most of tracking systems originate using just one enterprise,which is an inner recognizability framework by which data isn't

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handily shared. Second, most of detectability frameworks depend on brought together turn of events, and information is misty and unbalanced, with the gamble of altering by the executive and low validity. At long last, existing detectability frameworks have a weak link, and when a hub fizzles, the entire framework might fail. The above rise of block Circuit system effectively solves issue painpoint of the existing agrarian food production network recognizability frameworks.

Objectives of the study

- To identify the factors affecting online traceability systems of the crop food supply chain.
- To introduce the block chain framework concept in smart contract system
- To analyze the impact of numerous participants,lengthy production network cycles, information and the incorporated framework for the essential rural food supply chains.

Review of Literature

The root cause of the public's resilience is eating, not diet handling is firmly connected with individuals' well being: in this manner, individuals are dedicating expanding consideration regarding sanitation. As of late, specialists had increased inspired by food recognizability. The first innovation applied to sanitation recognizability is innovation affiliated to the World Wide Web (WWW) the system (IoT) [3], like standardised identification QR codes, and Transponder innovation. A methodology for food recognizability for the milk industry network was presented by In view of QRcodes, which increase clarity from supply to sales and build an eating framework, Li et al. detectability stage. Be that as it may, QR standardised identification short QR codes, for RFID innovation, for instance, are examples of Net of Devices (or IoT) innovation [4][6]. Li et al. [5] established a paradigm for food recognition since milk products manufacturing.

In the clinical field, S. Wang et al. [3] fostered a "immunization blockchain" framework considering vaccination end and other challenges can be resolved via the use of blockchain and machine learning. immunization record extortion by utilizing the detectability and brilliant agreement. In light of blockchain, Tripathi et al.'s [8] amazing treatment foundation structure give a solid and security safe guarding medical care framework. In the field of safeguarding security, B. Jiang et al. proposed a clever prototype for understanding flow in and out of tubes fostered a model framework to confirm the plausibility Its design, hence tackling the issues of data overt repetitiveness and insufficient extra room in blockchain[9]. Nonetheless, this structure is simply material to faculty data the executives framework as well as is yet to be relevant to it more fields.

The Author[7]proposed a detectability framework for horticultural item supply chains considering Cyclone i, a type of blockchain hyperledgernnovation, which carries out the EU's "ranch to-fork" model. Purchasers can learn point by point item data including with via QR codes cleaning, the item's inspection, and security. However,theSawtoothtechnologyisnotmatureenoughandlacks materials and programmes. It context with Yang and Huang [10] created an ankle ring for fighting via the issue of managing poultry food using ethereum and RFID technologies. When problems arise, this foot ring makes simpler clients to follow data and find specific areas in the manner of making fowl. and is useful for suitable identification of ailments in the birds rearing cycle.

Proposed Methodology

This study suggests a mechanism for monitoring and following workflows in remote Contextualising alimentary networks via creativity agreements and consortium chains. Ensure that transportation networks are transparent and shareable, and disrupt the data islands between businesses as often as you can get rid of the requirement for focal groups and delegates and enhance the exchange record's integrity, consistency, and stability. Farmers record environmental data as well as specifics on crop development data during the Intranet Planetary File System.

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SPEECH EMOTION FEELINGS RECOGNITION BIOMETRIC USING MACHINE LEARNING

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Abstract
The purpose of the article is to identify the feelings that the speaker arouses while speaking. These days, emotion detection is a crucial responsibility. Speaking from a place of fear, wrath, or joy has a greater and wider range of pitch than speaking from a place of sadness. Speech recognition is useful for facilitating human-machine interactions. Support Vector Machine, Multi-layer Perception, and the audio features MFCC, MEL, chroma, and Tonnetz were used in this case to classify the emotions. The emotions (calm, neutral position unexpectedly happy, sad, angry, afraid, and contempt) have been trained into these models. We measured accuracy at 86.5%, and when we tested it using input audio, the results were the same. It enhances computer and human communication. Due on a subjectivity of emotions, it can be challenging to annotate audio and difficult to predict a person's feeling. However, "Speech Emotion Recognition (SER)" makes these tasks possible. The Artificial Neural Networks (ANN) model for the suggested system attained 100% training accuracy and 99% validation accuracy.

Keywords: Tonnetz, MFCC, SER and ANN

Introduction

Computational models with numerous processing layers can learn representations of data at various levels of abstraction thanks to deep learning. The state-of-the-art in many other fields, including drug discovery and genomics, object identification, visual object recognition, and Major advances have been made to recognising speech by these techniques. To be capable of determine how a machine should modify its inner specifications, which are required to derive the representation in each layer from the representation in the preceding layer, deep learning uses the backpropagation technique. Recurrent nets have shed light on sequential data types like text and speech, whereas deep convolutional nets have made advancements in the processing of pictures, video, speech, and audio.

The majority of modern civilization is powered by machine learning, including social network content filtering, e-commerce website suggestions, and a growing number of consumer goods like cameras and smartphones. Machine-learning algorithms are used to choose relevant search results, recognise objects in photos, convert speech to text, match news articles, posts, or products with users' interests, and more.

These applications are increasingly using a group of methods known as deep learning. The ability of traditional machine-learning approaches to analyse natural data in its raw form was limited. For decades, designing a feature extractor that converted the raw data (such as the pixel values of an image) was crucial to building a pattern-recognition or machine-learning system. This required meticulous engineering and extensive domain knowledge.

Building a machine-learning or pattern-recognition system for many years required careful engineering and extensive domain expertise to design a feature extractor that transformed the raw data (such as the pixel values of an image) into a suitable internal representation or feature vector from which the learning subsystem, often a classifier, could detect or classify patterns in the input. A computer can be fed with unstructured data and automatically find the representations needed for detection or classification using a group of methods collectively referred to as "representation learning".

The methods of deep learning are symbol-learning techniques that use many layers of symbol. They are created by combining straightforward but non-linear modules that each convert the representation at one level (beginning with the raw input) into a representation at a higher, marginally more abstract level. Very complicated operations can be learned if enough of these transformations are combined.

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Review of Literature

The primary form of communication for the world's deaf and dumb population is sign language. [1]Communication between a verbally challenged person and a normal person has, however, never been easy. A breakthrough in communication for deaf-mute people is sign language recognition. The commercialization of a cost-effective and precise an honour programme current global problem for researchers. To be able to generate text and speech from the input gesture, this research aims to create a user-friendly and precise mechanism for brain identification of gestures networks.

Anil Kumar [2], Jasmeet, and Kaur researchers are currently shown interest in the subject of voice emotion recognition, Utilising machine learning algorithms such a k-nearest neighbour, multi-layer perceptron, convolutional neural network, and random forest, there study offers many techniques for extracting emotions from audio inputs. From the Berlin's emotional speech database, short-term Fourier transform spectrograms and Cepstral values for band are retrieved. Spectrograms were fed into CNN as input. While MLP, random forest, and k-NN each received MFCC features[3]. Each classifier produced acceptable results when categorising the seven different emotions (happiness, sadness, anger, hostility, neutrality, disgust, boredom, and fear), but the MLP classifier stood out with an overall accuracy of 90.36%. Also offered is a comparison of how well certain categorization methods perform.

The article by Gamage et al. suggested using a Gaussian inquiry to distinguish conversational feeling level based on I-vectors, illustrating the efficacy of MFCC dispersion. A evaluation based on the IEMOCAP corpus reveals that the GPLDA's foundation is stronger than the SVM's foundation and less sensitive to the I -vector, making the normal level more potent for changing rules during framework improvement[4][6].

Han et al. suggested that we focus on the ability to continuously recognise emotions from speech, and we are supporting an organisation that recursively produces memory as well as an instructive error-based approach to learning. The main model is then used as a computer code to retrieve the first value using two continuous RNN (Recurrent Neural Networks) techniques[5].

SVM is used in the current system to identify the speaker's emotion. Led techniques for machine learning called SVM, or support vector machines, have been applied to both classification and regression issues[7]. SVM does not function good in the current system model when classes in the data are areas that need improvement separated, which means that overlapping classes are present.In the current system paradigm, selecting the best kernel for SVM is a challenging process[9][10].

PROPOSED METHODOLOGY:

In this study, we suggest using a Gaussian Assessment with Bayesian Quadratic Discriminants (GPLDA) back-end to classify emotions at the utterance level using i-vectors that capture the distribution of MFCC features at the frame level. The GPLDA back-end outperforms an SVM-based back-end while being less susceptible to i-vector dimensionality, according to experimental results based on the IEMOCAP corpus. This makes the proposed framework more robust to parameter tuning throughout system development.

We offer a reconstruction-error-base (RE-based)[4] learning framework with memory-enhanced Utilising recurrent neural networks, or RNN, to enhance continuous emotion recognition from speech. The framework adopts two successive RNN models, the first of which serves as an autoencoder to rebuild the original characteristics and the second of which is utilised to forecast emotions. As a complementary description, the RE of the original characteristics is combined with the original features and provided to the second model.

This paradigm makes the premise that the system can recognise its "drawback," which is represented by the RE. The proposed framework greatly outperforms the baseline systems without any RE information, according to experimental results on the RECOLA database, in terms of The Harmony correlate greatly outperforms other cutting-edge techniques (.729 vs..710 for arousal,.360 vs. 237 for valence).

Enabling effective and natural human-computer interaction is the aim of computing. Making it feasible for computers to understand the states of feeling that individuals display so that customised solutions can be offered is among the most important goals. Practical applications are hindered because the majority of studies in the written word focus solely on identifying emotions from brief,

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Disruptive Technologies for Big Data and Cloud Applications pp 621–631

SMART CARAFE: An IoT-Based Real Time System

K. Suthendran ✉ & T. Subburaj

Conference paper | First Online: 02 August 2022

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Part of the Lecture Notes in Electrical Engineering book series (LNEE,volume 905)

Abstract

Many decades ago, to prepare hot water, people deployed firewood stove which caused air pollution and end up with respiratory diseases. To get the better of in a struggle, people accommodated the gas stove for heating. As there is a need to have cooling system, fridge has arrived. Kettle becomes popular for instant water heating. Later, water dispenser comes in to play by having both hot and cool water in a single product but it is heavy in weight, high in cost and cannot be affordable for all. So, having both systems in a single water bottle will make everyone's life better in hydration of our body. Therefore, we have designed a one litre water bottle which supports both hot and cool water system.

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Proceedings of Fourth International Conference on Computer and Communication Technologies pp 145–156

Discover Crypto-Jacker from Blockchain Using AFS Method

T. Subburaj, K. Shilpa ✉, Saba Sultana, K. Suthendran, M. Karuppasamy, S. Arun Kumar & A. Jyothi Babu

Conference paper | First Online: 30 March 2023

70 Accesses

Part of the Lecture Notes in Networks and Systems book series (LNNS,volume 606)

Abstract

The blockchain technology is used throughout the world for digital ledgers of transactions. To maintain all participant transactions on a blockchain, distributed ledger technology (DLT) is used. Blockchain technology has become a popular method of transferring huge amounts due to the pandemic situation. A hacker was able to exploit some part of a chain, smart contract, exchange, or stealing cryptocurrency, that is, a hack or a theft. Such attacks are referred to as crypto-Jack attacks. The Wormhole cryptocurrency platform was hacked in Feb 2022, resulting in a loss of $326 Millions. Many

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AN IOT APPLICATION FOR MILLTARY CAMP SECURITY

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ABSTRACT

In this security system where we will take the help of micro controllers and some other sensors using which we can give high level or extra security system to the army camp where they are camping. We will install the sensor based intruder system in the surrounding of the military camp and we will deploy a camera based payload if we feel any anomaly around the army camp. We develop the radar system using ultrasonic sensor which will alert the army camp when they are resting or cannot reach or cover the area. This sensor detect the enemy or other wild animal entering into the army camp area and surrounding and it will alert the soldiers to take an action quickly to secure the camp.This project also has a motion detection sensor which will sense the motion around it and alert the solider to take a quick action using PIR sensors.After sensing the anomaly around the camp solider cannot go outside directly because they will be the easy target to the enemy. so we created a remote control payload which will be sent in the direction of security breach in this way damage can be reduced easily on the army camp.

Key words:- Ultrasonic sensor, PIR sensor, payload.

I. INTRODUCTION

This is a full security system for both static and mobile military bases, Solider use to take shifts each time for guarding the military base so some Soldiers will not get proper sleep,rest and they will be the prime target for the enemy attack it may decrease the efficiency in their daily tasks or mission after that, so we introduced this system so that military base will be safe and sounded with the external or terrorist attacks. So we use this security system in three level so that the military base will be in extra protection and surveillances so let's discuss what are level and efficiency of this security system. We often see in the news and other resources that our army is continuously taking the hit by enemy when it's night time or resting time or in simple terms in unprepared or unpredictable situation which is sad and disturbing.

This problem can be solved to some extent using IOT applications so we developed a project to make our army base more secure and alert even in unpredictable time.

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Statistical Evaluation of Network Packets in an Intrusion Detection Mechanism Using ML and DL Techniques

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Descriptive Analytics Solution for Attack Detection by Utilizing DL Strategies

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Abstract— An intrusion detection system that employs a variety of system tasks and log files that are being generated on the host machine to detect HIDS refers to high-intensity distributed denial-of-service attacks. To enhance the capacity of intrusion detection systems, Big Data with Deep Learning Methods are combined. Deep Neural Network (DNN) and highly proficient approaches, Random Forest as well as Gradient Boosting Tree, are utilized to categories internet traffic datasets. Deep learning algorithms are widely used to develop an intrusion detection system (IDS) task of automatically recognizing and characterizing attacks at the host addressing performance in real time. Researchers utilize a homogeneity measure to analyze characteristics to identify its most productivity and organizational from dataset. As according to extensive experimental research, DNNs outperform classical machine learning classifiers in terms of performance. The findings shows that DNN has a good precision for different classifiers detection on datasets with accuracy rate for multi-class categorization. Employing Apache Flink to simplify the process and handling the streaming capabilities.

Keywords— Deep Neural Network (DNN), intrusion detection system, Apache Flink, Denial-of-service attacks

I. INTRODUCTION

Among the most difficult challenges is ensuring the safety and confidentiality of massive data. System security model is developed several significant obstacles. Technologies, particularly with widespread adoption of the Internet connections, as well as the fast increase in the amount of information generated a variety of sources. Additional space was created because of the growth and development. Attackers might leverage technology to execute their harmful assaults using Intrusion tactics and tools. Experts, on the other side, and intrusion prevention systems experts are working to improve the detecting of intrusions detection effectiveness of harmful attacks and early warning prediction assault. Among the most vital infrastructure in cyber security is intrusion detection. Intrusion seeks to breach the privacy, authenticity, or accessibility of system or computer security mechanisms or to circumvent these. Intrusion detection systems (IDS) [1-3] include physical devices or application that analyse information flowing via systems and servers to identify system vulnerabilities that jeopardise the privacy, security, or accessibility of a platform's resources. Intrusion detection systems monitor activities and identify assaults using two main methods: abuse identification and outlier detection.

Vulnerability assessment is about searching and detecting of sequences of assaults that are like or comparable to prior knowledge detecting attacks that are kept in a computer attack detection. The method to anomalies recognition is known as supervised learning, ANN, and deep neural networks, which have lately been extensively employed in the creation of intrusion detection system. Training techniques for gathering and retrieving information as well as information testing. Big data has increasingly been employed in vulnerability scanning. Big data is information that is difficult to transport, handle, or analyse [4-5]. Conventional manipulation techniques are used. Big's traits such as volume, diversity, and movement are examples of data. A significant problem for IDS/IPS, volume represents the amount of data created when information is produced from multiple sources. Numerous sources have expanded substantially in recent years. This necessitates network traffic assessment and analysis in order to combine with big data management. As a result, intrusion detection algorithms must sift this rising plethora of information for potentially invasive patterns from such a security standpoint. This habitat and its circumstances make it easier to determine breaches quickly and effectively. As a result, to detect such invasions, it is important to create an intrusion detection system that can manage big amounts of information utilising big data approaches. The nature of data in identifying unauthorized access to system of communication. As a result, this article utilizes deep learning strategy that is knowledgeable of massive quantities of data to construct an Intrusion Detection System [6-7] that is both productive and convenient to deal with all these issues.

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Utilization of high and low calcium oxide fly ashes as the alternative fillers for natural rubber composites: A waste to wealth approach

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ARTICLE INFO

Keywords:
Natural rubber
Composites
Fly ash
Calcium oxide
Alternative filler

ABSTRACT

Recently, fillers from renewable resources or agricultural wastes have been considered as the alternative fillers to reduce the environmental problems. Therefore, utilization of the fly ashes (FA) collected from the electric power plants as the reinforcing filler in natural rubber (NR) composites was carried out and compared these high (HCaO) and low (LCaO) calcium oxides with carbon black (CB). The FA concentration was varied up to an optimum loading of 1000 parts per hundred rubber (phr) by using melt mixing technique. Particle size and chemical composition of HCaO and LCaO were reported and the properties of NR composites in terms of cure characteristics, Payne effect, mechanical and dynamical properties together with morphologies were examined. It was found that the addition of HCaO significantly reduced the vulcanization time of the NR composites, while the one with LCaO provided higher degree of reinforcement efficiency to the NR matrix. It clearly supports the relation of storage modulus as a function of strain sweep and their morphologies, which are the major requirements in case of composites. Upon increasing of FA loading, NR has changed its role from rubber matrix to an adhesive binder and therefore the Young's modulus was found to be strongly changed. FA can be used to replace CB in NR composites with the composition ratios starting from 1:2-1:6 phr. Although, CB exhibited a slightly better reinforcing effect than FA, based on the lowered glass transition temperature (T_g), Tan delta (Tan δ) exhibited the same elasticity and CB can be replaced in case of several CB-based composites, particularly, the artificial wood, car stopper and tire industries to produce rubber belt and bead.

1. Introduction

Natural rubber (NR) based composites have been thoroughly studied in recent years to find verities of applications for NR as it is originated from natural resources. Properties of NR composites are generally improved to reach several applications (i.e., tires, sports articles, sealing materials, rubber boots) by the addition of inorganic and organic fillers, particularly silica (SiO_2), clay (CA) and carbon black (CB) (Krainoi et al., 2021). Such fillers effectively play the role on its process ability, product properties and production cost based on the reinforcement efficiency, strength and lifetime, particularly, SiO_2 and CB with several producing grades for various NR applications. Both the fillers have proper filler network structures that causes well NR molecular chain absorption and provides high reinforcement efficiency to the composites. However, these fillers are originated from natural resources, replacing them by the incorporation of particulate waste filler has been continuously searched in NR industries to reduce the environmental pollution.

Thus, the spherically shaped fillers from some of the industrial and agricultural wastes were used in the NR composites as the reinforcing filler, especially the rice husk ash (RHA), in case of epoxidized NR (ENR)

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Flexible canvas produced from uncured-natural rubber composites filled with high calcium oxide fly ash/cement hybrid filler

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ARTICLE INFO

Keywords:
Fly ash
Cement
Concrete canvas
Hybrid filler
Natural rubber

ABSTRACT

Concrete canvas (CC) is an attractive composite based on a combination of textile and cement, applying for the slope protection and ditch lining. However, there is no binder between both the materials and its high thickness causes a strong detachment of cement particles, and the complex designing of CC shapes is limited. Therefore, the possibility of incorporating natural rubber (NR) as a binder for extending the applications of cement-based composites has been considered. In the present work, NR composites with fly ash (FA) and cement (CM) are prepared through an internal mixer and a two-roll mill with a total filler concentration of 1000 phr. It can be found that, FA/CM hybrid filler is successfully adhered together through the NR matrix, and it promotes the flexible canvas composites with controlled thickness and provides complex shapes. The existing calcium oxide (CaO) present in the filler reacts with water molecules, and the NR composites become hardened and restrict the deformation and decomposition. The optimum ratio of FA/CM hybrid filler has been fixed at 300/700 phr, which has recognized as the product-like concrete canvas. Tensile properties, dynamic properties and thermal stability are improved upon the incorporation of hybrid fillers and its flexibility is found to be sustained on soaking with water. The structural changes are confirmed from the infrared spectrum which clearly explains the transformation of CaO to the C—S—H network structure in the NR composites. Un-crosslinked composites exhibited similar mechanical properties compared to the chemically crosslinked NR with sulfur curing system. Thus the composites can be used as the flexible canvas, although it has not been vulcanized. To clarify this statement, tensile properties, abrasion resistance and bending propagation of NR composites, NR vulcanizates and commercial concrete canvas are compared. The composites exhibited comparable properties with superior flexibility performance. Along with the waste utilization, the uses of FA, provides an opportunity of using FA/CM as the flexible canvas.

1. Introduction

Natural rubber (NR) is the well-known basic component for producing several flexible materials, such as surgical, examination gloves and condoms. However, it generally requires the addition of fillers as the reinforcement in order to improve the properties of the product [1,2]. Carbon black (CB) and silica (SiO_2) are the most commonly used reinforcing fillers to improve the mechanical properties in terms of strength, hardness, stiffness and abrasion of NR for the production of rubber bands, tires and belt products [3]. However, high energy is essential to develop NR composites with such common fillers. This method of preparation is not environmental friendly as it emits CO_2 to the atmosphere, that leads to global warming [4,5]. Therefore, the alternative fillers are needed to replace the common fillers and the alternative ones should be derived from the renewable resources or agricultural waste. For example, the use of wheat bran as a plasticizer in NR matrix for producing low-cost reinforcing filler in the field of rubber composites has been reported [6]. Also, the brewers' spent grain (BSG) was applied for mixing with ground tire rubber composites and the reinforcement efficiency of the filler to rubber matrix was elucidated [7]. It was found that the addition of natural-based filler effectively improves of the mechanical and dynamical properties of NR composites as a result of the absorption of NR molecular chains onto the filler surfaces. In case of the matrix, several biopolymer matrices, such as polysaccharide, nano-

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The dielectric and impedance spectroscopy of poly vinyl alcohol doped with carbon (PVA-C)

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ARTICLE INFO

Keywords:
PVA-C composite
Fourier transform infrared radiation
Attenuated total reflection
Dielectrics
Electric modulus
Relaxation time

ABSTRACT

The poly vinyl alcohol (PVA) thin-film composites with a uniform dispersion of carbon nanoparticles were prepared by the solution casting technique. Spectroscopic techniques were used to evaluate the distribution of carbon in the composite film. The surface morphology studies were done using Scanning Electron Microscope. The variation in crystalline property, the formation of groups and variation in direct band gap in PVA and PVA-C composite were studied by X-Ray Diffraction method, Fourier Transform Infrared Radiation - Attenuated Total Reflection and by Ultraviolet-Visible Spectroscopic study. The IV characteristics study shows the non-Ohmic behaviour and the variation in conductivity. The impedance, dielectric properties and electric modulus were evaluated. The impedance value for PVA is 700Ω, and for 0.4%C + PVA is 4.6 MΩ. The tangent loss of PVA is found to be decreased by 67% ± 2 for 0.4%C + PVA. The PVA-C is flexible, and lightweight with enhanced dielectric performance and finds its application in microwave electronics.

1. Introduction

The production of insulators and dielectric materials has made extensive use of polymers that exhibit low electrical conductivity [1]. PVA is a polymer that dissolves in water and biodegrades. It is a semi-crystalline polymer, and the age and process of its synthesis affect its crystalline index [2]. The typical dipole relaxation characteristic property determines the dipole strength and relaxation process at a specific frequency for PVA and all of its composites [3]. Portable and wearable devices often require rechargeable and flexible energy storage devices with effective performance. PVA makes the material stretchable and flexible. Flexible films with high capacitance and electrochemical performance are formed by the combination of PVA, Polyaniline and carbon nanotubes [4]. The wide range of applications for polymer electrolytes, comprising fuel cells, electrochromic devices, sensors, supercapacitors, energy storage and conversion components, has drawn the attention of researchers. Among these, batteries are contributing more significantly to meeting human and industrial demand on a global scale [5,6]. PVA film prepared by solution casting method with Poly (vinylidene fluoride) and Lithium triflate ($LiCF_3SO_3$) with the inclusion of salt makes the polymer matrix more ionic conductive [7]. In accordance with the direct current and induced polarization approach, the intended ionic transfer counts proposes that the conducting carriers are primarily ions. Ionic conductivity of PVA is produced via doping as a result of variations in lattice energy and anionic size [8]. PVA films implanted with cadmium sulphide (CdS) nanoparticles, magnesium-oxide (MgO) and Zincoxide (ZnO) displays the variation of optical parameters [9,10]. The optical energy bandgap value of PVA/carboxymethyl cellulose is reduced and the enhancement in real part and imaginary part of dielectric constant occurs due to inclution of Cd5/Mg particles, prepared with thermolysis and casting methods [11]. The discrepancy in particle size of dopents and the quality of defects in PVA films results in the variation of energy gap [12,13]. The hydrogen bond interaction with the dopants in PVA composite film results in increase of dielectric constant [14]. The PVA-Poly (ethylene oxide) mix matrix with intercalated and dispersible montmorillonite clay structures exhibit a linear relation with the segmental dynamics of the nano-composite polymer chain and the real part of dielectric constant [15]. With the applied frequency the decay in polarization occurs the electric dipoles formation stops in PVA based nano composite [3,16].

A promising approach for flexible materials is to build dielectric polymer composites by blending carbon nanostructures with polymers. The nano-composites keep the benefits of polymers and obtains the maximum permittivity due to the low percolation threshold. The

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ORIGINAL ARTICLE

Synergistic effects of 2, 4 dihydroxybenzaldehyde and carbon black nanoparticles on the properties of natural rubber

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Abstract
The aim of this study was to develop a nanocomposite by incorporating carbon black nanoparticles into vulcanized natural rubber in view of improving its physical properties. The vulcanization of natural rubber was achieved through the addition of 2, 4 dihydroxybenzaldehyde to natural rubber latex. The composite materials were developed by adopting the latex blending method, and the amount of carbon black nanoparticles was varied in steps of 0.2% up to 1.4%. Fourier transform infrared spectroscopic analysis confirmed the cross-linking of the rubber phase. Natural rubber, cured with 80 ml of 1% (w/w) 2, 4 dihydroxybenzaldehyde, was selected for the preparation of composites as it displayed superior tensile properties. Scanning electron microscopy was employed to analyze the uniformity of nanoparticle dispersion. The thermal stability of natural rubber was continuously enhanced with the incorporation of carbon nanoparticles until a combination of 1.2% carbon black and natural rubber. The same trend was also observed for the tensile properties of these composites. The composite of cured natural rubber with 1.2% carbon black exhibited an increase of 1131% in tensile strength compared to pure rubber. At the loading level of 1.4% carbon black, particulate agglomeration occurred, leading to a weakening of the material.

Keywords Natural rubber · Vulcanization · 2, 4 Dihydroxybenzaldehyde · Activation energy · Carbon black · Nanocomposites

1 Introduction

Composite material is a combination of two or more materials with different physical and chemical properties. Composites can be fabricated by tailoring the properties of matrix and reinforcements [1]. Polymer composites, particularly those based on rubber, are highly manageable and easy to handle. These materials possess several beneficial properties such as being lightweight, having increased strength, and better resistance to corrosion. Due to these qualities, they are excellent choices for the manufacturing of accessories for automobiles, boats, and airplanes. Elastomers are a type of polymer with a viscoelastic nature, possessing higher elasticity than any other solid materials. They are characterized by their high molar mass and very long chain molecules. The coiled structure of rubber molecules provides the elasticity, but unmodified elastomers have weak intermolecular forces holding the molecular chains together, resulting in poor physical and thermal properties. To enhance its properties, elastomers are often improved by adding fillers, thermoplastics, and cross-linking agents into rubber. Due to their unique features, elastomers are widely preferred for industrial applications. A filler or the cross-linking system can help to increase the stability of elastomers [2]. Natural rubber (NR) is an elastomer composed of cis-1,4 polyisoprene monomeric units. It displays stain-induced crystallization when stretched, and possesses superior electrical insulation and excellent elastic properties. However, NR suffers from poor weather resistance, thermal stability, and solvent resistance which are significant disadvantages [3]. Elastomeric nanocomposites are highly sought after in the manufacturing of engineering materials due to their outstanding functionality. These materials

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RESEARCH ARTICLE

Developing effective gamma and X-ray shielding materials: Thermoplastic natural rubber composites with antimony oxide

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Abstract

Thermoplastic natural rubber (TPNR) based on polybutylene adipate terephthalate (PBAT)/natural rubber (NR) has been prepared to develop flexible radiation shielding materials by adding antimony oxide (Sb_2O_3). TPNR composites were prepared with a composition of NR 40% and PBAT 60%, at various loading levels of antimony oxide. The properties of the resulting composites, such as tensile strength, elongation at break, hardness, and specific gravity of TPNR composites, were investigated. Gamma-ray shielding properties were measured under the exposure of gamma rays in the energy range of 0.223–0.662 MeV by Compton scattering technique. X-ray shielding properties were measured with a high-frequency digital radiography X-ray machine at 70–120 kVp and 40 mAs. The results show that the gamma-ray shielding properties, such as the values of mass attenuation coefficient (μ_m), effective atomic number (Z_{eff}), and effective electron density (N_{eff}) of materials, increased with increasing amounts of Sb_2O_3. Similar results were observed for X-ray shielding properties. The half-value layer (HVL) values of all samples decreased with increasing Sb_2O_3 content. The obtained results confirm that TPNR/Sb_2O_3 can be effectively used as an alternative flexible radiation shielding material.

KEYWORDS
flexible shielding materials, radiation shielding and antimony oxide, thermoplastic natural rubber

1 | INTRODUCTION

Flexible radiation shielding materials need to be developed to protect from radiation, such as gamma rays and X-rays. They have various applications in the fields such as manufacturing, agriculture, medicine, hospitals, and laboratories. Different types of radiation and doses have their own benefits, but exposure to radiation can pose hazards to living organisms and the environment. Therefore, safety measures should be taken to prevent radiation exposure. Three factors should be considered: time, distance, and shielding.[1] Shielding materials have been developed using lead, which has been the most preferred choice due to its low cost and suitability for attenuating radiation as it has high atomic number ($Z = 82$). However, lead has several drawbacks, such as being heavy, fragile, toxic, and harmful to the environment.[2]

Therefore, researchers are searching for alternatives to lead-free shielding materials.[3] Lead-free glass shielding materials generally

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Research article

Use of modified deep eutectic solvent as an additional chemical in a flexible conductive natural rubber sensor for motion analysis

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Abstract. The strain sensors based on conductive natural rubber (NR) composite, filled with carbon nanotubes (CNT) and conductive carbon black (CCB), are developed due to their superior elasticity and sensitivity. To encourage electron tunneling, ionic pathway for electron moving was achieved by modified deep eutectic solvent (mDES) synthesized in-house. It was found that the incorporation of mDES impacts the curing, mechanical and electrical properties of the composites due to the interconnected CNT/CCB-mDES networks. It is demonstrated that the electrical signal sensation of conductive NR composite was improved by adding mDES, and the inconsistent sensor behavior under cyclic and quasi-static loadings was eliminated. The mDES not only improves the movement of electrons, but it also promotes the crosslinking of NR molecules without adding ZnO. In addition, for analyzing the object motion, the piezoresistive rubber sensors were tested on a soft printing structure through the cyclic motion analysis of a soft tendon-based actuator. The obtained electrical signals showed the smooth signal with noise and un-prediction electrical peaks after the combination of the mDES into the conductive NR composites. This clarifies the flexible movement of the CNT/CCB structure into the NR matrix following the specific designed objects' motion. The present work indicates the different core novel technologies based on the use of mDES in the conductive composites matching with the acceptable electrical signal for applying as the promising motion sensor materials for soft structures.

Keywords: *rubber, polymer composites, material testing, mechanical properties*

1. Introduction

Resistive sensors typically convert mechanical, thermal, or chemical stimuli into an electrical signal and are generally fabricated from various materials, selective from metallic to semiconductors and inorganics to organics [1]. In recent years, the demand for flexible and stretchable strain sensors based on polymer matrix has received enormous attention in wearable electronics, soft robotics, and stretchable devices due to the potential of expressing flexibility, processability,

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Research article

Enhanced photocatalysis of natural rubber foams filters boosted by modified-titanium oxide hybrid fillers: Gaseous benzene removal, antibacterial properties and air permeability

Pornsiri Toh-ae[1], *Prachid Saramolee*[2], *Siriluk Chiarakorn*[3], *Dujduan Waraho-Zhmayev*[4], *Attapol Kamthong*[4], *Raymond Lee Nip*[5], *Ekwipoo Kalkornsurapranee*[6], *Jobish Johns*[7], *Patcharapit Promoppatum*[8], *Yeampon Nakaramontri*[1*]

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Abstract. Natural rubber (NR) composite foam was developed through the Dunlop process with better volatile solvent absorption and antibacterial activity. The unmodified and modified titanium dioxide (TiO_2), namely TiO_2-zinc oxide (TiO_2-ZnO) and TiO_2-silver doped zirconium (TiO_2-Ag-Zr), were incorporated into the foams. The photocatalytic origination under UV and visible light leads the composite foam with TiO_2-ZnO to exhibit effective and suitable benzene absorbing and removing abilities. Thus, the specific foam sizes provided the gaseous benzene absorption of 14.0 ppm within 3 h and the gaseous benzene elimination of 7.6 ppm within 14 h in case of the composite with 10 phr TiO_2-ZnO. Also, the foams with NR/TiO_2-ZnO and NR/TiO_2-Ag-Zr exhibited excellent antibacterial activity for *E. coli* due to the release of Zn^+ and ROS species across the rubber foam filter layers to the bacteria surfaces. The resulting composite foam showed superior elastic properties in terms of tensile strength, toughness, and elongation at break. To study the applicability as filter, the engineering simulation relating the air flowability throughout the foam was examined. From the flow velocity and the air permeability of the foam at a specified thickness, it was observed that the NR/TiO_2-ZnO exhibited proper porous sizes and shapes for filtrating, reacting, absorbing and removing the gaseous benzene relative to other porous filters.

Keywords: *nanocomposites, rubber, modified titanium dioxide, mechanical properties, photocatalytic properties*

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Effect of Compatibilizer on the Properties of Areca-Fiber Reinforced Polypropylene Composites

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ABSTRACT

Areca fiber reinforced polypropylene (PP) composites were prepared at 20%, 30%, 40%, and 50% loading levels in the presence of compatibilizing agent, MAPP (maleic anhydride grafted polypropylene). The influence of compatibilizing agent and filler concentration on the mechanical properties of the resulting composites was studied. At 50% areca fiber loading, tensile, flexural strength, and modulus of the coupled samples were found to be superior when compared to the uncoupled samples. Coupled composites exhibited effective coupling/interfacial adhesion between the surface of areca fiber and polypropylene phase as evidenced by SEM microphotographs and FTIR spectroscopy. Increase in fiber percentage led to an increase in brittleness and stiffness of composites. A considerable increase in strength was noticed upon the addition of compatibilizing agent, due to proper incorporation of areca fiber into the polypropylene matrix and the efficient transfer of load from matrix to the fiber. Higher moisture absorption in case of composites with higher fiber content was found. Addition of MAPP reduces the percentage of water absorption as a result of encapsulation of areca fiber. Areca fiber can be effectively utilized to develop artificial wood with better properties to replace natural wood as a waste-to-wealth approach.

摘要

在相容剂MAPP（马来酸酐接枝聚丙烯）的存在下，以20%、30%、40%和50%的负载水平制备了槟榔纤维增强聚丙烯（PP）复合材料。研究了相容剂和填料浓度对复合材料力学性能的影响。在50%的槟榔纤维负载下，发现与未耦合样品相比，耦合样品的拉伸、弯曲强度和模量更好。SEM显微照片和FTIR光谱表明，偶联复合材料在槟榔纤维表面和聚丙烯相之间表现出有效的偶联/界面粘附。纤维百分比的增加导致复合材料的脆性和刚度增加。添加增容剂后，由于将槟榔纤维适当加入聚丙烯基体中，并有效地将载荷从基体转移到纤维上，强度显著提高。发现纤维含量较高的复合材料具有较高的吸湿性。由于槟榔纤维的包封，添加MAPP降低了吸水率。槟榔纤维可以有效地用于开发具有更好性能的人造木材，以取代天然木材，作为一种浪费财富的方法。

KEYWORDS

Areca fiber; polypropylene; MAPP; coupling agent; composites; mechanical properties

关键词

槟榔纤维；聚丙烯；偶联剂；复合材料；机械性能

Introduction

It is important to develop eco-friendly, biodegradable, and sustainable materials which support to limit global warming as a major threat to the environment. Incorporation of natural fibers into a continuous polymer phase is an attractive method to design materials with better physical properties (Nayak and Ranjan Mohanty 2019b). Natural fibers are gaining significant interest from researchers to utilize as a reinforcing material for commercial thermoplastics (Karmarkar et al. 2007). Recently, scientists in the field of materials science give more attention to natural fibers like cotton, coir, areca,

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ORIGINAL PAPER

Enhancing Thermo-mechanical Properties of Thermoplastic Starch/ Natural Rubber Blends Through the Synergistic Combination of PEG and Modified Natural Rubber

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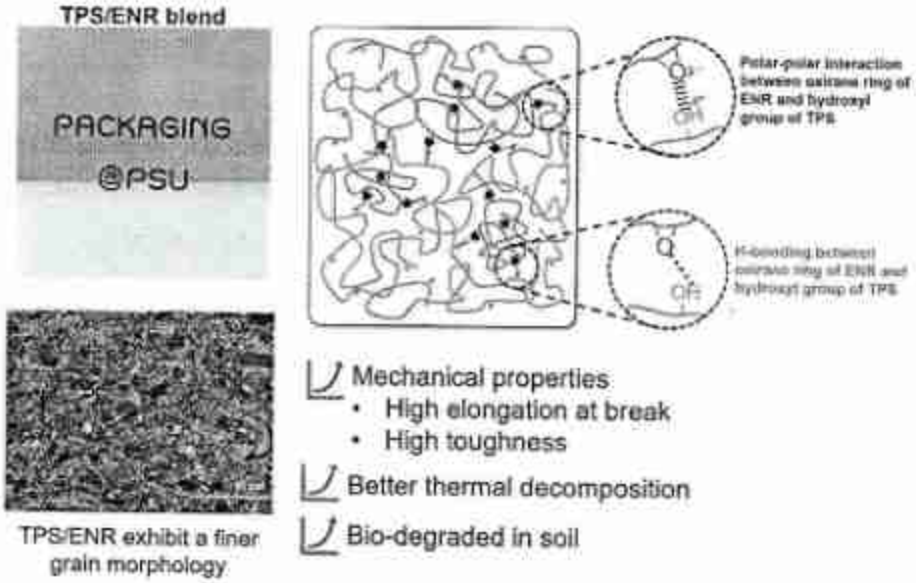
Abstract

This study focuses on enhancing the mechanical and thermal properties of thermoplastic starch (TPS) and natural rubber (NR) blends by incorporating polyethylene glycol (PEG2000) and various types of modified natural rubbers, including epoxidized natural rubber (ENR50), poly (methyl methacrylate)-grafted natural rubber (NR-*g*-PMMA), and poly (butyl methacrylate)-grafted natural rubber (NR-*g*-PBMA). The influence of the TPS/NR blend ratio, PEG content, and type of modified NR on the properties of the blends was investigated, along with their water absorption and biodegradation. Increased ductile properties were achieved by adding pure and modified NR. Among the series of 90:10 TPS/modified NR blends by weight, the highest toughness (1,628 MJ/m^3) was observed when the blend was formulated from ENR50 with 1.0 wt% of PEG. The water absorption of TPS/NR blends was lower than that of TPS but still exhibited a high-water absorption rate compared to the other conventional polymers. Biodegradation tests confirmed the biodegradation capability of TPS/NR blends, and more than 95% of the tested samples were biodegraded in soil within 120 days. These sustainable and eco-friendly TPS/NR blends could be potential materials for single or short-term use products, such as plant nursery pots and other disposable packaging.

Graphical Abstract



Keywords Thermoplastic starch · Polyethylene glycol · Modified natural rubber · Epoxidized natural rubber · Biodegradation

Extended author information available on the last page of the article

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REGULAR ARTICLE

A Green Approach to the Removal of Malachite Green Dye from Aqueous Medium Using Chitosan/Cellulose Blend

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Abstract
The usage of a cost-effective, eco-friendly, and highly efficient adsorbent for the removal of dye from an aqueous solution is presented in this paper. This work focuses on the prospective use of chitosan/cellulose blend to remove malachite green (MG) from an aqueous medium. Results revealed that the maximum adsorption of the dye occurs within 30 min of the experiment. The SEM images exhibited a change in their surface morphology upon the adsorption of dye. The adsorption isotherm of MG fits the Langmuir and Freundlich equations and follows the pseudo-second-order rate equation. Freundlich isotherm exhibited the maximum adsorption capacity of 115.1 mg/g when compared to Langmuir isotherm. 98.65% of dye degradation is observed at room temperature for an adsorbent dosage of 0.2 g per 30 ml initial dye concentration. R_L, dimensionless constant separation factor evaluated at room temperature in the present study is 0.1488, which specifies that the adsorption is favorable. Current analysis and its comparison studies with other reports on adsorbents conclude that the chitosan/cellulose blend can be considered a cost-effective choice for the removal of MG.

Keywords Chitosan · Cellulose · Malachite green · Polymer blend · Dye adsorption · Adsorption isotherms

1 Introduction

Increasing industrialization has led to serious ecosystem concerns due to the intake of excessive toxic pollutants into either underground or exposed water bodies. The textile industry solely witnesses two-thirds of the overall dyestuff production [1, 2]. Disposal of colored wastes into aquatic sources not only disturbs the esthetic nature, but also hinders diffusion of light into streams, consequently reducing the photosynthetic act. Further, chemicals present in the colored wastes inhibit the lethal impacts on microbial populations and could remain toxic to mammals [3, 4]. Conventional biological treatment practices were ineffective in dye removal as dyes are non-biodegradable [5].

The recent advancements in dye removal technologies include physiochemical, biological, and chemical techniques such as flocculation and coagulation [6], adsorption [7], ozonation [8], electrochemical [9], and fungal decolonization [10]. Among these methods, adsorption is an efficient and cost-effective method in the removal of dyes from effluents and hence has gained more prominence [11]. Adsorption is a surface process that leads to the accretion of a substance (an ion or atom, a molecule) on a solid surface from its liquid or gaseous environs [12–14]. Usually, adsorption exhibits high treatment efficiency and adsorbents can be reused multiple times after regeneration.

The ability of adsorption is mainly dependent on the properties of the adsorbent; hence, developing an effective adsorbent is very important for its broad application in water treatment [15]. The molecular structure of both chitosan and cellulose consists of β-glycoside linkages. Therefore, there is a similarity in their structures. At C-2 positions, chitosan has primary amino groups, whereas cellulose has hydroxyl groups [16–18]. Chitosan is a deacetylated form of a biopolymer called chitin in the presence of a highly concentrated sodium hydroxide solution. Chitin and its derivatives have many intrinsic features, making them effective adsorbents for dye removal [19]. Chitosan/modified chitosan adsorbents

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Research Article

Thermo-Responsive Shape Memory Thermoplastic Elastomer Based on Natural Rubber and Ethylene Octene Copolymer Blends

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The shape memory (SM) polymers with superior SM properties were successfully fabricated based on melt blending of natural rubber (NR) and ethylene octene copolymer (EOC) at various crystallinity of EOC phase. The differential scanning calorimetry analysis, mechanical properties, temperature scanning stress relaxation, and shape memory properties were studied. Results revealed that the mechanical and thermal properties of the prepared NR/EOC blends improved as a function of amount of ethylene fraction in the EOC phase. The ethylene segment of EOC in the NR/EOC blend is triggered as a stimulus-sensitive domain. The shape memory properties in terms of shape fixity and shape recovery efficiencies of the blends tended to increase with the increasing of crystalline segments in the blends. The shape memory properties of the prepared blends substantially exceed the best performance (close to 100%) by blending the NR/EOC at 50/50 parts by weight, having 62%–80% of ethylene content in the EOC phase, which corresponds to approximately 3°–16° of crystallinity of EOC phase in the blends.

1. Introduction

Shape memory polymers (SMPs) are currently being highlighted both in academic and industrial fields with tremendous development due to its various functionalities [1, 2]. SMPs are smart or intelligent materials that can recover a temporary shape to its original (memorized) shape when subjected to an external stimulus such as chemical, temperature, electricity, and magnetic field without applying an external force [3–5]. Among those developed SMPs, thermo-responsive SMP is a typical kind of SMPs, which has been widely studied and used in industry practices [6, 7].

In general, at the molecular level, thermo-responsive SMPs are the possession of molecular switching segments and net points. Net points are responsible for determining the permanent shape, while the switching segments are responsible for shape shifting process [8, 9]. The behavior of the SMP can be controlled by a transition temperature (T_{trans}), which is related to either the melting temperature (T_m) for a semicrystalline polymer or the glass transition temperature (T_g) for an amorphous polymer [1, 10, 11]. The SMP is deformed in the amorphous state to an elongation by application of external stress, generally, above a transition temperature, and fixed in the desired temporary shape by cooling the material to a crystallization temperature (T_c) of switching domains; these domains solidify acting as a physical cross-linking [12].

During the last decade, the SMPs based on high-density polyethylene (HDPE) and polyethylene terephthalate, cross-linked linear-low density polyethylene/polypropylene, and HDPE-short chain with branched polyethylene, i.e., ethylene-1-octene copolymers (EOC) have been developed [13–16]. Natural rubber (NR) is a biopolymer having unique chemical and physical properties, i.e., high elasticity, good mechanical properties, especially excellent strain-induced crystallization (SIC) behaviors. For these reasons, the NR is considered a potential raw material for SMPs. [17, 18]. An amorphous structure in NR is able to turn into crystalline form upon

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TRENDS IN SCIENCES 2023; 20(9): 6826 RESEARCH ARTICLE
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Improving the Performance of Wood Adhesive with Waste Rubber Tire

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Abstract

Reclaimed rubber (RR) from waste tires was introduced as a wood adhesive by blending with epoxidized natural rubber (ENR). To improve the polarity of RR and compatibility with ENR, maleic anhydride (MA) was grafted onto RR chains. Influences of RR and RR-g-MA (maleic anhydride grafted reclaimed rubber) on the adhesion of wood adhesive along with their properties such as crosslinking, mechanical properties, thermal stability, and wettability were studied. It was found that RR and RR-g-MA affect the vulcanization of ENR by increasing crosslink density. Especially, in the case of using RR-g-MA generates a new form of an ester linkage. The higher crosslink density together with the formation of ester linkages results in superior thermal stability by the addition of RR-g-MA. In addition, the incorporation of RR exhibited an increase in the lap shear strength when compared with the pure ENR. This improvement is due to the increased crosslink density because the presence of RR resulted in the enhanced cohesive strength of rubber adhesive. Additionally, the incorporation of RR-g-MA showed higher efficiency to improve the adhesion of rubber adhesive. The addition of RR-g-MA has not only enhanced the cohesive strength of rubber adhesive, but also increased the adhesive strength from the interaction between the hydroxy group in cellulose on the wood surface and the polar functional group (i.e., oxirane rings of ENR, maleic group of RR-g-MA and ester group of ester linkage) of rubber adhesive. Therefore, the cohesive fracture was observed in ENR/RR-g-MA adhesive.

Keywords: Epoxidized natural rubber, Wood adhesive, Reclaimed rubber, Lap shear strength, Waste Rubber Tire, Maleic anhydride, Ester linkage

Introduction

The growing use of rubber products depends on the development of automotive parts because around 65 % of rubber products are used in the automotive industry. It has been reported that approximately 1000 million worn-out waste tires are disposed every year, and predicting the current trend indicated that it will increase to 1200 million by the year 2030 [1,2]. Therefore, a huge volume of waste tires will be released into the environment and directly affects the ecosystem. A waste tire is vulcanized rubber waste that cannot be easily reprocessed and recycled. Several methods were used for the disposal of a waste tires including incineration [3], landfilling [4,5], and reclaiming [6,7]. However, it has been known that incineration and landfilling can cause many problems for the environment by releasing greenhouse gases in the air, reducing biodiversity, and contaminating the environment by leaching soluble toxic components into the soil/or water, respectively. Hence, rubber reclaiming is effective recycling method applied to the waste rubber tire. It uses mechanical, thermal, thermo-mechanical, chemo-thermomechanical, and irradiation energies to break down vulcanized bonds in vulcanized rubber networks [8]. The main rubber components of tires compose natural rubber (NR), butadiene rubber (BR), and styrene butadiene rubber (SBR) [9].

It is a challenge for the rubber industry to turn the recycling rubber waste into a usable products. Rubber reclaiming and blending with virgin rubber has increased in interest in recent times due to the growing concerns about the environment and rising prices of synthetic rubber. The incorporation of reclaimed rubber in rubber formulations reduces the cost of rubber compounds by lowering the loading level of virgin rubber. Previous researchers have studied the blending of reclaimed rubber with various types of virgin rubbers including NR [10-13], BR [10,14], SBR [15-18], ethylene-propylene-diene rubber (EPDM) [19,20], acrylonitrile butadiene rubber (NBR) [21,22]. It can be seen that most of the studies have been focused on blending reclaimed rubber with nonpolar rubbers as they have a closer polarity, whereas,

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ORIGINAL ARTICLE

Synergetic effects of cross-linking and incorporation of Fe-Al bimetallic combination on the properties of polyvinyl alcohol novel films

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Abstract
Polyvinyl alcohol films incorporated with Fe-Al bimetallic combination novel films were synthesized by sol-gel method in the presence of glutaraldehyde (GA). The results of FTIR spectra confirmed the cross-linking between PVA and GA, resulted in the formation of rigid molecular chains. The comparison of thermograms of pure PVA and Fe-Al PVA films cured with GA indicated the enhanced thermal stability of the cured films. The electrical properties of the pure PVA films and bimetallic PVA films cured with GA were studied in the frequency range 100 Hz to 100 kHz. The current study explains the effect of GA and incorporation of Fe-Al bimetallic combination towards the structural modification and dielectric properties like dielectric constant, dielectric loss, ac conductivity, polarization, and permittivity of the cured PVA films. The variation of the storage modulus of cured PVA films as a function of temperature has also been studied.

Keywords PVA film · Fe-Al bimetallic system · Glutaraldehyde · Synergetic effect

1 Introduction

Polyvinyl alcohol (PVA) is a synthetic water-soluble polyhydroxy thermoplastic polymer with significant interest due to its potential advantages like biodegradability [1], non-toxic nature, non-carcinogenic, benign to living tissues and wide applicability [2–5]. A few of their applications include the medical field, construction industries, packaging materials, adsorbents [6] and resins. PVA is essentially synthesized from the hydrolysis of polyvinyl acetate, which forms a solubilized crystalline structure in water. PVA is reported to have enhanced properties when blended with biopolymers, and polymers possess hydrophilic properties [7]. This enables PVA to have superior mechanical properties due to its hydrophilic nature with a compatible structure. PVA is widely investigated due to its cross-linking properties [8] and nano-fillers. The properties of PVA are dependent upon the hydrolysis nature of polyvinyl acetate, specifically whether it is partially hydrolyzed or fully hydrolyzed. The molecular weights of PVA vary between 20,000 and 40,000 which is dependent upon factors like the extent of hydrolysis to remove the acetate groups, the length of the vinyl acetate from which PVA is synthesized, and the reaction conditions, acidic or alkaline [9]. The hydrolysis degree may vary from 80 to 99%, which in turn affects its physical and water-soluble nature. PVA hydrogels will result from nearly completely hydrolyzed ones which possess tunable properties through cross-linking of the linear polymers. This results in the formation of polymer-fluid species where the polymer will be in gel form and the fluid in sol form. The physical property of polymer material depends on the polymer contents present:

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Section: Research Paper

A Survey on Image Fusion Technique forRemote Sensing Application

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Abstract— In last decades the hyperspectral (HS) imaging have been used vastly, as it provides very good temporal, spatial, and spectral resolutions of larger areas. The hyperspectral imaging provides accurate estimation similar objects with tolerable spectral signature and accurate estimation of complex surface physical properties; thus, HS imaging have been used in variety of remote sensing application such as military, crop monitoring, environmental study, and precision agriculture etc. The fusion of two images i.e., one with higher spectral information and other with higher spatial information provides huge scope in aforementioned application. This paper provides an extensive survey of various image fusion methodologies using statistical, machine learning (ML), and Deep learning methodologies for hyperspectral images. The survey shows the traditional panchromatic and multispectral (MS) image fusion techniquerequires high precision registration, which impose limitations in achieving high-quality fusion outcomes. Thus, fusion of MS and HS have been used in recent time for provisioning different remote-sensing application; thus, it prerequisite to minimize uncertainties for achieving better fusion enhancement. This paper provides present methodologies, problems, and possible solution of hyperspectral image fusion for remote sensing application.

Keywords—Deep learning, hyperspecral, image fusion, machine learning, multispectral, resolution enhancement.

I. INTRODUCTION

The remote sensing images have been collected using Unmanned aerial vehicle (UAV) and Satellites. Images captured by satellites are the primary source of global coverage information.

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Performance Evaluation of a Network on Chip Based on Ghz Throughput and Low Power for Streaming Data Transmission on FPGA

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Abstract:

Currently, because of how quickly technology is developing, designing sophisticated applications is proving to be very difficult and is leading to issues with throughput, power consumption, chip area, and speed. Reliability and performance become another difficult task when technology production processes progressively scale down to minimise chip dia size. Network on Chip (NoC) is a frequent option in the creation of complicated applications to meet all these challenges in the most recent technological growth. In this study, hybrid approaches NoC are created to optimise the area, throughput, and power consumption. Due to the complexity of using a larger number of routers and the 8×8 dimensions of the NoC in this research project, power consumption is significantly higher with a lower packet delivery ratio. The data transmission between multiple devices in networks with the least amount of latency, memory usage, and power consumption is crucial. Buffered and buffer-less NoC are created utilising Dynamically Reconfigurable NoC (DR-NoC) and the Flexible Direction Order Routing (FDOR) scheme in order to adhere to these restrictions. The FDOR with Transition-Based Power Reduction Encoding (FDOR-TBPRE) Algorithm is presented in order to reduce static power. It [illegible] power owing to more transitions in the incoming data. By minimising the amount of transitions in the incoming packets, FDOR-TBPRE is able to deliver higher performance in order to increase energy efficiency, eliminate [illegible] and

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II. Literature Survey
III. Design and Consideration
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This paper adduces 4x4 butler matrix beamforming network employing a new technique in transmission line structure– open circuit coupled lines and a metamaterial structure of composite right-left handedness formed by interdigital capacitors. The basic design elements for butler matrix per suites 45 degrees phase shifter, quadrature-coupler cascaded crossover (0dB) and 90 degrees hybrid coupler. Central operating frequency considered is 3. 5GHz and flame-retardant (FR-4) (ε_r=4.33 and h=1.66mm). The design and simulation are carried out in COMSOL Multiphysics V5.5 software. Insertion and isolation losses from simulation are ≥-10dB and return loss better than 16 dB. The BM aspects are 68. 8mm in width and 66. 9mm in length. The simulated phase difference are ±45° and °135° with tolerance of 70. This metamaterial-based beamforming network heralds for 5th generation (5G) wireless beam steering technology envisioned for deployment in India for phased array antenna systems.

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Abstract **:** This paper presents an automated approach for designing a Commercial power factor correction. This technique enables reduction of energy consumption and hence reduces the loss of power in commercial industries. This paper proposes the use of shunt capacitors to carry out Power Factor correction which helps in significantly reducing the electricity bills and the penalty charged by the electricity provider. Power Factor can be described as the ratio of working power to apparent power. Power Factor is mathematically calculated as COS(Φ). By using ATmega 328 microcontroller we automate the entire process and corrected power factor displayed on the LCD display.

Keywords—Power Factor, Active power, Reactive power, Power saving, Inductive, Resistive, Capacitor.

I. INTRODUCTION

The power factor of an electrical system indicates how efficient the system is at performing useful work with the available electrical power. A poor power factor increases losses while also attracting a penalty from the electricity provider. Due to the usage of various electrical equipment that requires greater reactive power, modern industries using mechanised methods suffer from a low power factor. The power factor is a measurement of energy efficiency. It's usually expressed as a percentage, with lower the value, inefficient the power usage, It is found by multiplying: kVA=V x A.

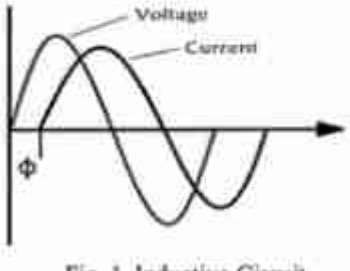

Fig. 1. Inductive Circuit

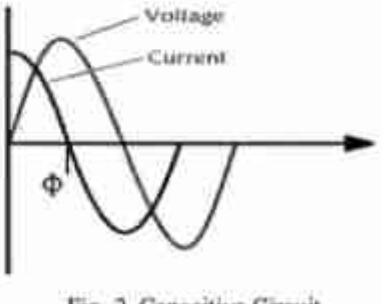

Fig. 2. Capacitive Circuit

Maintaining a monthly power factor near to unity can result in significant savings in utility power expenditures. Shunt capacitor banks are an extremely well-established technology for Power Factor Correction (PFC). The latest tendency is to automate the capacitor switching method in order to gain the most benefit in real time. Because of their dependability, embedded systems based on microcontrollers can be utilized to monitor and regulate the switching of corrective devices.

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The lifetime of the wireless sensor network (WSN) is affected by the overall energy consumption of the routing protocol because of the difficulty of recharging the sensor nodes after they are deployed in the network environment. Data aggregation is a conventional method of eliminating the redundancy of data at each node which impacts the overall throughput in the system. It is important that WSN nodes determine the correct path from source to location so as to minimize unnecessary power consumption on the nodes. In the present study, A-LEACH protocols are used to improve the output and power consumption of cluster heads. The A-LEACH router protocol is one of the most effective principles that help measure network power consumption. The quantitative methods are employed to evaluate the WSN nodes before and after the deployment of the A-LEACH protocols. The results show better outcomes with the use of the A-LEACH protocol.

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Prediction of QoS Data for Pressure Sensor Using Prophet and FFNN AI Algorithms

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Abstract:
In wireless networks, monitoring of wireless environment is performed by spectrum sensors and network sniffing. By this we will get a set of measurements which are spatially distributed. In this paper the QoS data from pressure sensor is taken and based on that, univariate models were constructed. For construction of the models, Prophet and Feed Forward Neural Network (FFNN) artificial intelligence algorithms were used. The algorithms are applied to data taken from a wireless sensor network test bed. In order to evaluate the model, we have predicted and analyzed the pressure sensor data. The RMSE of Prophet algorithm prediction is 8.6108, MASE is 0.2890 and SMAPE is 0.0961. The FFNN approach provides a RMSE of 8.0495, MASE of 0.2902 and SMAPE of 0.0967. The results indicate that FFNN supervised machine learning approach provides accurate results as compared to the prophet approach.

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"MULTIPLE PARAMETER PATIENT HEALTH MONITORING SYSTEM"

Dr. Vijaya S M[1], Dr.A.M. Prasanna Kumar[2], Krishna.R[3], P Nikhil Gowda[4], Pavan.S[5], Punith B[6]

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Visvesvaraya Technological University, Belgavi, India

Abstract : Attempts have been made to apply modern technology to numerous fields in an effort to improve the quality of mortal existence as technology develops and detectors become smaller. One of the most important fields of research that has utilised all available technologies is the medical field. Healthcare is too expensive for those who need it, especially in developing countries. As a result, this activity is an effort to address a current healthcare problem in society. The primary goal of the design was to create a remote medical gadget. There are three parts to it.. The first step entailed using detectors to identify the case's vital indicators; the second step involved sending the data to a cloud storage facility; and the third step involved transferring the information found data for further analysis. By breaching the data ever, a croaker or guardian can conceal a case's health status while they are not in the sanitarium. As a result, the suggested armature captures detector values via Arduino and sends it to the pall, where it's reused and analysed for remote viewing. In the event of an exigency, feedback conduct grounded on the analysed data can be communicated back to the croaker or guardian via dispatch or message announcements.

Keywords: Sensors ,vitals, cloud storage, Arduino microcontroller.

I. INTRODUCTION

A patient's vital bodily functions can be remotely monitored via a patient's health monitoring system, which is an addition to a hospital's medical system. Discovery systems were first restricted to hospitals and were distinguished by large, intricate circuitry that consumed a lot of electricity. Nonstop progress in the semiconductor assiduity microcontrollers which are lower in size, briskly in operation and consumes low power, and are less precious have redounded from the technology assiduity. The quantum of parameters that a simple case monitoring system can descry can be used to make it. In some scenarios, relating one parameter allows for the computation of numerous readings. The following are some simple considerations for parameter discovery

i) Single parameter monitoring system In this case, a single parameter, similar as an ECG dimension, is covered. Depending on the fashion utilised, different readings can be attained from the ECG or twinkle discovery. The heart rate and oxygen achromatism can be determined using an ECG.

ii) Multiple parameters are covered at the same time in a multi-parameter monitoring system. High Reliance Installations, Intensive Care Units, surgery in a sanitarium theatre, and post-surgical recovery units in medical institutes are exemplifications of similar systems. The ECG, blood pressure, and respiration rate are among the pointers that are measured. The Multiparameter Monitoring System serves as substantiation that a case is alive and well. The twinkle discovery system, fall discovery system, temperature discovery system, moisture discovery system, air quality and dangerous gas discovery system, and SPO2 discovery system are all part of the multi-parameter Patient Health Monitoring System. A croaker or health specialist can use the device to ever cover all of the case's or person of interest's vital health criteria. The case's status is detected using detectors, and the value is collected and bear using a microcontroller. Croakers and nursers must visit the case on a regular base to assess his or her present state. Likewise, the operation of several microcontrollers in an intelligent system gives high connection in hospitals with numerous cases. cases must be generally observed For this, we employ the conception of wireless network technology, giving each case a unique ID that allows the croaker to snappily identify the case and his or her health report. Data could be wirelessly sent to the Case Monitoring Approach using the available system, which in turn allows for nonstop case monitoring. This technology achieves a lesser degree of client satisfaction and low- cost relinquishment in hospitals by contributing perfection in measures and offering security in correct alert mechanisms. As a result, the case can go about his everyday conditioning in a relaxed terrain free of the distractions of ingrained detectors.

Physiological monitoring tackle is simple to produce utilising simple detector interfaces with a microcontroller device and can be used efficiently for patient monitoring. This will make it possible to produce low- cost widgets with natural mortal-computer interfaces. The

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Design and simulation of Butler Matrix for 5G applications

Dr. Sunitha R[1], Sanjay P[2], Sanjay P[3]

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Abstract : This paper adduces 4x4 butler matrix beamforming network employing a new technique in transmission line structure – open circuit coupled lines and a metamaterial structure of composite right-left handedness formed by interdigital capacitors. The basic design elements for butler matrix per suites 45o phase shifter, quadrature-coupler cascaded crossover (0db) and a 90o hybrid coupler. Central operating frequency considered is 3.5GHz and FR-4 (εr=4.33 and h=1.66mm). The design and simulation are carried out in COMSOL Multiphysics V5.5 software. Insertion and isolation losses from simulation are ≥-10db and return loss better than 16db. The BM aspects are 68.8mm in width and 66.9mm in length. The simulated phase difference are ±450 and ± 135o with tolerance of 70 . This metamaterial-based beamforming network heralds for 5th generation wireless beam steering technology envisioned for deployment in India for phased array antenna systems.

IndexTerms - 5G, beamforming network, 900 hybrid coupler, interdigital capacitors, composite right-left handedness, phased array antenna.

I. Introduction

India, a country with radical growth in Industrial Internet of Things 4.0 and commercial cellular technology is planning scrupulously to launch 5G acquainting with rest of the world. Broad coverage, reliable communications, greater data rate and minimal latency are the major goalposts for 5G. A distinct field of exploration is millimetre wave technology. All of which would exploit phased array antenna system, which are capable of radiating more focused beams towards direction of interest. Besides these end user's ultimatum also include compactness in device and connectivity to be ubiquitous.

Interpreting wireless systems in 5G, Beamforming network and antenna form vital elements. From literature a circuit based beamformer called Butler matrix has gathered the interest owing to its easy and low-cost fabrication process and reduced complexity in design. A N x N BFN, indicates N input and N output ports and typically constituting couplers, crossovers ad phase shifters.

Conventionally microstrip line-based butler matrix design would end up with larger area, reduced bandwidth, greater insertion loss and as Nth order increases so would the error be at output phase difference. In [1], with the aid of open-stubs in TL design allowed a size reduction of approximately 45%. In [2], in absence of phase shifter only with coupler (with 450 and -900 phase difference) and crossover is designed.

The issue with conventional BM has its limited bandwidth and large size due to the hybrid couplers and phase shifters. So, the researcher started to introduce new designs of BM with an open-stub, modified hybrid branch line coupler (BLC), without crossover, without phase shifter and metamaterial transmission to minimize the size [1]–[5]. In [5], it is shown that the use of 45o and 90o phase shifter, and four BLCs miniaturized by employing open-stubs in each transmissionline allows the size reduction of 42.68% as compared to the conventional BM.

In [6], a miniaturized BM using cross-slot patch hybrid couplers and 45o phase shifters using short circuited stubs are presented. The bandwidth of BM improved by 14%, and the size is reduced by 56% as compared to conventional BM, respectively. A novel compact BM without phase shifter is presented in [7] that contains couplers with - 45o and -90o phase difference and a crossover. In [8], a novel electromagnetic metamaterial transmission-line (EM-MTM TL) is proposed by using the structure of symmetric double spiral lines (SDSLs).

As per the literature review presented here, most of the discussed designs demonstrate a reduction in the area without much improvement in the bandwidth of the BM. From [3] - [5], a novel design was introduced aiming compactness in size along with precisely engineering the unknown material constituting from the third quadrant (double negative) of the permittivity-permeability quadrant system. Thus, here in this paper, using combination of open circuit coupled lines and CRLH-TL (i.e., IDC unit cell) metamaterial structure, the quadrature coupler (90o), cascading which a 0db crossover and a phase shifter is designed.

This paper poses 4x4 butler matrix design and simulation using COMSOL Multiphysics software for RF applications. The proposed BFN is designed using flame-retardant (FR-4) substrate having dielectric constant of 4.33 with 1.66mm thickness. The essential

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Deoxyribonucleic acid (DNA) microarray technology has promised rapid improvement in recent studies. On DNA microarray images, there are several spots. Spots on microarray images represent gene expression and show the status of normal and malignant cells. One of the approaches for enhancing and analysing an image is to use digital image

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Multimodal Human-robot interaction

Dr. Sumitha Manoj [1], Harshith.R [2], Sanjay kumar L [3], Shiva kumar [4], Madan s [5]

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ABSTRACT : This paper presents a multimodal Human-Robot interaction based on fusion of speech and gesture. Interface, a robot control command is designed ,which can transform the speech and gesture of users into commands that robot can execute.The advantage of the proposed method is that the combination of speech and gesture makes the human-robot interaction more convenient and direct. Finally, a series of experiments were carried out to validate our method and prove that it performed better than other proposed methods

IndexTerms - Automation, Machine Learning, Color Rendering, Indoor Farming.

1 .INTRODUCTION :

In the future of the word ,th robot will become a good helper of the mankind. Therefore the communication between human being and robot is inevitable. Human beings are comfortable using gesture and speech and speech to communicate with each other in daily life. So people can easily interact if robots are programmed to identify gesture and speech.

Using gestures for human-robot interaction is an ideal way.Gestures generated from a persons hand can be used as the basic commands for the movement of an robot.As

humans are adapt to use normal bodily gestures and speech for communication, few people may find it difficult to interact with a robot using normal methods i.e. joystick and computer generated commands.So we came up with this method of interaction where a person can use hand gesture or other gestures for communication and command a robot.

Alternatively, if it is not possible to interact using gesture ,we have implemented the use of audio as the alternative mode as in some instances we may not be able to use gestures to communicate, during this time we can use audio as alternate source of interaction with the robot.

We have used multiple methods to interact as many environmental and human tendancies may not be favorable or accurate, so it may be difficult to accurately verify and execute a command, to avoid difficultics we have to use different modes of communication so if it is not possible with one method other alternate method can be used for communication.

There are many models which focus on gesture and audio but in our model we try to make the model more cost efficient, we try to intigrate both modes of interaction by using android devices. For user convenience we try to make the use of software as minimal as possible,so the method of interaction can be used by any age group without much difficulty.

The main objective of our project is to implement user friendly human robot interaction. though technology has gone through many improvements in the last two decade many people still find it difficult to cope with the present technological progress, so to make it easy and appropriate for them to use we try to minimize the use of technology as much as possible for user interface.

This project is designed and implement by the use of raspberry pi.in this project when an user shows gestures to the installed webcam, the data is received and processed by the raspberry pie , then the movement of the robot takes place.

Use of android phone is common these days so we have made use of an android application for giving command through audio using Bluetooth.the raspberry pi supports both Bluetooth and wifi so we can multiple modes of interaction by using different hardware sources for sending the data

2. METHODOLOGY

2.1 Platform setup

This paper is about the develop a multimodal interaction robot. Robot can gathered audio and video detection information by humans.

We used open cv for computer vision application, that is identification of gestures. We have implimented this by writting the code using python programming.For hand gesture input we used the zigbee for wireless interfacing communication. For voice input we used wifi by communicating andriod phone interfacing by raspberry model.

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Greenhouse Monitoring and Controlling using the Internet of Things (IoT)

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Abstract : As we all know that different plants require different climatic conditions and different soil mineral content for their proper growth. In this project, we are going to address the climatic conditions problem. This model provides microclimatic conditions inside a greenhouse. This greenhouse monitoring and controlling system is not an ordinary system, it is capable of adjusting its temperature, humidity content in the air, and soil water content, all this is done using the Microcontroller and Internet of Things. This model explains how a greenhouse can be monitored and controlled with the help of the Internet of Things. To monitor and control the microclimatic conditions inside the greenhouse effectively, it is necessary to design a monitoring and control system which is cost-effective to implement the design and should be scalable when it is required. The model contains two parts, one is the monitoring part and the other is the controlling part which controls the microclimatic conditions like temperature, humidity, ambient light, and soil moisture content, inside the greenhouse. The monitoring part contains all the sensors like soil moisture sensor, humidity sensor, temperature sensor, and the LDR sensor. Each sensor will monitor the different climatic parameters. The controlling part contains a microcontroller (ESP32), relays, and agricultural tools like water pumps, light (LED), and fans to control the microclimatic conditions inside the greenhouse. The model is monitored using an android application that is connected to the firebase real-time database system which stores sensor readings from the greenhouse and also relays the control signals from the application to ESP32 to control the various agricultural tools with the help of the internet.

Index Terms - ADC, Circuit, Control Systems, Conditions, DC (Direct Current), Environment, Environmental Factors/Parameters, ESP32 Microcontroller, Greenhouse, Internet, LDR (Light Dependent Resistor), Microclimatic Conditions, Microcontroller, Model, Monitoring, Moisture Content, Sensor, System, Threshold, Voltage, Tools.

I. INTRODUCTION

In India, agriculture is the backbone of our economy, majority of the population in India practices agriculture as their profession so there is a need for modernization of the agricultural system to increase the productivity of the system. We know that traditional cultivation methods cannot meet people's needs. Most fruits and vegetables are grown using fertilizers to meet people's needs. Traditional cultivation methods have problems such as constantly changing weather conditions affecting crops, which can be affected by diseases. Therefore, farming practices need to be updated to achieve maximum crop production, and reliance on crops should shift to sustainable agriculture with the help of techniques adopted in different countries. "Technology is evolving day by day, and we all know that technology defines modern farming methods". By monitoring the greenhouse, the system provides detailed values and can be controlled by scheduling the system. This system can also be applied to scientific management to give crops maximum growth and disaster prevention capacity. This will introduce a type of low-cost, low-power consumption agricultural greenhouse monitoring and control system based on ESP32 short-range radio communication. The ESP32 is a development kit that can connect to a Wi-Fi network and work with the Internet using the TCP / IP protocol suite.

The objective is to control the greenhouse microclimatic conditions according to the data of the crop. So, these sensors will collect information on the greenhouse environmental parameters like humidity, atmosphere temperature, light, and soil water content, and the microcontroller can turn ON various agricultural equipment like water pumps, lights, and fans to vary the climatic conditions inside the greenhouse for optimum growth of plants and can view the status of different sensors and equipment's on android application or webpage.

II. HARDWARE COMPONENTS

A. ESP32 Wrover Module Microcontroller

ESP32 Microcontroller is the brain of the whole system it gathers the data from various sensors and controls various agricultural tools and equipment by giving control signals to relays. ESP32 Devkit (Wrover Module) is a powerful, generic Wi-Fi, Bluetooth, Bluetooth LE MCU module with a PCB antenna, that is used for a variety of applications majorly in IoT since it can be connected to the internet easily, it also includes TCP/IP protocol suite providing seamless internet connectivity. The chip embedded inside the ESP32 Devkit is

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An International Open Access, Peer-reviewed, Refereed Journal

"WOMEN SAFETY VIDEO SURVEILLANCE AUTONOMOUS SECURITY NIGHT PATROLLING ROBOT"

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Abstract: The pair deals with Arduino being used for monitoring system. Video capturing is important to provide high security these days. High version Cameras are required in office, schools, hospital, commercials, and the other sectors. The latest technologies need high end version of the rover which is very costly and difficult for a common man to purchase it, so looking for a cheaper rover is necessary so that the required amount of money can be spent by the common man. Idea is to build a robot that helps us to perform all the activities easily in stipulated period of time considering the notches of the latest technologies.

I. INTRODUCTION

Security is a vital asset for lot of companies and homeowners. It also avoids damage done to individuals and avoids stolen or destroyed personal belongings. All read companies keep a highend budget for security to be provided at the high-end version so that no crime rate is increased in the present world with the decrease in the crime rate purposefully provide the government industry and other organizational measures which are considered in the upcoming over to In 2011homeowners spent about $20.64 billion on united state home security systems. These statistics show how imperative safety is for companies and homeowners alike. Alongside security guards, there are a variety of technologies that help to ensure security. Security Camera is one of the most common types of surveillance. This security method does not prevent the crime but helps to find hijackers to law oblige when a accident occurs. There are also security systems, where a security may sound once triggered to prevent offenders from further breaking in. These systems typically send a warning to law enforcement or a security station and can be triggered within a range.

II. MOTIVATION

Nowadays Women Safety is the biggest concern in many parts of the world. There is still a fear in alone areas for women as well as men. So here we propose a security patrolling robot using Arduino and Laptop Camera. The system uses cameras and mic mounted on robotic vehicle for securing any premises. It monitors each area to detect any problem using camera. It has the ability to monitor sound in the premises. Robot hears any sound after area is quite and it starts moving towards the sound on its predefined path. It then scans the area using its camera to detect any human faces detected. It provides continuous monitoring together with live broadcasting of the site off crime going on. This can be an autonomous one or even the manual one. Help to find the human or any problem detected using the sound sensor. Which involves in the kind of virtual investigation. Achieves women safety. Tackle non-upright face detection directly

III. PROBLEM STATEMENT

In the existing system, robot has to be controlled remotely where the person has to monitor the area using remote control and more human resource is needed for this operation of the patrol robot. Some systems require a smart phone for controlling the night vision robot. Some use local host webpage hence the control range is limited to local network range.

IV.Proposed Method

In this proposed system, Robot is built with Arduino Controller and Laptop camera which help the system for the automation and help to find the human or any problem detected using the sound sensor and according to the sound produced it automatically goes to that area and capture the image and send it to user using IOT technology.

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An International Open Access, Peer-reviewed, Refereed Journal

"MONITORING SOCIAL DISTANCING FOR COVID-19 USING DEEP LEARNING"

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Abstract : Recently, social distance has become a popular word, owing to the COVID-19 epidemic, which has touched the entire world and resulted in over 1 million deaths. We lived in a radically different world a few months ago than we do now. Humans have become more vulnerable as a result of the lack of antidotes and immunity to fight the virus. As a result, Social Distancing is the only way for us to protect ourselves from diseases spread through human interaction, including COVID-19. During a pandemic outbreak, social distancing is a tactic that can be utilized to minimize the number of new cases. This article focuses on surveillance in public settings and determining whether or not people maintain social distance. It discusses the advancement of technology by employing AI-based techniques to detect whether or not the social distancing standard is being observed in any public video stream. The inbuilt software can tell the difference between someone who maintains social distance (marked green) and someone who does not (marked red), as well as keep track of events where social distance is not maintained.

I. Introduction

Controlling the spread of contagious diseases is done through social distancing. As the name implies, social distancing entails people physically separating themselves from one another in order to reduce close contact and thus the spread of a contagious disease (such as coronavirus). By definition, people cannot spread germs if they are not close together, so social distancing is arguably the most effective non-pharmaceutical way to prevent disease spread. We designed a system that can be used on any video stream using technology, specifically AI-based technology. It may be used to distinguish between those who adhere to the social distancing and those who do not. Using CCTV and drones in this epidemic time, we can maintain track of human activities in public spaces, compute and aggregate distances between people, and monitor social distancing breaches across the city. This suggested system will make it difficult for people to come together and socialize. People who gather in enormous proportions at holy places might make circumstances worse. Recently, all countries around the world were, and still are, in a state of lockdown, forcing citizens to stay at home. However, as time passes, people will begin to visit more public places, religious sites, and tourist destinations, so in those circumstances, this system of social distancing monitoring will be beneficial all over the world. With the help of computer vision and deep learning, as well as the software that has been installed. CCTV We can keep watch of people and compute the distance between the min pixels using computer distance algorithms, define the standard maintained distance to be followed, and get a picture of who is breaking the law so that the appropriate authorities can intervene.

II. Motivation

To mitigate the spread of the corona virus (COVID-19) Pandemic, the international bodies, governments, and other stakeholders around the world have been urging, among other practices, before the using social distancing. Although definitions of social distancing vary, the World have been urging, among other practices, by making use of social distance we can avoide the spread of diseases, In our project by using these project which we can easily track peoples by using camera and drown, wheather they are maintaining the distance or not.by these we are motivated that in any crowded places like theatre, campus and colleges we can avoide the spreading of disesase from one person to other person. Many youth students are suffering due to these covid 19, they are struggling to go to college or office,by implementing these project they can come over those struugles, and they can concentrate on those works.

III. Problem Statement

The proposed design for the system which was based on image processing. The queue length and traffic densities were recorded from the images taken from the camera. System which is a complete working model which comprised of enforcement, model and object detection algorithm and also uses YOLO real time object detection.

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Original Article

Classifying Pap Smear Images with an Advanced Composite Random Forest Model

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Abstract *- Manual screening and diagnosis of conventional Pap-smear slides for cervical cancer diagnosis is slow and suffers from human error. Here we have proposed a hybrid-deep-learning model achieved using k-means cluster and Random Forest models, which aims to identify the most prevailing characteristics of cervical tissues and classify them into different cytopathological classes. Just because the texture, shape (morphometric), and color of the nucleus and cytoplasm together or individually play a vital role in PAP smear image classification, fifteen prominent features are extracted based on it to classify images collected from the Herlev Pap Smear dataset. Gray Level Covariance Matrix and Gabor Filter helped extract the texture-based features, whereas morphometric and color-based characteristics were abstracted using Canny's edge detection and histogram analysis. In addition, a new and advanced cutting-edge compound random forest model is constructed to categorize the PAP smear photos. It was noted that the suggested hybrid approach offers up to 99% effectiveness. Additionally, this study also demonstrated a thorough comparison of the suggested model. It was observed that the suggested model also performs admirably when measured against Support Vector Machine (SVM) and Deep-Multilayer Perceptron methods.*

Keywords *- Cervical Cancer, Herlev Pap Smear dataset, Gray Level Covariance Matrix, Random Forest, Deep-Multilayer Perceptron.*

1. Introduction

One of the most prevalent diseases that impacts all women who receive optimal care if it is diagnosed early is the circumstance of cervical cancer. The death rate in India is relatively high. According to GLOBOCAN 2020, India reports 123,907 occurrences per year and close to 77,348 cancer-related fatalities, accounting for approximately one out of three global cancer incidences [1]. A Pap smear test is commonly used in gynecology to test pre-malignant and malignant tissues in the cervix uteri. Sample can be taken from the cervix, identified using Papanicolaou methods [2], and applied to a microscope slide. The microscopic analysis then identifies the cell construction and embryological abnormalities of cell nuclei. These examinations identify pre-cancerous conditions of cervical tissue if any, and early preventive treatment gets done.

In the manual screening procedure, many images are scrutinized using conventional techniques. The complete method is time-consuming, expensive, and encompasses observer biases. Moreover, false-positive and false-negative diagnostic errors often doubt the manual screening process. A machine learning-based computerized screening system of Pap-smear images can assist cytopathologists in reducing the screening time and observer biases. Standard wet-fixed Parameters are used in the Smear test diagnostic test, including variations in light and color intensity of the cellular components of the coloring operations. In addition, air-drying and rehydration method is used for a smear with excessive blood, mucus, bacteria, and inflammation. All these features together make the identification of apprehensive cells. The primary cells for examining the abnormality are many cells (50 thousand to 3 lakhs on average) on a slide to be examined by a proficient at illustrating the smear as ordinary or maligned. As the categorizing of PAP smear is constructed on well-established cell characteristics, it is desirable to model the automated classifier encompassing all those characteristic features. A direct image-based classifier may overlook some of these critical features, which become considered while classifying the images.

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Analysis of Multiple Constraints and Strategic Investment Decision with Proposed Algorithm

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Abstract

As a consequence of fierce global competition and a shorter product life cycle, sometimes demand from the market exceeds the manufacturing capacity of the organization. Under such situations constrained resources limit production capacity through the first part of this paper, an attempt has been made to find out the optimal product mix in case of multiple constraints by using the Theory of Constraints (TOC) and Linear-Integer Programming (LIP). In this case of multiple resource constraints, the throughput generated by TOC is more than that of LIP, but the solution, provided by TOC, was found infeasible. Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) is used for to recital assessment of investment alternatives with a view to exploring the opportunity embedded in multiple resource constraint problems. Capital investment is a major decisive factor in any investment process and it has to be separately emphasized. In the final section an algorithm, holistic in nature, is proposed to find out the best alternative in a utopian environment. The proposed algorithm is a hybrid of TOPSIS and capital investment. To make an eclectic decision sensitivity analysis was also reported.

Keywords: theory of constraints; linear integer programming; strategic investment; topsis; algorithm; sensitivity analysis

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1. Introduction

The theory of constraints helps managers at all levels of an organization maintain a focus on system constraints with the help of a set of principles and concepts [1]. TOC consists of throughput, inventory, and operating expenses measurement systems. These can be translated into bottom-line financial measurements such as net profit, return on investment, and cash flow. TOC principles state that maximum throughput can be achieved by exploring and exploiting the bottleneck (critical resource). This may not be the case always when multiple constraints exist. The traditional linear integer-programming technique of product mix optimization gives better results under such circumstances. It ensures the profit maximization goal of TOC [2].

TOPSIS is used to find out the performance of the strategic investment alternatives. TOPSIS, one of the most classical Multi-Criteria Decision-Making (MCDM) methods, is used to rank competing alternatives in terms of overall performance. It is based on the theory that the alternatives are having the shortest and farthest distance from the ideal and negative ideal solution respectively. The assumption is each attribute tends to increase or decrease monotonically. The ideal solution can be defined as the sum of all best the attribute values attainable. All attainable worst attribute values constitute the negative ideal solution. Capital investment is also to be emphasized separately to explore insight. For the final selection of an investment alternative an algorithm, named Investment Alternatives Measure (IAM), is proposed in which the result of the TOPSIS performance model will interface with the capital investment. Sensitivity analysis was done to show the coefficient of attitude (β) effect in the final results.

2. Literature Survey

TOC principles of managing constraints are used by many researchers. Also reviewed from the inception of TOC as a scheduling software to the management philosophy of today, what has been accomplished [3, 4]. But TOC principles will

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"VANET:SIMULATION AND DETECTION OF BLACK HOLE USING NS2 TOOL"

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Abstract : Vanet (vehicular ad-hoc network) facilitates the transmission of the information between the agents (vehicles) and other supporting entities present on the road. This transmission of data between the agents help each other to avoid the on-road complications. During the process there are chances of a network being harmed by the several external agents. one such is a Black hole attack, spotting of Black hole and to interpret the shortest route is a main sight of the project. During the process some network framework such as throughput, overhead, delay and packet ratio are taken into consideration. This whole simulation is carried out in Ns2 simulator.

Keywords:VANET, Black hole attack , RSU.

I. INTRODUCTION

Wireless network is a network setup by using radio signal frequency to communicate among computers and other network devices.vanet network is a network where each mobile nodes are vehicles equipped with communication means. The VANET network are characterised by a high mobility nodes. A VANET architecture consist of 3 components OBU RSU and trusted authority, every vehicle is associated with OBU to receive and send information to the other vehicle RSU is used to communicate with the vehicles, infrastructure and TA. VANET shares real-time and important messages to the other drivers. Due to this time - critical communication and open access VANE is vulnerable to many attacks, one of primary considerations is secure transmission. The black hole hole attack acts as a kind of denial of service where malicious nodes drops the packets.

II. MOTIVATION

Vehicular ad-hoc network has become promising research area among vehicle industry and academic environment.Keystone for enhance road safety and traffic efficiency etc.Most important attack in VANETs to be considered is black hole attack which increase the chances for packet loss and in turn to accidents and we develop the technique to detect black hole attacks and reduce number of accidents.

III. EXISTING PROBLEM

Considering an real time example of an on-road incidents such as:

Traffic congestion is the principle trouble of any character nowadays and it ends In site visitors injuries of lots of human beings and taking lots of lives every year. There are diverse motive for site visitors congestion and a few are to insane. People don't observe any site visitors guidelines which can be the principle motive of site visitors congestion. Apart from site visitors congestion there's a trouble while a few through mistake take a incorrect tavenue and that ends in a diversion .These conditions may be prevented if motive force became supplied cautions few few-seconds earlier than so they are able to take a few opportunity precaution.While information is being communicated there might be a loss of information due to Black Hole Attack.

IV. Proposed System

Here we propose a system where we establish an effective communication network between the vehicles which shares a realistic on road information with another vehicle ,with a minimalistic loss of data from source to destination by detecting the malicious node, and analyzing the shortest route to transmit the data.

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"STRESS DETECTION USING BIO SENSORS AND ARTIFICIAL INTELLIGENCE"

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Abstract : The ratio of health cares is steadily reducing as the world's population grows. As a result, innovative technologies to screen people's physical and mental health in their daily lives are urgently needed. Negative mental states such as depression and nervousness, in particular, are major issues in modern civilizations, owing to stressful situations encountered in daily activities such as employment. This study shows how to use wearable physiological sensors and artificial intelligence to identify stress in people, with the goal of enhancing their eminence of life. The proposed technique may continually screen the subject's status and label it as whether the person is in stress or not . When it comes to real-time stress detection, the results of our categorization show that this method is a good place to start. Our project focuses on recognizing and addressing work-related stress and other stress-related disorders. We use technology and software to identify stress. The hardware includes biosensors such as sweat sensors, heart sensors, and other sensors. The software analyses a person's facial expression to identify whether or not they are stressed. We compare the two outputs to determine whether or not the person is stressed. This allows for more precise stress production, demonstrating that the person is genuinely anxious.

Keywords: Health, depression, artificial intelligence , stress, bio sensors.

I. INTRODUCTION

We are attempting to analyze a person's stress level using Facial Landmarks as well as bio sensors, which are bio potential signals created by the heart. We used medical science and technology as bio medical engineering in this project to achieve a satisfactory result. First and foremost, we attempted to obtain a signal from the heart in order to recognize a certain body's stress. A person's sentimental state, intellectual activity, intent, temperament, and psychopathology are observable indexes of their facial appearance, which plays an announcement role in interactive dealings. It has been premeditated for a long time and has made momentous change in recent decades. In spite of substantial advances, precisely empathetic facial terminologies remain difficult because to the complication and variation of facial emotions. In over-all, nonverbal cues such as gesticulations, facial languages, and intuitive dialects can be used to connect intents and feelings. This approach has the potential to be a very beneficial nonverbal means for individuals to communicate with one another. What matters is how well the structure identifies or extracts facial terms from descriptions. The structure is ahead of status because it has the potential to be functional in a variability of sectors, including falsehood recognition, medical valuation, and social-mainframe interface. The Facial Action Coding Structure (FACS), familiarized by Ekman in 1978 and adapted in 2002, is a widely used instrument for facial appearance examination.

Humans distinguish reactions on a day-to-day basis through characteristic elements expressed as part of a facial expression. Happiness, for example, is inextricably linked to a smile or upward movement of the lips' angles. Similarly, other feelings are distinguished by distortions exceptional to that exhibition. The difficulty of on behalf of and classifying still or active aspects of these distortions of expression pigmentation is lectured by exploring into instinctive facial expression identification. The method divides an individual's facial terminologies into six categories: rage, dislike, dread, happiness, sorrowfulness, and amazement. The fundamental goal line of this structure is to enable operational collaboration between humans and machines through the use of eye contemplating, facial terms, intellectual displaying, and supplementary techniques. Facial appearance recognition and labeling can be active as an ordinary means for human and mechanism communication in this circumstance. And the asset of the scheme varies from individual to individual, as well as with time of life, gender, facial dimensions, and form, and even in the interior the same individual's terminologies do not remain reliable over period. However, feeling detection will be difficult because of the fundamental heterogeneity of face pictures shaped by elements such as illumination, situation, configuration, and constrictions. Few educations on facial expression feature illustrations for appearance acknowledgment and appearance examination went into great extent about these problems and possible preparations. Human stress is a state of being out of balance. A stressor is a stimulus that threatens an individual's homeostasis condition and can be classed as either physical or psychological. In the workplace, it is hard to escape stress.

However, if individuals are aware of their tension stages, they might be able to income preventative efforts to reduce stress and achieve stress balance before it leads to major health concerns. Since there stand several forms of tension - serious stress, discontinuous serious stress, and longlasting stress — stress managing can be rigid and bewildering. It stems from previous demands and tensions, as well as expected future needs and difficulties. The majority of individuals are constantly stressed in their daily lives. It is a natural flight-or-fight reaction to stressful situations that is not harmful. Physiological symptoms may appear as the frequency of these events increases.

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IOT Based Smart Mirror using Raspberry Pi

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Abstract: Internet and mobile phones connect us more easily in the virtual world. Smart phones with the concept of Internet of things connect us to everyday objects. Intelligent mirrors with computations using microcontrollers and computer provides the information on the places located on the mirror. Smart mirror uses microcontroller cards and associated with web for retrieving information from the web. This will be displayed in the mirror. The proposed smart mirror displays the information such as weather, data and time, calendar, captures picture from camera, multimedia information such as music, voice control and local news from the web. Rasberry pi 3 microcontrollers are used as hardware to control the sensors and the smart mirror. This will act as brain of the interactive system and it is powered by python scripts for mirror software. Google assistant Application Programmable Interface is used as personal assistant for interacting with web. IFTTT – a free web service to access open source API's for customizing Google assistant. The device looks like an ordinary mirror. It has screen inside that is capable to interact using voice commands and smart phones.

IndexTerms **- Application Programmable Interface ,IFTTT Python, Raspberry Pi;**

I. INTRODUCTION

With the advancement of technology, most of things which we are using in our day to day life is automated. Few examples are smart phone, cars, cities and homes. Home automation system is required to monitor the essential things that includes temperature, power, closing and opening of doors/windows, turning on and off the light and fan and water tank. This can be done from anywhere at any time through mobile. With the help of Internet of Things (IoT) , multimedia and artificial intelligence essential services may personalize to manage the activities in a comfortable manner. IoT is a integrated technology consisting of wireless sensors and internet. Smart mirror offers weather, news update, local date and time. In future smart mirrors are enabled with security performs to manage the payment of electricity bills, phone bills, insurance policy details and daily appointments. Smart mirror may be implemented by using raspberry pi and data from the internet. Raspberry pi runs with raspbian Jessie pixel operating system. user interface may be developed by using web browser or java script or python.

Limitations of the existing mirror are users must have an android mobile phone with application installed. Data transaction may be disconnected when the server goes down. This can be overcome by using the smart mirror both in offline and online mode. The proposed smart mirror will display date and time, current weather condition, remainders, energy meter. It has the ability to display widgets, to detect the presence of the user, to navigate the User Interface on user motion.

II. METHODOLOGY

IOT with raspberry technology has been used many advanced applications with advanced results. Smart mirror is used to design interface which is integrated with both personalized data and computing services for controlling house hold smart appliances. Interactive mirror is developed featured with multimedia, personal information that support users in the daily activities. Interactive mirror is a touch and gesture functional mirror. The users used this for video show off different types of drawing and 2D games that are displayed using a projector. Smart mirror is not only used for environment purpose but also provides solution to many problems faced by users on a daily basis. Magic mirror uses TV with a mirror finish and uses Microsoft Kinect to track movement and take in voice recognition. The whole system is run from a Windows PC. It has the ability to check email, calendar, and social media, which are implemented in the proposed smart mirror as well.

Similar works are environment monitoring system can remotely monitor environments parameters such as temperature, humidity etc. Patient monitoring system can be used to wirelessly monitor patients. Physiological parameters such as temperature, blood pressure and ECG. Wireless Industrial automation system which is based on Raspberry pi technology. It controls industrial devices, manages power activities and also monitors the employee activities. Home automation with IOT gives huge benefits. Sensors are used to monitor the system. The proposed system includes raspberry pi as a processing unit, temperature sensing, automatic light system, water level sensing system and relay system to control the electronic appliances at home .

III. SYSTEM DESIGN

The proposed system consists of sensors, relay, water level meter, Raspberry pi controllers, LED Screen and google home.

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Data aggregation scheme for IOT based wireless sensor network through optimal clustering method

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Abstract

Wireless sensor network (WSN)based Internet of Things (IoT) has gained much popularity, in offering solutions to several real-time applications by interaction between sensor nodes and physical world entities through interconnected technology. WSN based IoT has become key technology in achieving real-time quality of service (QoS), low-cost operation and long-term reliability. IoT based WSN nodes, permits interconnection of various objects wirelessly and these nodes are tiny, equipped with irreplaceable battery and are resource constrain. Due to continuous sensing and gathering, IoT produce huge volume of data which may results in high computation overhead, data redundancy, packet collision and high energy consumption. To address resource constrains, significant research has been conducted to optimize energy consumption of nodes to extend network lifetime. Most of the existing methods focus on extending network lifetime by scheduling method through duty cycles, however these methods fails to handle data redundancy and has lower throughput. Cluster based data aggregation schemes have offered solution to eliminate data redundancy and harvest energy. In this paper we propose an efficient data aggregation scheme (EDAS) for IoT based WSN, this scheme considers improved low energy adaptive clustering algorithm (I-LEACH) to form optimal number of cluster head (CH), by considering node residual energy and average network energy. Data redundancy is eliminated using network coding, this technique integrates liner XOR operation and ensures non-replicated data transmissions. Finally, we performed simulations of proposed EDAS scheme to evaluate network parameters and performance of EDAS is compared with existing schemes.

Previous

Next

Keywords

Clustering; Data aggregation; XOR; IoT and WSN

Abbreviations

IoT, Internet of Things; WSN, Wireless Sensor Network

1. Introduction

Internet of things (IoT), a new form based on wireless sensor network (WSN), is becoming popular and key technology for time critical applications e. g. industrial, health care, smart cities and automobiles [1]. Popularity of wireless technologies and internet based system, such as cloud computing has boosted Internet of Things (IoT), in offering flexibility in various applications fields. IoT based sensors are tiny, smart and intelligent device equipped with battery, these nodes are distributed, and self-configured and are energy constrained nodes which provides specific function in monitoring physical environment without human intervention [[2], [3], [4], [5]]. IoT devices are integrated with

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WIRELESS SENSORS NETWORK FOR ENVIRONMENTAL RADIATION MONITORING USING IOT

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Abstract: Due to the appearance of the atmospheric pollutants from nuclear power plant due to which environmental changes such as radiation leakage, fuel recycling and other activities, which causes various health issues. This leads us to monitor these environmental parameters for the living being's welfare. To control these parameters, this paper is presented where Wireless sensor network is used for monitoring the safety of nuclear power plant and as well as the public safety. The sensor network module transmits data via ZigBee, then this data is sent to the cloud for storage through Thingsspeak server which is a system situated on the Internet of Things (IoT). Then the analyses of data take place to accurately judge whether the surrounding environment is safe.

IndexTerms - Internet of things, Monitoring, controlling, Wireless sensor Networks, Nuclear power plant

I. INTRODUCTION

The nuclear power plant (NPP) is one of the main sources ofelectricity generation in many countries, which contributes tothe progress in the industry. Because electricity is an important source of energy for the world, they are often generated by converting other sources of energy. Few countries depend on some of these hydroelectric power plantsfor electricity. Nuclear power plants thus play an important role in the independence of a country. But there are times when these power plants undergo a few bursts, resulting in harmful effects on humans and animals. Most often, theoperational experts working in these nuclear power plants should examine the atmosphere and vital areas nearby daily,which leaves open to various possibilities of radiation-relatedattacks. Knowing that the NPP is so large that monitoring every single site in a power plant is tedious for many workers,to reduce the burden, we implement a model that helps with monitoring by using technologies such as wireless sensor networks to communicate across different parts of the plant.

The idea of wireless sensor networks is used in many industrial applications that help collect the raw data from different nodes depending on the different sensor readings, facilitating monitoring without the help of a worker. When new risks emerge, governments do calls for a higher level ofsafety in the factories to strengthen environmental protection.It will be easy if the plan is to monitor the entire facility froma remote location. Internet of things (IoT) applications have recently been implemented in some NPPs because of their flexibility for displaying sensor values in the cloud database.An intelligent environment must use information andcommunication technologies to make uncomfortable situations safe. so, in this article, we discuss various sensors used to detect various parameters such as temperature, gas, fire, and sound using WSN technology such as ZigBee to provide a safe model for NPP monitoring in a cost-effective way.

II. LITERATURE SURVEY

In recent year there have developed many nuclear power plantmonitoring and controlling systems. Various literaturesthat explain the implementation of Internet of Things and wirelesssensor networks in various fields, IoT architecture, requirements and security improvements have been studied.

In [1] the author uses the sensors and LoRaWAN communication modules, LoRaWAN Gateways and an Open-source IoT platform for monitoring and identification. The radiation sensors interact with the physical of interest, asan electronic interface for analog processing the signal generated by the sensor for taking the required actions, for node control an embedded Linux based system is been used. The drawback is that it cannot be used for the real time as only some data can be sent for every couple of minutes and it cannot be used in case of continuous monitoring.

Internet of things is been used in [8] for surveillance of the nuclear power plant, as Internet of things is a network of physical objects containing sensors and actuators for communicating, collection and control of environment. This Method uses raspberry pi board as the centralized unit and the LAN cable for the communication of the data. The platform for the client application -used here is the mobile phone or web page. The limitation of this method is that the LAN is capable of covering only a limited range as the distances increases or any obstacle there is a signal drop.

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Neuro Fuzzy Model Based Routing Protocol in Mobile Ad-Hoc Networks

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Abstract: Mobile Ad-Hoc Networks (MANETs for short) are gaining the importance in the field of wireless communication. The promising feature of MANET is that it can be deployed immediately in demanding situations as they do not require the infrastructure or any centralized structures as compared to traditional wired and wireless networks.An intelligent system has been designed to select an optimum route for various contexts.An efficient protocol is designed to overcome the limits of route finding and link formation in MANET's. This can be done by making use of the application of soft-computing techniques such as artificial neural networks, fuzzy logic and genetic algorithms. Traditional techniques are based on statistical techniques such as regression models and probabilistic methods.It can be seen from the simulation outcomes that the route finding time using the HYPER-NF-NET simulator which use soft computingtechniques is 20% to the routing finding time using NS-2 simulator. It is also seen from the simulation results that the HYPER-NF-NET protocol performance is better compared to AODV, DSR and OLSR routing protocols for different node population and various degree of congestion. The simulation results showcase a superiority of HYPER-NF-NET simulator over NS-2 and associated HFNET protocol over other existing protocols.

Index Terms: Route Finding, Protocol, MANET, Intelligent System, Soft Computing.

1. Introduction

Mobile Ad-Hoc Networks (MANETs) are gaining the importance in the field of wireless communication. The promising feature of MANET is that it can be deployed immediately in demanding situations. MANETs are the communication networks which do not require the infrastructure or any centralized structures as compared to traditional wired and wireless networks. Base stations are required for traditional wireless systems and a physical link may be optical fiber or coaxial cable is required for the wired systems.

MANETs has been inpractice since many years and have developed recently into more mature and systematic technology. The typical applications of ad-hoc networks include tracking of enemy tank in the war field, tracking of automobiles in a strict traffic. The ad-hoc networks are used to transmit the atmospheric parameters such as temperature, pressure, sunlight intensity and the humidity to adjacent networks or nodes.

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IMPLEMENTATION OF AUTHENTICATION OF WEB OF THINGS BY USING SECURE HASH ALGORITHM-3 AND SALSA20 ALGORITHM

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Abstract: The increasingly developing field of Web of things has led to lot of sensitive user data being exchanged over the web. Web of things enables the user to interact with their connected environment such as sensors, digital devices, automation systems, security camera monitoring without any hazels. But the growing number of users in the mere future poses a threat to the data being transmitted so there needs to be strong authentication and encryption measures put forth to ensure the integrity of the data it is also essential to create a way to identify the intruder has not manipulated the data. This paper deals with implementation a multi factor authentication scheme by using stream encryption algorithms for the encryption and authentication of the data there by ensuring faster validation of data and a better data monitoring. There has been various stream encryption algorithms developed to both authenticate and encrypt the data consists of SHA-1,2,3 for authentication and RC4, A5/1, Panama, Salsa20 etc. In this Paper we utilize Secure Hash Alogorithm-3 (SHA-3) algorithm in combination with Salsa20 with facilitates high speed data validation.

IndexTerms – WoT (Web of Things),encryption, SHA-1, SHA-2, SHA-3, RC4, A5/1, Panama, Salsa20

I. INTRODUCTION

Web of things is extension of internet of things where the data from different objects, sensors, applications gets transmitted over the web. The web of things ensures interoperability of different internet of things and application by describing specific set of standards. The WoT provides several building blocks which makes implementation of the system to follow conventions of the WoT architecture. These blocks are Thing description, Binding Templates, Scripting API. Security and privacy is a key aspect in WoT architecture where each building block in the WoT architecture contains specifications for security and privacy. This is essential because IoT only deals with transportation of information through the internet and does not bother with how the information travels or what happens to the data while in transmission in contrast the WoT establishes several rules that needs to be followed for the transmission of information. As more and more devices get integrated with the internet the switch from WoT to IoT becomes pretty evident. The WoT provides flexibility to implement different encryption algorithms to be embedded into its architecture. In this paper we implement a authentication scheme as well as an encryption scheme for WoT applications by utilizing SHA-3 which belongs to a family of Secure Hash Algorithms and is a latest member. It is a one way function used for generating digital prints of select length (128, 224, 256, 384 or 512 in bits) in our case it is 256 bits it is a algorithm which generates a one way function that we will be using for authenticating the integrity of the data being transmitted in combination with another algorithm Salsa20 which is a pseudorandom function generator based oof of add-rotate-XOR (ARX) operation which we will be using for data encryption and decryption. Use of both the algorithms makes it easier the any manipulation in the transmitted data and also send a encrypted data over the network.

II. LITERATURE SURVEY

1.They basically created a novel architecture for the WSNs environment, upon which a proposed technique for user authentication and key agreement has been given. Despite the fact that paper has a higher efficiency than other systems, it compromises key security elements.

2.This study examines the use of homomorphic encryption to encrypt client data on a cloud server and to perform necessary computations on this encrypted data. This paper focuses solely on analysis and does not include any recommendations for action.

3.The SHA-3 algorithm is written in Verilog HDL and simulated with Xilinx ISE 14.2. Only combinational circuits were used to implement the SHA-3 architecture.

4.The maximum frequency of the design, f-max is 224.339MHz. The design uses one clock cycle for each round and throughput obtained is:10170Mbps.

5.This paper has algorithm which has been upgraded version of the traditional ChaCha algorithm that increase cryptanalysis resistance. The super ChaCha cipher is suitable for security of IoT devices which required high security but suffering from low energy and limited storage space.

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Minimizing the Energy Consumption and Enhancing the NetworkLifetime in WSN using Advanced LEACH Protocol

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Abstract:
The lifetime of the wireless sensor network (WSN) is affected by the overall energy consumption of the routing protocol because of the difficulty of recharging the sensor nodes after they are deployed in the network environment. Data aggregation is a conventional method of eliminating the redundancy of data at each node which impacts the overall throughput in the system. It is important that WSN nodes determine the correct path from source to location so as to minimize unnecessary power consumption on the nodes. In the present study, A-LEACH protocols are used to improve the output and power consumption of cluster heads. The A-LEACH router protocol is one of the most effective principles that help measure network power consumption. The quantitative methods are employed to evaluate the WSN nodes before and after the deployment of the A-LEACH protocols. The results show better outcomes with the use of the A-LEACH protocol.

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DESIGN AND DEVELOPMENT OF A SEWAGE CLEANING MOBILE ROBOT

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Abstract: The main objective of this paper is to develop a Friendly Sewage Cleaning Robot to remove the blocks manually. To replace the human being in sewage cleaning by automated system and to prevent from hazardous chemicals. Presently, the sewage blocks are removed only by means of manual intervention. Because of this method, there is a threaten to cause many health hazards. Hence a methodology has been developed to reduce the work of high human effort. In this paper, Robot with an IR camera and IR sensor has been used. Blocks in the sewage can be identified using IR camera as well as IR sensor. The camera continuously captures the image in the sewage which can be monitored using PC. As the robot moves inside the sewage, IR sensor detects the presence of block. Once the block is detected, IR sensor gives the signal to the microcontroller, so that the blocks can be removed by means of arm movement of robot. This system limits the human involvement for the sewage cleaning process of sewage system and prevents the infection of diseases to the mankind.

I. INTRODUCTION

Manual Scavenging is the most nauseating thing to do; for others, it is the only way to make a living. From drains and sewers to septic tanks and railway tracks, more than half a million manual scavengers across the country are cleaning, carrying, and disposing human excreta. They force themselves into choked sewers and septic tanks; hang on for hours, scooping out filth with bare hands and bearing the stench of sewage. Every year, hundreds of manual scavengers die, asphyxiated by poisonous gases. The Drainage water cleaning system is used to clean wastes from the water like polythene, bottles, etc. present in water. Mainly it can be used to solve the problem of filtration of debris from the water, and it saves the time and cost. Drainage pipes are used for removal of sewage, and unfortunately, sometimes, there may be loss of human life while cleaning the blockages in the drainage pipes. The municipality workers need to get down into sewage sludge to clean the complete sewage. The advances in robotics, in the last ten years, have enabled robot technology to solve many practical problems that humans encounter in day-to-day activities. But, even today manual scavenging of the sewage is practiced in urban areas of India, wherein man enter the manholes and clean the scales and clogs in the sewage pipelines manually with virtually no technical equipment. This practice might jeopardize the lives of humans; therefore, a sewage cleaning robot is essential to replace the human intervention. It affects their health badly and causes skin allergies. Whole process is monitored and processed by the Atmel microcontroller, depending on the signal received from IR sensor; microcontroller controls the movement of the robotic arm. IR sensors sense the blocks in the sewage pipeline as well as the camera is used to monitor the sewage system. With help of the dc motor, the microcontroller moves the robot as well as the robotic arm either from forward to backward or vice versa. Direction of the robot movement is decided by the microcontroller, this is done with the help of signal from IR sensor as well as the camera. The signals given to microcontroller from IR sensor will decide the direction of robot movement. Based on the movement of the robot, the blocks in the sewage system can be removed.

II. HARDWARE COMPONENTS

A. ARDUINO

Arduino/Genuino Uno is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins of which 6 can be used as PWM outputs, 6 analogue inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to get started. Can tinker with UNO without worrying too much about doing something wrong, worst-case scenario can replace the chip for a few dollars and start over again. "Uno" means one in Italian and was chosen to mark the release of Arduino Software IDE 1.0. The Uno board and version 1.0 of Arduino Software IDE were the reference versions of Arduino, now evolved to newer releases.

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Blind Navigation Using Artificial Intelligence

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Abstract: Navigation plays a vital role in everyone's life, especially in the case of a person having a disability like visual impairment, the day-to-day navigation is more challenging. They always need assistance to navigate through the streets, which can be difficult because of the busy lifestyle of the people living in the present world. Therefore, in resolution to this problem, this paper presents a system to assure the blind a safe and hearable environment using Artificial Intelligence to detect the objects encountered in the path.

IndexTerms **- SSD*lite*. Augmented Reality, MEMS.**

I. Introduction

A recent study shows that fifteen percent of the world's total population is having any form of disability. Within this percentage of disabled people mentioned above, 253 million are having visual impairment problems. This figure is about to rise to higher than 550 million by 2050. If the current trend continues, the rising count can't be controlled, but an alternative solution can be modelled to simplify their life.

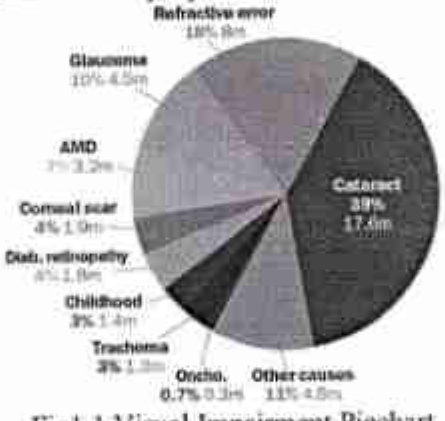

Fig1.1 Visual Impairment Piechart

The intention behind this project is to come up with a model of device which helps blind people to navigate easily with more safety & Confidence. This system involves the usage of Raspberry Pi, Artificial Intelligence, and other hardware components like ultrasonic sensor & accelerometer sensor which help in tracking distance, and speed and identifying and recognizing the objects in the vicinity. Thereby this paper provides an easy navigation solution for those having visual impairment. The use of the advanced objection detection model provides a piece of accurate information regarding the object identified in the path. The real-time panic alert provides a reliable information source to the caretaker regarding the status of the user & is very helpful in providing on-time interference.

II. Methodology

A study was carried out in the publication in providing blind people with a safe navigation system to make their daily life easy and simple. The proposed model aims to identify & recognize objects and the distance between them encountered in the navigating path and provides an alert to the user via voice output. This project uses Raspberry Pi as the main developer kit. All the peripherals are interfaced with the kit by using python code. The input image from the camera is fed into the pre-trained deep learning model deployed in the kit. This project uses a Mobilenet SSD*lite* V2 object detection model to detect an object in real-time and to provide to give the user with an audible alert using eSpeak module is used.

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AUTOMATIC MILK QUALITY ANALYSING WITH BILLING SYSTEM

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ABSTRACT

Farmers supply the milk to the Dairies and get the payment based on the purity of milk. Late examinations detect that crude milk contains pathogenic life forms which could bring about contamination if devoured which can build the rate of infections and break down the personal satisfaction. Thus, creating apparatuses for constant and shrewd detecting is required for quality checking and to settle on reasonable and opportune choice. As the milk is kept for several days, the expansion of bacterium will get increased which ends up in undesirable smell, style and harmful substances. Hence there is a necessity for monitoring system to discover and determine the spoilage of milk and turn out into a healthy product. The work aimed to present some aspects regarding milk quality and quantity estimation. The various factors like FAT, refrigerated status of milk and Adulterated chemicals percentage in the milk are identified. Generating the desired rate for the amount of fat in the milk. So, the system calculates these parameters.

KEYWORD: *Internet of Things (IoT), Arduino Billing System, fat, Milk and Adulteration*

1. INTRODUCTION

Depending upon the time and situation there is a need to change the working system of the old modules like dairy farming. Now a days this process is done manually that can results to mistakes which is biggest loss to farmers. Therefore, to decrease the many manual work and to get better result there is a need to replace the existing system with a new system using the system where milk sample can be measured automatically and in low cost. Firstly, it is required to calculate the amount of fat present in milk. Manually testing of fat and quantity is time consuming.

Secondly, some Dairies in villages do not have good milk Testing equipment's. In such condition the milk sample can be tested once the milk is free from fat which can take one to two hours. By that time the milk packed in a plastic bags or bottles leads to unhealthy. Another reason is since the process is done manually that can results to mistakes which is biggest loss to farmers. Therefore, to decrease the many manual work and to get better result there is a need to replace the existing system with a new system using the system where milk sample can be measured automatically. User will also know different information about milk with help of temperature, fat sensor. This is an efficient tool to detect adulteration of the milk.

2. METHODOLOGY

Milk tester is a method, which gives the result that is fat based on the light scattered by the milk. A device called photo resistor whose resistance decreases when the incident light gets increases. It's a semiconductor material having high resistance. It works on the principle of photo conductivity. When the light is fallen, the greater number of electrons are released, which leads to increase in charge carrier those are holes. Thus, the

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ADVANCED HEALTH MANAGEMENT USING MACHINE LEARNING

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ABSTRACT

The healthcare industry is constantly evolving with technological advances and one of the innovations is the smart healthcare monitoring system. The system is designed to improve the quality of care by enabling real-time monitoring and prediction of patient health status, enabling timely intervention, and reducing hospitalizations. The Smart Healthcare Monitoring System uses machine learning (ML) algorithms to analyse patient data collected through various sensors and wearable devices such as smart watches, fitness bands and health monitoring apps. The system then uses this data to develop personalized predictive models that can detect potential health problems such as cardiovascular disease, diabetes, and respiratory disease. The system can also monitor and alert healthcare providers when there are unusual changes in a patient's health. ML algorithms reduce the risk of serious illness and hospitalization by predicting potential complications and alerting healthcare providers before a patient's condition worsens. The Smart Healthcare Monitoring System also has several benefits for patients. First, it helps patients maintain a healthy lifestyle by providing personalized insights into their health and well-being. Patients can track their daily physical activity, including B. Setting fitness goals based on steps taken, calories burned, sleep patterns and preferences. Second, the system can improve medication adherence by reminding patients to take their medication on time. This is especially useful for older patients and those with chronic illnesses who have difficulty remembering their medication schedules. Third, the system can reduce the need for frequent hospital visits and tests by enabling remote monitoring of patient health. This allows patients to receive treatment in the comfort of their own home rather than requiring frequent hospital visits, saving time and money for both patients and healthcare providers. Overall, smart healthcare monitoring systems are a promising technology with the potential to revolutionize the healthcare industry. The ability to monitor and predict health problems, improve medication adherence, and enable remote monitoring can improve patients' quality of life and reduce healthcare costs for providers. However, implementing the system presents some challenges, including B. Privacy and security issues, interoperability issues, and the need for standardized data collection protocols. Addressing these challenges is essential for the widespread adoption and success of Smart Healthcare Monitoring Systems by healthcare providers and policy makers. In summary, smart healthcare monitoring systems using machine learning algorithms are a game-changing technology with the potential to transform the healthcare industry. Improve patient outcomes, reduce hospital stays and provide personalized care. However, there are some challenges that need to be addressed to ensure successful implementation and adoption.

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Keywords: - *Electrocardiogram (ECG), Internet of Things (IoT), Machine Learning (ML), Electronic Health Record (EHR), In-Patient Department (IPD)*

OUTLIER DETECTION FOR DIFFERENT APPLICATIONS

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ABSTRACT

Outlier detection is a critical task in many applications where identifying anomalies in the data is important for ensuring data quality, identifying potential problems, and making informed decisions. This paper presents a comprehensive review of outlier detection techniques in different applications, including data mining, machine learning, computer vision, network intrusion detection, fraud detection, and healthcare. We discuss various statistical, clustering, distance-based, and machine learning-based approaches for detecting outliers, highlighting their strengths and limitations. We also discuss the challenges associated with outlier detection, such as data sparsity, high dimensionality, and class imbalance, and review some of the recent advancements in the field, including deep learning-based approaches and ensemble methods. Finally, we present some open research directions and discuss potential future directions for outlier detection in different applications.

Keywords: *Outlier detection, Anomaly detection, Data mining, Machine learning, Clustering, Distance-based methods, Statistical methods, Deep learning, Ensemble methods, High dimensionality, Class imbalance, Computer vision*

1. INTRODUCTION :

Outlier detection, also known as anomaly detection, is the process of identifying data points that deviate from the expected patterns or behaviours within a dataset. Outliers can be caused by various factors such as measurement errors, data entry errors, or unexpected events, and can significantly impact the accuracy and reliability of statistical models and machine learning algorithms.

Outlier detection techniques are used in a wide range of applications such as fraud detection, intrusion detection, medical diagnosis, and environmental monitoring. These techniques employ statistical and machine learning algorithms to identify outliers and provide insights into the underlying causes of these anomalies.

Some common techniques used for outlier detection include statistical methods such as z-score analysis and clustering-based approaches such as k-means clustering and DBSCAN. Machine learning algorithms such as isolation forest, one-class SVM, and autoencoders are also commonly used for outlier detection.

Effective outlier detection is critical in many industries, as it can help to identify potential issues early and prevent costly errors or damage. As datasets continue to grow in size and complexity, outlier detection techniques are becoming increasingly important in data analysis and decision-making processes.

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CONTROL OF LONG RANGE QUADCOPTER USING NODEMCU

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ABSTRACT

This is the design and implementation of a long-range quadcopter using the NRF24L01 wireless communication module. The quadcopter is controlled remotely using a joystick and a wireless communication link established between the ground station and the quadcopter using NRF24L01 modules. The quadcopter's control system comprises of an Arduino microcontroller, which receives commands from the ground station and sends control signals to the quadcopter's motors. The quadcopter's frame, motors, and propellers are designed for high efficiency and long-range flight. The system is tested in open spaces to validate its long-range capabilities and robustness in handling different weather conditions. This project demonstrates the feasibility of using NRF24L01 wireless communication modules for long-range drone control and highlights the importance of designing an efficient and reliable control system for drones to ensure safe and successful operation.

1.INTRODUCTION

The use of drones has become increasingly popular in recent years due to their versatility and wide range of applications. However, drones are often limited by their communication range, which can restrict their use in certain scenarios. This limitation can be overcome by using long-range wireless communication modules such as the NRF24L01, which can transmit data over long distances with low power consumption.

In this project, we explore the design and implementation of a long-range quadcopter using the NRF24L01 wireless communication module and an Arduino microcontroller. The quadcopter is remotely controlled using a joystick, and the communication link is established between the ground station and the quadcopter using NRF24L01 modules. The quadcopter's control system uses an Arduino microcontroller, which receives commands from the ground station and sends control signals to the quadcopter's motors.

This project aims to demonstrate the feasibility of using NRF24L01 wireless communication modules and an Arduino microcontroller for long-range drone control. The quadcopter's frame, motors, and propellers are designed for high efficiency and long-range flight. The system is tested in open spaces to validate its long-range capabilities and robustness in handling different weather conditions. This project highlights the importance of designing an efficient and reliable control system for drones to ensure safe and successful operation.

1.1 SYSTEM DESIGN

The system design for a long-range quadcopter using the NRF24L01 wireless communication module involves the following components:

Quadcopter Frame: The quadcopter frame is designed to be lightweight and durable. It should also have enough space to accommodate the control system components and batteries.

Motors and Propellers: The motors and propellers should be selected based on the weight of the quadcopter and the desired flight characteristics. High-efficiency motors and propellers are preferred for long-range flights.

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DEVELOPMENT OF HEALTH MONITORING ROBOTIC NURSE

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ABSTRACT

This paper highlights the role of robotics in health care. This Paper also describes the evolving role of robotics in healthcare and allied areas with special concerns relating to the management and control of the spread of the novel coronavirus disease 2019 (COVID-19). The prime utilization of such robots is to minimize person-to-person contact and to ensure cleaning, sterilization and support in hospitals and similar facilities such as quarantine. This will result in minimizing the life threat to medical staff and doctors taking an active role in the management of theCOVID-19 pandemic. The intention of the present research is to highlight the importance of medical robotics in general and then to connect its utilization with the perspective of COVID-19 management so that the hospital management can direct themselves to maximize the use of medical robots for various medical procedures.[8] This is despite the popularity of telemedicine, which is also effective in similar situations. In essence, the recent achievement of the Korean and Chinese health sectors in obtaining active control of the COVID-19 pandemic was not possible without the use of state of the art medical technology Keyword--- Health care follower, Delivering pills, patients, health monitor.

1. INTRODUCTION

Proposed system is a Healthcare Monitoring Robot. ATMega 2560 is used as a control processor which controls all the activities and the movements of the robot. The DC motor rotation is also controlled by Microcontroller by sending proper instructions.[1] [2] Health Monitoring Robot using ATMega 2560 it gives the instruction for every presented hardware for an operation and it send the instruction as per the given delay for efficient working of the motors and sensors to work correspondingly.[4] [6] By referring these in these paper in our proposed system we know that the World Health Organization (WHO) on January 30, 2020 publicly declared the COVID-19 pandemic as a "global emergency" because of the rapidity at which it had spread world wide.The virus has shaken worldwide economies leading to a stock market crash in many countries. Recently, clinical data confirmed that a significant portion of the COVID-19 patients show diminutive symptoms for the first four days. Which illustrates the stealthy transmission potential of this contagious disease. Scientists have deliberated that COVID-19 is far more transmittable and lethal than the ordinary flu.[5] Here robot s are designed to take care of the COVID-19 patients in hospitals. To avoid person to person contact for nurses or doctors to COVID-19 patients. Time to Time medicine dispense to the patients.[10] Emergency conditions checking for each person. If any emergency condition send message to Doctor. The main purpose of proposed system is to help doctor and nurse at the hospital. It delivers the medicine to the patient and to check the heart beat and temperature of the patient.

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HEPTOCELLULAR CARCINOMA DETECTION USING DEEP LEARNING FRAMEWORK

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ABSTRACT

Liver is one of the largest gland and largest internal organ in human body. Abnormal growth in cell in the liver causes liver cancer, which also known as hepatic cancer. People having liver tumor died due to inaccurate detection. Detection of this tumor is mostly difficult and it can be detected at advance stage and life-threatening. Its better detect the tumor at an early stage .In this project we detect liver cancer at the earlier stage using image processing. This project consist of automated method of detecting the liver cancer in abdominal CT images and classifying CNN algorithm. The model consist of many stages the image is normalized and pre-processed using the median filter to remove noise . Histogram equalization of the image ,the feature are extracted based on the Discrete wavelet Transformation(DWT).Finally ,liver CT images are classified by implementing convolutional neural network and segmentedresult.

Keyword : - *Discrete wavelet transformation, Convolutional neural network, Segmentation, CT Scan*

1.INTRODUCTION

Millions of cells in our body divide everyday to form new cells. The cells which are formed replaces all the deadcells present. They get together to form a tissues again tissues get together to form organs. In some cases cells dividemore than necessary and forms lumps or extra growth known as tumors. Major cause of death is caused from LiverCancer .Liver Cancer is not only death causing but and difficult to detect and mostly found in advance stage. The known or common type of Liver Cancer is known as hepatocellular carcinoma .It is found more in males than the female .To overcome this issue we have come up with the detection of liver cancer using deep learning framework Using this we can detect cancer in an early stage And with the most accuracy.

1.1 Proposed System

Here we propose detection of cancer using the clustering and neural networks. It consists of three main phases pre-processing, detection processing phase, detection phase in which wavelets are applied to signify the segmentation to classify the normal and abnormal stages of the tumor. Accuracy of the exact location of the tumor located plays an important role .Diagnosis method consist of three stages pre-processing of images ,feature extraction and classification. Once done with histogram equalization of image ,the feature is extracted based on the Discrete wavelet Transformation(DWT).In the final stage of the process Convolution Neural Network are classify the abnormal and normal

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ENCRYPTION OF DATA USING AES 256 IN VERILOG

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ABSTRACT

The Advanced Encryption Standard (AES) algorithm is one of the most widely used symmetric block cipher algorithms in the world. This algorithm has a unique structure for encrypting and decrypting sensitive data and is used in hardware and software around the world. It is very difficult for a hacker to get the actual data when it is encrypted with the AES algorithm. There is currently no evidence that this algorithm has been cracked. AES can handle three different key sizes like AES 128, 192, and 256 bits, and the block size for each of these ciphers is 128 bits. This project will design the hardware architecture and implement the Advanced Encryption Standard (AES) algorithm based on a Field Programmable Gate Array (FPGA) using High Level Language (HLL). This design focuses on maximizing the use of available resources. Therefore, we minimize hardware resource usage and power consumption, and perform global optimization of PPA (power, performance, area) parameters to the best of our knowledge.

Keyword: *-Cipher Text, Key expansion, Byte Substitution, Mix Columns, Shift Rows, Round Keys, ALTERA, Sub Bytes, S-Box, Rcon, XOR, Galois Field, data, SubKey_a, Subkey_b, Cadence, Quartus II Programmer, FPGA (Field Programmable Gate Array)*

1.INTRODUCTION

AES is an advanced encryption standard developed in 1998 by two members, Joan Daemen and Vincent Rijmen. This AES is used to ensure the security of transmitted data. Various keys can be used to operate this AES. B. AES 192.128.256 bit key. With the advancement of technology, there are many new applications and products, even the Internet of Things (IOT), and there is even a need to give security to data and information, so this AES encryption plays an important role and can be decrypted. They can be implemented in field programmable gate arrays and embedded systems. An HDL language is required to implement this AES in an FPGA. In this document you can learn about AES 256-bit key encryption. The proposed architecture is used for 256-bit keys.

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RECOGNITION OF ADHD SYNDROME IN CHILDREN

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ABSTRACT

Attention Deficit Hyperactivity Disorder (ADHD) is a Disruptive Behavior Disorder characterized by the presence of a set of chronic and impairing behavior patterns that display abnormal levels of inattention, hyperactivity, or their combination. Since most individuals especially children display these behaviors from time to time, it is be difficult to differentiate behaviors that reflect ADHD from those that are a normal part of growing up which makes the diagnosis a tricky job. Electroencephalogram (EEG) is a best method for monitoring, recording and measuring spontaneous voltage fluctuations of the brain that caused due to the ionic current associated with the neurons. Due to having many advantages of using EEG over MRI, PET and MEG in the detection and diagnosis of ADHD, in this proposed system a well-known artificial intelligence technique, the SVM algorithm, is used for the diagnosis of the disorder. The major advantage of using SVM is that it helps in controlling the complexity of the problem of diagnosing. The proposed methodology improves on the overall identification accuracy. SVM algorithms are known to give good solution to very complex problems. The proposed system extracts the features which are responsible for ADHD syndrome by SVM, method using the python language provides 99% of efficiency it helps in early detection of abnormalities and starts the exact treatment.

Keyword— *ADHD, SVM, EEG.*

1. INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is one of the most common childhood disorders and can continue through adolescence and adulthood. ADHD is a disorder in which a person has a difficulty to learn effectively, caused by an unknown factor or factors. The unknown factor is the disorder that affects the brain's ability to receive and process information. It typically first shows up when a person has difficulty speaking, reading, writing, figuring out a math problem, communicating with a parent, or paying attention in class [4].

1.1 Classification of ADHD

ADHD is characterized by [4].

- Hyperactivity, Impulsivity, Inattention
- Difficulty staying seated
- Fidgeting and bouncing while seated
- Talking excessively
- Seeming to be in constant motion
- Climbing on things and jumping off things inappropriately
- Running inappropriately.
- Having great difficulty waiting for turns Interrupting children's play activities Interrupting conversations
- Blurting out answers to questions not directed at them
- Acting recklessly without thinking of the consequences

These are just ways of identifying if a child is suffering from ADHD or not. They are just an estimate and not the correct way to predict the advent of ADHD. Since there is no correct method or proposed method to

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SMART STAIRLIFT FOR ELDERLY/DISABLE PEOPLE USING NODEMCU

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ABSTRACT

The development of an indoor and outdoor stairlift is the primary goal of this project. In comparison to average people, there are many elderly and physically disabled people who find it challenging to climb stairs. Therefore, the project is created to aid them as well as those whose small houses prevent them from affording a lift. The main goal of this project is to build a cheap mechanism that can be used to lift and lower people whenever needed.Today's high-quality lifts, which are a safe and affordable solution to overcome the specific needs and challenges that people experience on the stairs, include many features to maximize comfort, ease of use, and attractiveness in the home. While safety is still the primary concern when using the stairs, going up and down them. The topic of this paper is the construction of escalators (stair lifts) with rope and pulley mechanisms that lift and lower the platform to convey people. This aids the person who is having trouble climbing stairs. Due to the fact that this is a mechanical engineering project, we suggest equipment that a person could readily operate.The project had to be built on a budget that was lower than that of a lift, require less maintenance, and not put human lives or the power grid at risk. The elderly who are unable to climb stairs benefit from this effort.

Keyword: -*Internet of Things, The Comfort, Mobile Chair*

1. INTRODUCTION

Technology advancements have enabled impaired persons to live independent lives and contribute more positively to society. For people who have mobility issues, such as older people, stairways into buildings offer a substantial environmental barrier. Technology advancements have enabled impaired persons to live independent lives and contribute more positively to society. For people who have mobility issues, such as older people, stairways into buildings offer a substantial environmental barrier. A prototype that had pantographic legs operated by a computer that walked in a straight line in the lab in October 1998. It was using a stationary controller with a complicated design, but it was not transporting passengers.

Because of the legs, a person had to sit in a fixed position without moving, which is frequently not very comfortable. Even the technology itself is plagued by safety concerns. Wheeled systems do not require any control electronics or system maintenance because the wheels passively support the chair. Because of the system's intricacy, safety is a natural concern, and without it, consumers would not choose this mechanism.

We proposed our Smart Staircase System with a few smart features after outlining the relative benefits and drawbacks of various electric-powered wheelchairs, lifts and escalators for an overall comparison of the control

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POWER GENERATION THROUGH HUMAN LOCOMOTION USING PIEZOELECTRIC SENSORS

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ABSTRACT

The production of electric power from the footstep movement of the peoples and the pressure exerted during walking which is fritter away is the main theme of this paper. The mechanical power transformation into electrical power as the pressure exerted by the footstep and by using transducers is basically called as "Footttep power generation system". Power is produced by the power generating floor and it is basically the production of electrical energy from kinetic energy. The main aim is to overcome the power crisis throughout the world although it is not enough to fulfill over excessive demand of electrical energy, but it will be able to change and decrease reliance on old method of generating electricity. It can be installed on roadside footpath, parks and jogging tracks and many other public places, airport etc. and have great impact of this and will create great difference in the electrical power generation system. We can produce energy that can be stored in a rechargeable battery, so that we can use it for our later purposes, and it can be also placed in public places like streetlight, mobile charging etc.

Keyword: - *Piezo-electric Sensor, Mobile charging, Footstep.*

1. INTRODUCTION

The formation of electrical energy from the force exerted by footstep on the floor is illustrated in this research work. It will be surprising to know that the normal footstep movement on the floor can generate how much energy. As thousands of steps per day is taken by each person. Electrical energy is generated by the footstep taken by the peoples because of walking. It is a fact that large amount of energy is lost by each person during routine walk which is the main source for this system. A system is designed which generate power through non-conventional energy source technique such a walking on the gardens, grounds, and floors etc. This system is established in heavy populated areas. A compatible system has been designed to complete the procedure through which the load will run, home appliances will work on alternating current output voltage.

The energy that is produced from a person walking on floor is noise and pollution free. That type of energy is advantageous and even not need any type of fuel or power source to run. renewable energy in today's world while the demand of energy is increasing day by day is the current solution of this modern world. In this research work a system is designed which generate power through non-conventional energy source technique such a walking on the gardens, grounds, and floors etc. This system is established in heavy populated areas. Basic way of the "Footstep Power Generation" is based on the piezoelectric sensor to apply this system wooden plates up and down will be placed and adjusted on the piezoelectric sensor and moving spring.

The force is applied when the person is walking on that mat and the magnet is fixed on the upper portion of the wooden sheet because of force and moves into the cavity. However, the cavity is fixed on the bottom wooden sheet of the mat. A compatible system has been designed to complete the procedure through which the load will run, home appliances will work on alternating current output voltage. And the task is with the help of direct current to charge battery and then using inverter to convert direct current into alternating current for normal usage. At last, designing for the power generation of such types are very useful as compared to the demand of energy all over the world.

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EV CHARGER USING SOLAR ENERGY

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ABSTRACT

Today energy is the main inspiration for socio-economic development. But due to incremental rate of environmental concern renewable energy provide a significant interest. This alternative power source is continuously achieving greater popularity due to continuous reduction in fossil fuels. It is the energy comes from sun, wind, rain etc. Among the non-conventional, renewable energy sources, solar energy affords great potential for conversion into electric power. Maximizing power output from a solar system is desirable to increase efficiency. In order to maximize power output, needs to keep the panels aligned with the sun. This paper deals with the electricity generation using solar power. The proposed system ensures the optimization of the conversion of solar energy into electricity by properly orienting the panel in accordance with the position of the sun. The operation of the paper is based on a Stepper motor intelligently moves a panel according to the light intensity of the sun sensing by light sensor.

1. INTRODUCTION

The creation of battery charging station structures is critical to lessen the power request of the framework. Subsequently, sustainable powers sources emerge with develop innovation furthermore, focused on cost. In this work is proposed the design of a system to create and handle Electric Vehicles (EV) charging procedures, based on intelligent process. Due to the electrical power distribution limitation, Electric Vehicles charging should be performed in effective way. This proposed Smart Electric Vehicle Charging station having many advance features like it will automatically maintain the power from different source and automatic switch the source based on availability of the source. However, the massive penetration of EVs brings the big challenge of EV recharge–related issues. Therefore, to provide electrical energy for EVs, charging stations and battery technology considering actual EV field trips are attracting more and more attention from researchers.

Road transport is undoubtedly the most common and affordable form of commute for people around the world. However, recently, it has faced much criticism due to its dependence on fossil fuels and its relativelylow operational inefficiency. This has opened the doors for the electric mobility industry, and the world has witnessed a drastic surge in the acceptability of EVs. As India aims to decrease its carbon footprint like other nations and step into the world of sustainability, the government is consistently introducing transport sector reforms that aim at the electrification of all effective forms of commute. As a result, according to a study conducted 2020 to 2027. The average annual growth rate for the EV sector in India is estimated to be around 44%. Articles published by various research scholars and authorities mainly focus on the importance of shifting towards EVs, the technical aspects of charging stations, and the governments' policies to develop the necessary infrastructure for EVs.

Topics such as the need for India to move away from its crude oil imports, fighting climate change to reduce its carbon footprints, and reducing pollution have been discussed in detail, and conclusions regarding India moving into the EV space following its global peers have been made. Moreover, new energy storage and transfer technologies that can be used to implement the charging infrastructure have been studied according to the necessary requirements.

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FIRE DETECTION AND RESCUE SYSTEM BY CAMERA USING ARTIFICAL INTELLIGENCE

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ABSTRACT

In this work, we build and create a real-time camera and water pump surveillance system powered by artificial intelligence for large-scale fire detection and rescue.The Raspberry Pi, a potent open source microcontroller, an inexpensive camera with a water pump, and other components are used in this arrangement.We used the RGB colour model to convert it to HSV and get edge detection.This system can be installed practically anywhere for the purpose of detecting fires, including shopping centres, office buildings, and many other public areas.The accuracy, latency, and detection area of traditional fire detection techniques using smoke and heat detectors are disadvantageous. Using an unmanned aerial vehicle with an integrated visual detection system, we propose and demonstrate a real-time fire detection solution for large-area surveillance in this work.

Keyword: - *Artificial Intelligence, Raspberry Pi, Edge Detection, Fire rescue.*

1. INTRODUCTION

The 21st century has seen a development trend in the field of artificial intelligence (AI). With dramatic revolutions influenced by both ideas and methodologies, the evolution of AI has promoted the development of human society in our day and age. However, due to its multidisciplinary nature and rapid expansion, AI is a field that is challenging to fully comprehend. We discover that the region is undergoing sustainable growth, and its effects are growing. The reduction in self-references suggests that the AI is becoming more and more flexible from the perspective of reference behaviour. The growth of the field's outline markers may be seen in the fire detection and rescue system employing cameras and artificial intelligence. The concept put forward in this essay seeks to enhance safety measures implemented in public areas or commercial structures by utilising automated fire detection and rescue systems. This innovation sheds light on public safety while also offering profound insights into the most recent scientific trends.

1.1 Motivation of the Task

Over time, we have discovered fundamental fire safety principles that can be consistently applied globally, such as prevention, detection and communication, occupant protection, containment, and manual extinguishment, that can be used to prevent fire events and manage their impact. However, having a rescue system with automated fire suppression is ideal.

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DETECTOR ROBO FOR FACE MASK ANDTEMPERATURE DETECTION

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ABSTRACT

The first step to detect covid is by scanning for fever. Also, we need to monitor every person for a mask.We have temperature checking systems for every entrance for scanning, but manual temperature scanning has a lot of disadvantages. To solve this problem, we here propose a fully automated temperature scanner and entry provider system. It is a multipurpose system that has a wide range of applications. The system makes use of a contactless temperature scanner and a mask monitor. The scanner is connected directly with a human barrier to bar entry if high temperature or no mask is detected. Any person will not be provided entry without temperature and mask scan. Only person having both conditions is instantly allowed inside. The system uses temperature sensorand camera connected with a ARDUINO system to control the entire operation. The camera is used to scan for mask and temperature sensor for forehead temperature. The raspberry processes the sensor inputs and decides whether the person is to be allowed. In this case the system operates a motor to open the barrier allowing the person to enter the premises.

Keyword – *Detector Robo For Face Mask and Temperature Detection.- Arduino,Raspberry, etc.....*

1. INTRODUCTION

Checking for fever is the initial step in the diagnosis of COVID. Additionally, we must check everyone for masks. Every entrance has a temperature checking system for scanning, although manual temperature scanning has many drawbacks. The staff members lack adequate training in the use of temperature scanner devices.Many times, despite greater temperature readings or the lack of masks, visitors are allowed to enter because values are often read incorrectly by humans. If supervisors are not present, staff members will not scan. Large crowds are not suited for manual scanning systems.Here, we offer a completely automated temperature scanner and entry provider system as a solution to this issue. It is a multifunctional system with numerous applications. The technology makes use of a mask monitor and a contactless temperature reader. If a high temperature or lack of a mask is found, a human barrier is immediately attached to the scanner to prevent admission. Entry won't be granted to anyone without a temperature and mask scan. The only person who meets both requirements is admitted right away. The system uses a temperature sensor, a camera, and an ARDUINO system to regulate every aspect of the process. The temperature sensor and camera are used to scan for masks and measure forehead temperature.

1.1 OBJECTIVES

- Face Mask Recognition: The robot should be able to recognise whether or not a human is wearing a face mask. It need to be able to recognise the face of the subject and ascertain whether or not they are donning a mask.
- Temperature Detection: The robot should be able to use an infrared thermometer or a thermal imaging camera to determine the subject's body temperature. If the temperature is higher than normal, it should be

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STOCKPILE TRACK-OFF APPROACH

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ABSTRACT

India is a nation where the agrarian sections have a significant influence on the economy. Consistently ranchers deal with various issues because of the capacity prerequisites, the absence of legitimate checking of the food put away. Stockrooms are utilized for capacity purpose. Just a little piece of the food grains is put away in the state-run distribution centres. An enormous piece of the harvests in left without suitable storage spaces. The worldwide creation of Incorporates maize, wheat, and rice. However, because of the variance in the market, the misfortunes that the nation faces consistently because of inappropriate stockpiling is about RS. 50,000 crores in financial terms. A food warehouse is a place used by food establishments or individuals to store and distribute food for wholesale. So in this project we use a proposed solutions for this problem. We use raspberry pi, IR sensor, fire sensor, smoke sensor, Temperature sensor, GSM module, Esp32 micro-controller. By writing an Embedded C code to run the out-put and we use the Arduino ide to program and dump the program in esp32 micro-controller. We get the out-put in the node-red dashboard using VNC viewer. The data is collected to the micro-controller and it is sent to node-red dashboard by MQTT protocoland we obtain the output.

Keywords: *Raspberry pi, Node-red (dash board), Embedded C, MQTT protocol, Stockpile*

1. INTRODUCTION

In a traditional food warehouse, a lot of food is wasted because there is no data about the parameters that affect the food and no efficient system to monitor the food stored in the warehouse also the system is labor-intensive as it requires people to monitor the warehouse at all times. There are different natural components that sway the normal contamination of food grains, for instance, kind of limit structure, clamminess, temperature, CO2, moisture, and so on as the piling up time builds, the food will lose its worth. Different customary stockpiling strategies were started which constrained a tremendous manual methodology that requires additional time and is likewise less productive. Another burden was the deficiency of a multi-limit really taking a look at the structure. India needs to properly assess and address the problem of food loss in transit. An efficient food warehouse monitoring system can help to reduce food waste, keep agricultural produce and grains less volatile to market variations, and help to increase food grains exports and overcome food shortages. This attempted project presents a smart IOT based food noticing structure in stockrooms using ESP32 and various sensors that constantly screen the various factors which may impact the food quality. This proposed structure intends to screen appropriation focal constraints, for example, temperature, humidity, CO, development, and smoke, all of which have a significant impact on grains. The ESP32 Wi-Fi module collects data from the sensors and transfers it to the Node-red dashboard over the MQTT specialist. Various IOT hubs will be placed at various locations across the appropriation area to provide information about the back room environment to authorized individuals by mobile SMS and e-mail announcement.

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POSITION DETECTION FOR WIRELESS CHARGING OF ELECTRIC VEHICLES

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Abstract

For a number of years, wireless charging for electric cars (EVs) has been under research in anticipation of the increased usage of these vehicles. EVs may now be charged effectively and conveniently using wireless charging devices from a similar ground source, originating from several classes and at a variety of power levels. The method to identify the aligned position of the transmitter and receiver coil, they are utilised in wireless charging for electric vehicles is presented in this study. The use of a retroreflective photoelectric sensor can improve the precision and dependability of a traditional position detecting system. With the suggested technique, the system runs continuously at its most effective efficiency and more accuracy. The technology of wireless power transmission (WPT) is gaining popularity and finding use in a variety of fields. Without the need for interconnections, power is transmitted from a source to an electrical load. Where physical wiring is impractical or impossible, WPT can be used to power electrical equipment. The suggested system also incorporates Internet of Things (IoT) technology, which enables remote monitoring and control. experimental analysis of the system's effectiveness using and without presented technique are compared to validates the proposed system.

1. INTRODUCTION

These days, the use of electric cars (EVs), which are the vehicles of the future, is increasing. They meet the requirements of the low-carbon society by having zero tailpipe emissions. In comparison to conventional internal combustion engine vehicles (ICEVs), they use less energy. Additionally, the cost of operation and upkeep is significantly reduced. Electric vehicle (EV) charging systems can be either conductive (wired) or wireless. The conductive charger requires the thick mechanical plug and heavy wire.

In contrast, a wireless charger doesn't require physical touch, which ensures user convenience and safety against electric shock or spark. Additionally, it is waterproof, allowing for use in harsh environments [1]–[2]. A typical wireless charging setup for EVs is shown in Figure 1 [3]. The transmitter (TX) coil receives high frequency current generated by an inverter circuit, which produces a high frequency magnetic field. This field induces a voltage when it passes through the receiver (Rx) coil.

This voltage is rectified before being transmitted to the battery to charge it. Resonant networks are connected to both the TX and Rx coils to make up for the reactive power required by the coupled coil. The Tx and Rx coils must be positioned so that they share the same centre in order to get the optimal magnetic coupling. However, as can clearly be observed in Fig. 1, the TX and Rx coil misalignment can occur in actual operation. As a result, the magnetic coupling degrades, which lowers the system efficiency. The position detection system was previously implemented to make sure both coils locate at the aligned location where the system efficiency is maximised research effort. The radio frequency identification (RFID) and magnetic field coupling technique-based location approach is described in [4]. Despite achieving excellent accuracy, the accompanying circuit and control are rather complex. The misalignment-sensing coils that were utilised to take advantage of magnetic-field symmetry and provide a measurement of the direction and magnitude of the misalignment are described in [5]. This approach is challenging to use and needs additional circuits, such as rectifier and filter. Using a tunnelling magneto resistive (TMR) sensor, a coil-misalignment detection method is introduced in [6]. Due to nonlinearity and saturation, this sensor's restriction prevents it from being employed in high magnetic fields.

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LORA NETWORK BASED WIRELESS COMMUNICATION AND MONITORING USING IOT

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ABSTRACT

Farmers take more concern in protecting their cattle. But the environmental factors greatly affect the health of cattle such that they may get affected due to various disorders. Therefore, this proposed project is based on monitoring the health conditions of the cattle by comparing the present health condition required for normal cattle. The parameters like humidity, temperature, gas values etc. are compared with standard parameters and the information is transmitted through IoT. The farmer gets notified and inspected when the veterinary doctors are not available at the instance. Availability of internet at rural areas is very difficult to access. So, by considering this factor we have added LoRa to get the intermediate connectivity.

Keywords:-*LoRa, Intermediate connectivity.*

1. INTRODUCTION

In this modern era, many technologies are introduced in our environment. In this electronic world, microcontroller plays a major role in the development of smart systems. In this day by day improvement and the development of new technologies, microcontrollers act as a heart of the system. These microcontrollers consist of a single chip processor which is suitable for automation and control process for an accurate result. To overcome the arising problem of monitoring the temperature, this project is designed and implemented. The monitoring of temperature is a process in which the temperature is a process in which the temperature of space or object is changed. The project describes the monitoring of temperature. This system is designed and implemented using an Arduino program which is written in Arduino UNO. The smart farming relays on basic needs of farmers such as helping the farmers by reducing their work like farmers visiting the cattle again and again for observing health condition, so to overcome the workload of farmers, a computing and sensor based methods controlled by Arduino module is installed in cattle sheds through sensor to monitor the health condition of cattle. The data is measured through sensors are then stored in the consumer database, where the consumers are allowed to extract data through the software. It includes another feature of alarming i.e., if the temperature of cattle exceeds beyond threshold value, the sensors senses the temperature and compares it with the safe range and it alarms when required.

1.1 Motivation of the Task

In earlier days, farmers used various techniques for detecting health condition of animal bodies, which requires continuous and daily to daily base observation of animals. This again requires an excessive amount of labor and their cost. Those techniques of detecting would give wrong results, which may be different from the actual

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EQUIPMENT CONDITION MONITORING SYSTEM BASED ON IoT

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ABSTRACT

The importance of the equipment condition monitoring system for the machining workshop is due to the rising demands on the effectiveness and dependability of the machining process. Accuracy can vary in a machine or equipment condition monitoring system. Data collection and processing from workshop equipment are necessary in order to construct the monitoring system. Consequently, a calibration interface is needed on the system's dashboard. Considering the intricate machining environment and the variety of equipment in the workplace. The suggested system calls for the development of a system for monitoring the state of equipment using heterogeneous data from several sources. The multisource acquired data from the sensors is then analyzed, stored in the Cloud and anytime an action is required, an alert signal is given to the user and an alarm is triggered to ensure that the action is taken immediately. Such that the machinery or equipment is promptly protected from changes in factors like temperature, humidity, pressure, altitude and vibrations. After analyzing the data from the sensors, an alert signal is sent through mail depending on the threshold levels that are defined for each parameter with respect to the specific pieces of equipment.

Keyword: - *Equipment, Monitoring system, Machining workshop, Cloud, Trigger and Threshold levels.*

1. INTRODUCTION

The term "Internet of Things" (IoT) describes all of the online-connected objects that are prevalent around the globe. IoT's goal is to use the Internet to connect and share data between two devices. The Internet of Things has advanced significantly over the last several years and has shown to be highly beneficial in numerous practical applications. In applications that require both hardware and software, it is highly helpful. IoT-based condition monitoring is frequently used to track the performance and operational characteristics of large machinery and equipment. The status, utilization, performance, condition, and other equipment data may be collected and analyzed in real-time using an equipment monitoring system on the Internet of Things. The answer can expedite equipment maintenance tasks and improve equipment functioning in the manufacturing, construction, healthcare, oil & gas, electrical, mining, and other industries. The importance of the equipment condition monitoring system for the machining workshop is due to the rising demands on the effectiveness and dependability of the machining process.

1.1 Motivation of the Task

Condition monitoring techniques hit upon anomalies in device before the ones turn into device-vital screw ups, permitting preservation to be scheduled earlier than the gadget absolutely breaks down. This will increase gadget uptime reduces normal protection charges. Circumstance monitoring uses sensors to offer meaningful insights into the modern-day health of numerous gadgets or objects of gadget. Those sensors gather records to display crucial operating parameters together with temperature, vibrations, humidity, sound anomalies, airflow, and present day.

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FOREST FIRE DETECTION USING OPTIMIZED SOLAR POWERED WIRELESS SENSORS NETWORKS AND LORA TECHNOLOGY

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ABSTRACT

A novel approach for forest fire detection using image processing technique is proposed. A rule-based color model for fire pixel classification is used. The proposed algorithm uses RGB and YCbCr color space. The advantage of using YCbCr color space is that it can separate the luminance from the chrominance more effectively than RGB color space. The performance of the proposed algorithm is tested on two sets of images, one of which contains fire; the other contains fire-like regions. Standard methods are used for calculating the performance of the algorithm. The proposed method has both higher detection rate and lower false alarm rate. Since, the algorithm is cheap in computation it can be used for real time forest fire detection. An effective forest- response is critical for minimizing the losses caused by forest fires.

Keyword: - *Forest-fire management, deep learning, Bayesian neural network, object detection.*

1. INTRODUCTION

Forests are important in the ecosystem on earth. It is inseparable from the function of the forest itself, namely as a producer of oxygen to mankind even bearing the predicate as the lungs of the world. The problem is that when the forest experiences a fire, there will be a lot of harm to humans, ranging from air pollution and the destruction of natural ecosystems in the forest itself, starting from animals that will die a lot and to living animals can lose their place of residence. Another thing that becomes a problem is that in the event of a forest fire, the authorities are slow in handling the forest fire, one of the reasons is the lack in information of forest fire. Therefore, we conduct a study that aims to detect fires and inform the authorities in the event of a fire. The project is intended to cultivate a robotic vehicle that can sense metals ahead of it on its path similar to detecting land mines.

1.1 Motivation of the Task

Now a days, wild animals and forest department are facing so many problems. Wild animals move towards urban area. Since forest woods has destroyed from human being day by day in the forest. The forest area reduced, so animals struggle for their existence in the forest. A survey found that 75% of forest burns due to fire. This loss of

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IMPLEMENTATION OF CHACHA AND DES CIPHERS FOR CRYPTOGRAPHIC AUTHENTICATION

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ABSTRACT

Cryptography means securing the data or information using codes. Using Cryptography we can restrict the information to the intended user only. In Cryptography ciphers are used, these are the algorithms which encrypt and decrypt the data. In order to secure information we are introducing VLSI Design of Cha-Cha Stream Cipher for High Performance Data Security. The Cha-cha cipher is used for 512 bit Key Stream generation and to encrypt and decrypt 512 bit data. To increase Security of Cha-Cha cipher we add DES cipher, which is a block cipher for 64 bit Tag Generation in both Encryption and Decryption Side. The Tag generation helps in authentication of the data. The Proposed Method uses a combination of a stream cipher and a block cipher. The Proposed method is simulated and synthesized using XilinxISE tool. The coding is done using a combination of Verilog HDL and VHDL languages. The area and throughput exploration of VLSI designs of the underlying algorithms has been evaluated. The proposed design provides increased security and integrity of the information.

Keyword--- *Cryptography, Cipher, Cha-Cha, DES, Verilog HDL*

1. INTRODUCTION

In cryptology we study about cryptographic algorithms, these cryptographic algorithms are also named as ciphers which encrypt and decrypt data. We have used two symmetric key ciphers. In Symmetric key ciphers also called as Single Key Encryption we use only one key for encryption and the same key will be used for decryption. In stream cipher data is encrypted or decrypted in a stream of 8 bits at a time. In block cipher data is encrypted or decrypted in the form of uniform blocks of 128 bits at a time. Initially, a key (k) will be supplied as input to the key stream generator and then it produces a key stream. One of the benefits of following cipher is to make cryptanalysis more difficult, so the number of bits chosen in the Key stream must be long in order to make cryptanalysis more difficult. By making the key longer it is also safe against brute force attacks. The longer the key the stronger security is achieved, preventing any attack. Key stream can be designed more efficiently by including more number of 1s and 0s, for making cryptanalysis more difficult.

1.1 BASIC TERMS IN CRYPTOGRAPHY

Plain text:
The data or message to be communicated from the sender to the receiver.
Cipher text:
The data or message will be XORed with the Key Stream to produce a text which is cannot be understood by hackers is called as cipher text.

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SMART HOME AUTOMATION, SECURITY& ENERGY OPTIMIZATION

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ABSTRACT

For almost 10 years, the home automation industry has attracted some academics' interest. Any automated system's main selling point is its reduction of manual labor, effort, time, and mistakes brought on by human error. Smartphones have become a must for every individual which results in the advancement of contemporary technology. There is an urgent need to save energy in every aspect due to the rise in population and energy usage. The main causes of energy loss is the inert to access and manage applications in remote areas. This article provides a review for these systems.

Keyword Smart Home, phone, Voice Control, wireless technology.

1. INTRODUCTION

Up until quite recently, only bigger commercial structures and affluent houses had computerized the control for all systems throughout the building. Building automation, which often just involves lighting, heating, cooling systems, seldom offered more complex management, monitoring, and scheduling features and was only available for distinct power locations in the building. We have pushed for omnipresent computation of many aspects of life since the 'Internet of Things' emerged in the past ten years.

Therefore, making it easier for people to communicate within technology is crucial. One such topic that seeks to attainsimplicity while boosting efficiency is automation. A voice-activated smart home seeks to further automation to attain simplicity. The point at which home automation truly "smart" resides in Internet-capable hardware that connects to the network which manages it. The smart home, by which many of the early smart home were created, is the standard control device. The panel which controls the security system, forexample, a app that drifts can be examined through an Internet-enabled PC, smartphone, tablet are more frequently used in today's smart home to spread program and monitor control. To compare the characteristics offered the existing systems, this study will conduct a analysis of all of them. The essay will also contrast and analyze each system, examining its many merits and downsides. Smart home come with a wide range of possibilities.

1.1 BACKGROUND

Home automation" is a concept that has been for a while. The words "Smart Home" and "Intelligent Home" were used to introduce the idea of networking gadgets inside the home.

Home appliances automatically gather electrical information, analyses it, and manage it using intelligent interactive interfaces, smart sockets, and other smart devices. Home appliances also accomplish economical operation and energy control. The system may remotely operate home and other services by phone, mobile phone, internet, and other channels. We can also achieve tasks like smoke, gas leak detection, anti-robbery, extremity assistance. We can also automatically collect and manage information from water, gas meters, support systems, and daily oversight of residential. Your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work.

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AN IOT AUTOMOBILE ROBO IMPLEMENTATION FOR DISASTER MANAGEMNET

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ABSTRACT

Most road accidents occur because of drowsiness due to careless driving of drivers. This system provides Eye Blink Monitoring (EBM) system that will alert the driver in drowsiness. Using an IR sensor the driver's eye is continuously monitored. The output of the system will have no effect on the normal eye blink rate. The IR sensor receives abnormal blinking rate and an alarm will ring to wake him/her up when the driver feel asleep. In this system we use alcohol sensor to detect the concentration of ethanol in air. If detected there will be no engine ignition. The speedometer and engine's computer receives the information from the engine speed sensor to tell the transmission to shift. Accident sensor need to detect a crash and convert it to usable signals within milliseconds.

KEYWORD:- *Disaster management, Internet of things, Networking, transportation saftey*

1. INTRODUCTION

"An IOT automobile robotic implementation for disaster management" is a project aimed at developing an autonomous vehicle that can be used for disaster management purposes. The vehicle is equipped with various sensors and communication modules that enable it to navigate through disaster-stricken areas and collect real-time data about the situation. The vehicle is also equipped with an internet of things (IOT) system that allows it to communicate with other devices and share data in real-time. The project aims to address the challenges faced by disaster management teams in accessing and collecting data from disaster-stricken areas. By providing a reliable and autonomous vehicle that can navigate through such areas, the project hopes to improve the speed and efficiency of disaster response operations.L298 is a popular motor driver integrated circuit that is used in many robotics and automation projects.L298 can be controlled using a variety of input signals, such as PWM signals, analog signals, and digital signals. This makes it easy to interface with microcontrollers and other digital control systems. A drowsiness sensor is a type of sensor that is designed to detect signs of drowsiness or fatigue in a person. Its main aim is to help prevent accidents or injuries caused by drowsy driving or operating heavy machinery while fatigued. Drowsiness sensors typically work by measuring various physiological parameters that are associated with drowsiness, such as changes in heart rate, respiration rate, or brain activity. Some drowsiness sensors use cameras to monitor facial expressions and eye movements to detect signs of fatigue, such as drooping eyelids or slow eye movements. Once a drowsiness sensor detects signs of fatigue, it can issue an alert to the driver or operator, such as a visual or audible alarm, to help them stay alert and avoid accidents. Some drowsiness sensors can also interface with other systems, such as vehicle control

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REAL TIME OBJECT MOTION DETECTION USING DEEP LEARNING METHODS

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ABSTRACT

This project aims to develop an object motion detection system using Python. The system utilizes computer vision techniques to detect and track moving objects in a video stream. The project includes preprocessing of the video stream to enhance object detection, background subtraction to identify moving objects, and object tracking using feature extraction and matching algorithms. The system is implemented using OpenCV, a popular computer vision library in Python. The proposed system is tested on various video sequences to demonstrate its effectiveness in detecting and tracking moving objects. The results show that the system is robust and accurate in detecting and tracking objects in real-time. The project can be useful in various applications such as surveillance, traffic monitoring, and robotics.

1. Introduction

Object motion detection is an important aspect of computer vision and has a wide range of applications such as video surveillance, autonomous driving, and robotics. The ability to detect and track moving objects in real-time is critical for these applications. Python is a popular programming language for computer vision and has several libraries that provide powerful tools for object detection and tracking. In this project, we aim to develop an object motion detection system using Python and OpenCV, a popular computer vision library. The system will utilize techniques such as background subtraction and feature extraction to detect and track moving objects in a video stream.

The proposed system will be tested on various video sequences to demonstrate its effectiveness in real-time object detection and tracking. The system can be useful in various applications such as surveillance, traffic monitoring, and robotics. The project will provide an opportunity to learn and apply various computer vision techniques and develop a real-world application using Python.

Computer vision is an exciting field of study that focuses on enabling machines to interpret and understand visual information from the world around them. In recent years, the rapid development of deep learning algorithms has revolutionized the field of computer vision, providing powerful tools for image and video processing, object detection, tracking, recognition, and more.

Deep learning is a subset of machine learning that uses artificial neural networks to model and solve complex problems, such as image and speech recognition, natural language processing, and decision making by making use of dynamic analytical skills of a system. Deep learning models are designed to learn and improve over time by processing large amounts of data, and they have demonstrated remarkable performance in a variety of computer vision tasks.

In computer vision, deep learning models are often used in combination with traditional computer vision techniques to achieve state-of-the-art performance on complex tasks, such as object detection, segmentation, and tracking. These models typically require large amounts of data and computational power to train, but they can provide highly accurate and robust results when properly configured and optimized.

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BONE CANCER DETECTION USINGDNN

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ABSTRACT

Cancer is a group of diseases involving abnormal cell growth with the potential to invade to other parts of body. A bone tumor, (also spelled bone tumour), is a neoplastic growth of tissue in bone. Abnormal growths found in the bone can be either benign (non cancerous) or malignant (cancerous). Bone tumors may be classified as "primary tumors", which originate in bone or from bone derived cells and tissues, and "secondary tumors" which originate in other sites and spread (metastasize) to the skeleton. In this paper a DNN model called as VGG16 which has layers such as Convolutional , ReLU , Fully connected , Max Pooling layer and softmax has been used by using this model it is possible to predict the viableand non viable cancer present in the bone tissue. Here about 570 image datasets to train and test the model has been usedwhich gave an accuracy of about 82%. 75% of the data for training and rest of the 25% of the data for testing has been used The output is classified based on binary values 0 and 1 , where 0 describes non viable cancer and 1 describes viable cancer.

Keyword--- *DNN,VGG16, ReLU*

1. INTRODUCTION

Cancer is a serious health problem among various kinds of diseases. More than 3 among 10,000people will be affected by some form of cancer during their lifetime. Among various types of cancer, Bone cancer is a leading cause of cancer-related death in many countries. Bone cancer has to be detected at earlier stages but detecting it in earlier stages was difficult, so various medical detection methods were introduced which were not so effective so we are taking input IHC processed images. The main aim is to find out the affected part i.e. uncontrolled growth and stage of disease in accurate manner by comparing two medical imaging techniques such as X-Ray, CT and PET scan. The scanned images may not have high resolution due to the number of slices per pixel and noise, so as an initial step need to preprocess the images using median filter which is used to remove the noise in an image Cancer is a serious health problem among various kinds of diseases. More than 3 among 10,000 people will be affected by someform of cancer during their lifetime. Among various types of cancer, Bone cancer is a leading cause of cancer-related death in many countries The proposed system helps to find and differentiate between viable and non viable cells present in bone tissue usingDNN model VGG16 The approach is similar to how the human brain uses different interpretation levels or layers of most representative and useful features resulting in a hierarchical learned representation. The model gives the accuracy of 82%

1.1 Classification of TUMOR

There are two types of tumor

1. Viable tumor : These are tumors which can mutate into more numbers and even if removed from patients

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AUTONOMOUS CAR

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ABSTRACT

Our project proposes to minimize that in an autonomous driving system, the field of view spans multiple cameras placed around a car driven through numerous driving scenarios Sensor data is received by the analyzing unit at a high velocity,also the camera provides over, millions of images for a small drive of about half a mile. A simple example of this is when pictures clicked on burst mode often have more throwaways than the ones which can be utilized. Efficient processing of a high volume of images is therefore a challenge which autonomous systems such as the driving system face. Given the multiple cameras present on autonomous cars, providing high resolution pictures through varying driving scenarios, the objective is to process and analyze this huge dataset efficiently. This project shall demonstrate the power of distributed computing in image processing algorithms and analysis of incredibly large datasets using a distributed approach. This paper gives a statistical proof of concept of how implementing a distributed parallel programming paradigm can improve autonomous systems such as the driving system which deal with high volumes of images.

Keywords: *Raspberry Pi, Automated Cars, Traffic Congestion, Increase safety.*

1. INTRODUCTION

An Autonomous vehicle has no human information and can detect encompassing with no human connections. An assortment of sensors are joined and are utilized to recognize the pathway, impediments, people on foot, and so forth from the encompassing. The advantage of having a driverless vehicle is having decreased expenses because of less wastage of fuel, expanded security, expanded versatility, expanded consumer loyalty, and so on. The target of a Autonomous vehicle is to make a completely practical mechanized vehicle that can decrease human exertion, lessen the mishap rate, give better traffic stream, explore to a given objective, keep away from ecological deterrents and follow street signs.These expansions in expressway limit now and then are one of the principle huge explanations behind sway in gridlock, especially in the metropolitan regions and more influenced in interstate clog in certain spots. For the specialists to deal with the traffic stream generally prompts expanding the gridlock, with the additional information and anticipating the driving conduct of individuals, we can consolidate these two subtleties for decreasing the gridlock the street with less requirement for traffic police on the streets and in any event, for the street signal.With the invention of self-driving cars manual driving problems are being resolved to a large extent. A simple example is that machines never goes to sleep. But developing self-driving cars increases the problem of large & complex calculations and feature extraction at high definition.

2. WORKING PRINCIPLE

The block diagram in Fig1 of the system consists of sensors unit, controller unit, server unit, and output devices. The sensor unit incorporates a number of sensors, including those for temperature, humidity, fire, gas, and infrared. A microcontroller with Bluetooth and Wi-Fi is called an ESP 32. The warehouse will have a number of nodes with ESP and sensor units positioned in various places. Sending this sensor unit data to ESP.In order to send SMS notifications to the authorities when there are deviations, we will integrate the GSM module with the ESP module. The data will be sent by the ESP to the server built using a Raspberry Pi and an SD card. Using the MQTT protocol, the raspberry pi module will send the data to the node-red dashboard. TheInternet of Things (IOT) uses the communications standard MQTT. It is intended to link faraway devices with a tiny code footprint and low network traffic by acting as a very lightweight publish/subscribe message transport. The node-red will take in the different sensor parameter data, process it, and show the parameter information. To prevent food waste from excessive storage, the system will also show the items' shipment time.

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AQUAFRIEND: SMART AQUACULTURE MONITORING SYSTEM

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ABSTRACT

Iot, or the Internet of Things, is a fast expanding technology that is utilized to aid emerging and developing economies on the economic and social fronts. India is the third-largest producer of fish in the world. The annual production of aquatic products is 11 million tons on average. The use of IoT is growing across many industries, including transportation, education, mining, medicine, and industry. Aquatic organisms are raised under regulated, natural conditions in freshwater and marine settings. However, significant changes to the current labor-intensive and resource-inefficient practices are needed for fish farming to be economically and sustainably viable. The major goal of this project is to build an Internet of Things(IoT)-based monitoring system that uses an Embedded System and Improving fresh water fish cultivation and problem-solving using ESP32 microcontroller and google fire base. With the aid of actuators and sensors, this system can be deployed as an embedded system to regulate and keep an eye on the crucial environment factors. Salt, nitrates, carbonates, pH, dissolved oxygen, and ammonia are a few examples of possible parameters. It is possible to construct an alert notification system that notifies farmers by Wi-Fi and allows them to check the status of actuators and sensors using an Android application.

Keyword: - *Regulated, Monitoring system, Actuators, Firebase.*

1. INTRODUCTION

Aquaculture is one of the most emerging field because the demand for sea food is increasing all over the world. Of the several sea foods the most wanted food is fish because of its health benefits. Fish farming has a huge impact on any country's economy as the demand for fish is increasing. However, many countries need to import fish, as the production does not meet though there is combination of annual supply of fish from aquaculture and capture. Aquaculture has become of crucial importance in relation to the development of fisheries sector in many of the countries in the world today because of the shortage in supply as it is expected to increase with limited prospects. Management of fisheries relies on the monitoring of water quality as fish diseases are very common and have a direct impact on the harvesting yield. Since water is a prerequisite for fish, quality of water must be monitored and controlled continuously. The significant parameters such as water level, humidity, bird's interaction and temperature in the tank should be continuously monitored in order to avoid undesirable condition for farming. Since fish are cold blooded animals, optimum temperature should be maintained and controlled in proper range. Enough oxygen is required for the fish for proper metabolism else they reside at the surface to catch up oxygen resulting in slower metabolism and eventually die due to lack of oxygen. The dissolved oxygen should be more than 5ppm always, pH value should be between 7 and 8.5 for their biological productivity ideally. In India, aquaculture has become one of the growing sectors. It contributes about 1.07% of the GDP. According to an estimation, the fish requirement by 2025 would be in order of 16 million tons.

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CONTROL AREA NETWORK BASED AUTOMOTIVE SURVEIL

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ABSTRACT

The use of Control Area Network (CAN) in automotive surveillance systems has become increasingly common. CANprovides a reliable and high-speed communication protocol that allows for real-time monitoring of critical vehicle parameters, such as engine speed, fuel consumption, and emissions. In a typical automotive surveillance system, sensors are used to measure various parameters of the vehicle and transmit the data to a central control unit via the CAN bus. The control unit then processes the data and generates alerts or takes corrective actions as necessary. One of the key benefits of using CAN in automotive surveillance is its ability to provide deterministic communication, which is critical in safety-critical applications. CAN also allows for easy integration of sensors and control units from multiple vendors, which simplifies system design and reduces costs. Another advantage of using CAN in automotivesurveillance is its ability to operate in harsh environments. CAN is designed to operate in noisy environments and can withstand extreme temperatures, making it well-suited for use in vehicles.

KEYWORDS: *CAN transreceiver, ATmega328p microcontroller, ultrasonic sensor, temperature sensor, alcoholic sensor, bumpsensor, LCD, LED/Buzzer*

1.INTRODUCTION

Nowadays accidents occur due to mistake done by the driver. An intelligent system needs to be developed to overcome these mistakes. So this system finds where the mistake is done by the driver are eliminated. Most of the intelligent car systems have monitoring systems only. Antilock brakes, speed sensors and other automatic systems are present in sports car and other luxury cars only. But these cars are not affordable to everyone. So, a system needs to be developed which can be implemented in every car. A system of sensors that is placed within a car to warn its driver of any dangers that may lie ahead on the road. Some of the dangers that these sensors can pick up on include how close the car is to other cars surrounding it, how much its speed needs to be reduced while going around a curve, and how close the car is to going off the road.

Control Area Network (CAN) is a widely used bus standard in the field of automation, automotive, and industrial control systems. It is a serial communication protocol designed to allow micro-controllers and devices to communicate with each other in real-time without the need for a host computer. CAN is a message-based protocol, meaning that data is transmitted in packets called frames.

Each frame consists of an identifier, a data field, and control bits, which are used for error detection and message validation Can has several advantages over other communication protocols, including its high speed, reliability, and ability to operate in harsh environments. It is also highly scale able and can support multiple devices on a single bus. One of the key benefits of CAN is its ability to provide deterministic communication, which is critical in applications where timing is important, such as in automotive and industrial control systems. CAN is also well-suited for distributed control systems, where multiple devices need to communicate with each other over a network. Overall, CAN has become a fact standard in many industries and is

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INTRACRANIAL BRAIN HEMORRHAGE DETECTION INCT SCANS USING DEEP LEARNING

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ABSTRACT

Intracranial hemorrhage is a serious medical problem that requires rapid and often intensive medical care. In intracranial hemorrhage treatment patient mortality depends on diagnosis based on a radiologist's assessment of CT scans. In this project, we propose the intracranial hemorrhage detection system using deep learning model to accelerate the time it takes to identify them. We can distinguish between the subtypes of the damage on the basis of the character of bleeding and its location in the brain region. To assist with this process, a deep learning model can used to accelerate the time it takes to identify them. This project aims to help and facilitate radiologists, medical experts in understanding the way how machine learning can be potentially used in the diagnosis of hemorrhage. We developed a convolutional neural network based on sequential for classification, and we trained and tested a sequential-based model for predicting the type of bleeding. In making the accurate multiclass prediction, our model has an accuracy of 93.4%.

Keywords: *Artificial intelligence, deep learning, convolutional neural network, intracranial hemorrhage, CT Brain.*

1. INTRODUCTION:

Intracranial brain hemorrhage refers to any bleeding with in the intra cranial vault, which includes the brain parenchyma and the surrounding spaces. Brain parenchyma refers to the functional tissue in the brain that is made up of brain cells. Defects in the parenchyma results in loss of consciousness or it may cause even death also. Parenchyma controlling the body, there are many causes for this issue, which includes trauma, rupture of a blood vessel, poorly connected arteries [It is the main connecting part, where the brain receives the blood] which results in the leakage of blood in the brain.

Due to high mortality rate in brain hemorrhage, early detection of the defect is very essential in order to decrease the mortality rate of patients. Hence we choose the deep learning concept based on artificial intelligence (AI) for the early detection of the defect type.

Deep learning is the fastest and easier to interpret large amount of data and from them in to a meaningful information.

It is the type of machine learning based on artificial neural networks, in which multiple layers of processing are used to extract data progressively. There are different types of hemorrhage – Epidural hemorrhage, Subdural hemorrhage, Subarachnoid hemorrhage, intra parenchymal hemmorage.

In Epidural hemorrhage the blood clotted between the skull and the outmost protection layer. In subdural hemorrhage the blood clotted between the skull and the surface of the brain. The bursting of blood vessel in brain is refer as subarachnoid hemorrhage. In intra parenchymal hemorrhage the blood bleed inside the brain parenchyma.

The complete results of the patient are usually ready for doctor in 1 to 2 days. This is for normal Condition which means when the brain and blood vessels and bones of the skull and the face are normal in size.

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ACCIDENT DETECTION AND ALERT SYSTEM

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ABSTRACT

Road accidents rates are very high nowadays, especially two wheelers. Timely medical aid can help in saving lives. This system aims to alert the nearby medical center about the accident to provide immediate medical aid. The attached accelerometer in the vehicle senses the tilt of the vehicle and the a heartbeat sensor on the user's body senses the abnormality of the heartbeat to understand the seriousness of the accident. Thus the systems will make the decision and sends the information to the smartphone, connected to the accelerometer through gsm and gps modules . The Android application in the mobile phone will send text messages to the nearest medical center and friends. Application also shares the exact location of the accident and it can save time.

Keywords- *Accident detection, alert system, GPS, GSM, Accelerometer, Androidapplication*

1.INTRODUCTION

Nowadays, the rate of accidents has increased rapidly. Due to employment, the usage of vehicles like cars, bikes have increased, because of this reason the accidents can happen due to over speed. People are going under risk because of their over speed, due to unavailability of advanced techniques, the rate of accidents can't be decreased. To reduce the accident rate in the country this paper introduces a solution. Automatic accident detection and alert systems are introduced. The main objective is to control the accidents by sending a message to the registered mobile, hospital and police station using wireless communications techniques. When an accident occurs in a city or any place, the message is sent to the registered mobile through GSM module in less time. Arduino is the heart of the system whichhelps in transferring the message to different devices in the system. Vibration sensor will be activated when the accident occurs and the information is transferred to the registered number through the GSM module. The GPS system will help in finding the location of the accident spot. The proposed system will check whether an accident has occurred and notify nearest medical centers and registered mobile numbers about the place of accident using GSM and GPS modules.

2. oBJECTIVES AND SCOPE

The main objective of this project is to prevent casualties which happen due to lack of medical assistance in time. Certainly, if the accident happens due to other cases, the used electronic devices will be able to provide the spontaneous message and exact location to police and ambulance in order to recover victims. Avoiding casualties caused by road accidents is the main goal of this paper, with the help of Accelerometer and GPS present in the mobile phones. Based on the data collected from these sensors, which are present in most mobile phones, the location of the accident is sent at the same time of the accident to the friends and relatives which the user allowed and stored, and also to the rescue and emergencyservices.

3. EXISTING SYSTEM

This idea proposal has been introduced at the start of the modern age of mobile phones. With the introduction of GPS sensors in the mobile, security applications based on GPS were proposed. Then they proposed special hardware devices which can be linked with mobile phones. This has the disadvantage of actually buying extra hardware with more money. With the massive development of mobile phones in the last decade and new sensors added with the development, the extra hardware can be avoided. The present application of this paper is present in a very few countries and providing the information with the relatives and friends with the emergency

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Cloud Multimedia Data Security by Optimization-Assisted Cryptographic Technique

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Currently, the size of multimedia data is rising gradually from gigabytes to petabytes, due to the progression of a larger quantity of realistic data. The majority of big data is conveyed via the internet and they were accumulated on cloud servers. Since cloud computing offers internet-oriented services, there were a lot of attackers and malevolent users. They always attempt to deploy the private data of users without any right access. At certain times, they substitute the real data by any counterfeit data. As a result, data protection has turned out to be a noteworthy concern in recent times. This paper aims to establish an optimization-based privacy preservation model for preserving multimedia data by selecting the optimal secret key. Here, the encryption and decryption process is carried out by Improved Blowfish cryptographic technique, where the sensitive data in cloud server is preserved using the optimal key. Optimal key generation is the significant procedure to ensure the objectives of integrity and confidentiality. Likewise, data restoration is the inverse process of sanitization (decryption). In both the cases, key generation remains a major aspect, which is optimally chosen by a novel hybrid algorithm termed as "Cian based Crow Search with Adaptive Awareness probability (CCS-AAP). Finally, an analysis is carried out to validate the improvement of the proposed method.

Keywords: Data security; confidentiality; sanitization; data integrity; CCS-AAP approach.

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Original Article

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A Hybrid Cryptography Technique for Cloud Data Security

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Abstract *- Nowadays, data sharing and storage is one of the most frequent activities associated with cloud computing. Since cloud computing handles large-scale user data at a time, sometimes it contains confidential information or data of the user that needs additional security so that the user can store the information in the cloud storage over the un-trusted computing network. In this regard, cloud data security becomes the primary need for storing confidential information or data over the cloud. The symmetric encryption approach is considered one of the best cryptography techniques to secure cloud data. It provides more security to the cloud information or data than other techniques. This research paper proposes a hybrid symmetric encryption technique to offer additional security to the user's data stored in the cloud compared to the single symmetric encryption approach. The investigated techniques show high processing speed and secure data sharing over the cloud with others. In addition, the computation time associated with the encryption and decryption is also minimized even when multiple users access the same file over the cloud. The proposed method aims to improve the privacy policy by investigating new algorithms for extra cloud data security. There is a broad scope of cryptography techniques in cloud computing, not only for securing the cloud data but also for solving various security and privacy issues while dealing with confidential data.*

Keywords *- Cryptography, Cloud Data, Decryption, Data Security, Encryption.*

1. Introduction

Cloud computing presents a holistic approach to offering services by reorganizing diverse content developed for consumers based on individual needs. It is also crucial for next-generation cellular telecommunications, hacking, and social computation. Cloud storage substantially decreases customers' storage load and provides them access flexibility, making it one of the essential cloud computing[1]. However, cloud data protection, transparency, and trust have emerged as critical issues affecting the viability of cloud services and perhaps impeding the advancement of 5G (Fifth Generation) and cyber systems. To begin with, putting data in the cloud raises the danger of data leakage and fraudulent activity. Second, cloud computing services are increasingly emerging targets of assaults and breaches, posing a threat to cloud data security[2]. Database management activities in the cloud, such as information storage, restoration, migration, erasure, update, searching, querying, and accessibility, may not be fully trusted by their owners. Cloud providers should preferentially audit the dependability of data management. Any source of incursions and assaults should be detectable and trackable. The above criteria provide a significant security issue, particularly for ample data storage and processing. Data processing and computing on the cloud may expose data owners' or associated entities' privacy to unauthorized parties. Another intriguing and essential research issue is approving cloud data processes and safeguarding data processing results. Cloud data security, transparency, and trust are indeed becoming critical factors affecting cloud technology success[3].

Cryptography is frequently used in cloud technology to protect data, confidentiality, and integrity. Cloud cryptographic algorithms data encryption to safeguard data will be used or kept private[4]. It enables customers to quickly and safely use shared cloud storage since any data held by cloud service providers is encrypted[5]. Cloud cryptography secures sensitive information without slowing the flow of information. Cloud cryptography is centered on encryption, which involves machines and methods to jumble text into ciphertext. This ciphertext can then be turned into plaintext by deciphering it using a sequence of bits using an encryption key[29]. The encryption of data can take place in one of the following ways, listed in Table 1.

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Research Article

Hyperspectral Image Classification Model Using Squeeze and Excitation Network with Deep Learning

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In the domain of remote sensing, the classification of hyperspectral image (HSI) has become a popular topic. In general, the complicated features of hyperspectral data cause the precise classification difficult for standard machine learning approaches. Deep learning-based HSI classification has lately received a lot of interest in the field of remote sensing and has shown promising results. As opposed to conventional hand-crafted feature-based classification approaches, deep learning can automatically learn complicated features of HSIs with a greater number of hierarchical layers. Because HSI's data structure is complicated, applying deep learning to it is difficult. The primary objective of this research is to propose a deep feature extraction model for HSI classification. Deep networks can extricate features of spatial and spectral from HSI data simultaneously, which is advantageous for increasing the performances of the proposed system. The squeeze and excitation (SE) network is combined with convolutional neural networks (SE-CNN) in this work to increase its performance in extracting features and classifying HSI. The squeeze and excitation block is designed to improve the representation quality of a CNN. Three benchmark datasets are utilized in the experiment to evaluate the proposed model: Pavia Centre, Pavia University, and Salinas. The proposed model's performance is validated by a performance comparison with current deep transfer learning approaches such as VGG-16, Inception-v3, and ResNet-50. In terms of accuracy on each class of datasets and overall accuracy, the proposed SE-CNN model outperforms the compared models. The proposed model achieved an overall accuracy of 96.05% for Pavia University, 98.94% for Pavia Centre dataset, and 96.33% for Salinas dataset.

1. Introduction

With the advancements of remote sensing technology, the use of hyperspectral imaging is becoming increasingly common. The precise classifications of ground features using HSI is a significant research topic that has received a lot of interest. Because of its high resolving powers for good spectra, hyperspectral images have a wide variety of uses in the environmental, medical, defense, and mining. The collection of HSI is dependent on imaging spectrometer deployed in various locations. In the 1980s, the imaging spectrum was created. It was utilized to image electromagnetic waves in the ultraviolet, near-infrared, visible, and midinfrared ranges. The imaging spectrometer can photograph in a variety of continuous and extremely narrow band, allowing every pixel to obtain a completely emitted or reflected spectrum in the wavelength range of interest. As a result, hyperspectral images feature great spectral resolution, multiple bands, and a lot of information. Image corrections, noise reductions, transformations, dimensionality

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A Enhanced Novel Methodology for Checking Driver Eligibility and Vehicle Security Using Image Processing

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Abstract: Around the world, cars are becoming a more and more common form of transportation. Adolescents driving without proper identification is a serious reason for concern in our country because it leads to accidents. According to figures from the World Health Organization, Chennai has the highest traffic collisions of any Indian city over the past ten years, followed by Tamil Nadu. India has the highest fatality rate at 16.6 per 100,000 people. Many technologies have been developed to reduce accident rates and, on average, detect auto thefts based on accident and theft scenarios. Researchers take a number of safety precautions when using modern technologies like Clonally Selection Algorithms, Artificial Fish Swarm Algorithms, and Intelligent Car Security Systems. It is important to know the license plate numbers in order to identify the car theft. In this study, we examine a range of technologies that can help detect and prevent car burglaries and accidents. Currently, the basis of transportation in the modern world is road communication. Unauthorized driving and auto theft have grown to be serious issues in our nation as more people rely on their cars for transportation. The most popular technique for screening drivers is to pull over the car while it is in traffic and check their licenses. At rush hour, it worsens the congestion in the traffic. The vehicles in the traffic line cannot all be checked by the traffic police. Similarly to this, it could be challenging to pin down the exact cause of an accident.

Keywords: *Driver, RFID GSM., Zigbee, License, .*

1. Introduction

RFID technology is used to ensure the evidence of the person and verify the person is an authorized one or not. RFID readers are used to read the stored database. RFID tags are used to contain the stored information about the drivers. RFID writer is a device which contains the program for enabling the RFID technologies. The RFID technology is the main source which is playing a major trend in the society on the concept of accepting the personal as an authorized one or not Similarly, Alarm system is implemented in all the devices such that if any car theft occurs, then immediately an alarm sound occurs. A hidden Smartphone is also been set up in the car without the knowledge of the car driver and it can trace out the location of the car. The set of very strict rules must be issued in order to allow and accept for the licensed drivers. The rules can follow few concepts such as there must be proper driving skills for issuing license, there must be all the proper practices on the road in advance. The final suggestion among the objective of the car security and driver eligibility is that to reduce the accidents in the society and to maintain the healthy life among the drivers without any loss.The rule must be created and designed in such a way that the driver without the license will be punished very effectively. The fatality rate Gets increased day by day due to the accidents which is happening in our society.

Car theft is the main issue which is being faced in recent times by the society. Zigbee has the main feature to send and receive messages through the devices. IOT modules are set up for communicating within devices and to alert the driver using sensors. GSM, GPS are the various technologies used for communication purpose among the devices. The communicating technologies are mainly used to find and trace out the location of the car. An autonomous car had come into existence where it leads to various hurdles. Autonomous car used to fail in the navigation directions and end up in many accidents which take off many lives in the society. The rule must be created and designed in such a way that the driver without the license will be punished very effectively. The

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A security model to protect the isolation of medical data in the cloud using hybrid cryptography

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DNA-based MECC algorithm

ABSTRACT

A cloud computing platform delivers a cost-efficient path for cloud users to store and access data privately over remote storage via an Internet connection. Medical data is stored in the cloud since it is scalable, secure, reliable, provides ubiquitous access, and is highly available. It is required to be isolated in terms of physical, network, and operational for protecting data from internal threats or external cyber-attacks. It can be achievable through hybrid cryptography in which symmetric, as well as asymmetric cryptosystem, is being utilized. To assure the confidentiality and integrity of medical data, an improved Robust S-box-based Advanced Encryption Standard (IRS-AES) is proposed with Runge-Kutta Optimization (RKO) algorithm. RKO generates an enhanced and secured RS-box through the computation of the Mackey-Glass equation. Initially, the medical data are compressed using Improved Huffman Coding (IHC). The Deoxyribonucleic Acid (DNA)-based Modified Elliptic Curve Cryptography (MECC) algorithm is introduced for key generation, and the best key is selected with Bald Eagle Search optimization (BES) algorithm. Finally, the medical data are encrypted IRS-AES algorithm and stored in the cloud. The proposed RS-box security strength is evaluated using non-linearity, Strict Avalanche Criterion (SAC), Differential Probability (DP), Bit Independence Criterion (BIC), and Linear Probability (LP) parameters. The efficiency of the proposed algorithm is evaluated with image, audio, and video dataset. The evaluation metrics such as communication overhead, file upload time, computational cost, Mean Square Error (MSE), encryption and decryption time, Peak Signal-to-Noise Ratio (PSNR), key generation time, and Signal-to-Noise Ratio (SNR) are used for validating the proposed approach. The performance of the proposed approach is enhanced with the communication overhead of 11.51 for the image dataset. MSE and PSNR obtained are 16.2 and 8.465 for an audio dataset, 75.21 and 3.5 for the video dataset.

1. Introduction

Cloud computing is the environment exploiting the association of remote servers distributed on the Internet for storing, progressing, and accomplishing the data [15]. It provides an effective way for storing and accessing data virtually from any place by utilizing devices connected to the Internet. Healthcare systems (HCS) are the benefits of technology, and automatic systems are developed to reduce healthcare services costs [1]. It can enhance the manual data management process through Electronic Health Records (EHR) [23]. EHR data contains personal and medical data in images, texts and video. The interoperability amongst patients' health information is increased with the requirement of privacy [29] and confidentiality. Intruders or unauthorized persons can access or modify medical data [16]. While transferring sensitive medical data over the Internet, data isolation is considered a research issue that has been addressed.

Encryption is one of the best solutions for data protection and privacy preservation. Encryption with an asymmetric cryptosystem uses two keys: one is for encrypting the plain text (public key), and another is for decrypting cipher text (private key). Researchers have recently created and developed several encryption algorithms for general and medical images. Since the size of the medical images is varied, it consumes more time for encryption [12]. Hence, additional approaches are required to deal with the encryption process of providing authentication and integrity. In real-time applications, public key cryptography is invoked through a hybrid system. The enhancement of asymmetric

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IOT BASED SMART AGRICULTURE

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ABSTRACT

Internet of Things (IoT) has revolutionized various industries, including agriculture. IoT-based smart agriculture is an innovative approach that enables farmers to use technology to increase productivity and efficiency, while reducing costs and waste. This system involves the use of sensor, automation and data analytics to control and monitor the farming process. With IoT-based smart agriculture, farmers can remotely monitor soil moisture, temperature, and nutrient levels, as well as automate irrigation, fertilization, and pest control processes. This abstract highlights the benefits of IoT-based smart agriculture and its potential to transform the agriculture industry by improving yields, reducing environmental impact, and creating sustainable farming practices..

Keyword: - *IoT, Arduino Uno, Soil Moisture Sensor, Relay, DHT11, ESP2866, DC Motor, Power Supply, LDR.*

1. INTRODUCTION

Agriculture has been a fundamental part of human civilization since the beginning of time. The evolution of technology has transformed agriculture into a more efficient and productive industry. With the rise of the Internet of Things (IoT), agriculture has entered a era of new smart farming, which has the potential to revolutionize the industry.IoT-based smart agriculture is a system that involves the use of sensor, automation and data analytics to control and monitor the farming process. The system enables ranchers to remotely monitor their farms, automate irrigation and fertilization processes, and optimize resource utilization. By using IoT technology, farmers can reduce costs, improve efficiency, and increase productivity. The use of IoT in agriculture is not a new concept, but recent advancements in technology have made it more accessible and affordable. IoT-based smart agriculture has the potential to transform the agriculture industry by creating sustainable farming practices, improving yields, and reducing environmental impact. This paper aims to explore the benefits of IoT-based smart agriculture, the technology behind it, and its potential to revolutionize the agriculture industry.

1.1 Proposed System

In this paper,The methodology of IoT-based smart agriculture involves the integration of various technologies and processes to create a system that is both efficient and sustainable. The methodology of IoT-based smart agriculture is constantly evolving as new technologies are developed and implemented. The goal is to create a system that is sustainable, efficient, and capable of meeting the increasing demand for food production.

1.2 Objective

The primary goal of the project is to expand the efficiency of the harvests regarding quality as well as with amount. It comprises of two primary parts: ThingSpeak and IoT.

2. METHODOLOGY

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REAL TIME DRIVER DROWSINRSS DETECTION

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KEYWORDS

Drowsiness,
Supervised Learning,
Unsupervised Learning,
Machinelearning.

ABSTRACT

Due to the rise in accidents brought on by drowsy driving, real-time driver drowsiness detection is a crucial area of study. The goal of this study is to use computer vision and machine learning techniques to create an effective and efficient system for real-time driver drowsiness detection. To detect drowsiness, the proposed system uses a camera to capture the driver's face and analyze different facial features like eye closure duration, blink rate, and head movements. To increase the accuracy of drowsiness detection, the system also considers other elements like the time of day, driving habits, and road conditions. The study's findings demonstrate that the suggested system can accurately identify drowsy driving in real-time, which may help to prevent accidents.

1. INTRODUCTION

A system that uses computer vision and machine learning algorithms to identify driver drowsiness in real time is known as real-time driver drowsiness detection. Typically, the system uses facial cues like eye and head movements to assess whether the driver is awake or asleep. The system typically uses a mounted camera inside the vehicle to take pictures of the driver's face. The images are then subjected to machine learning algorithms that look for signs of sleepiness like drooping heads, heavy eyelids, and slow eye movements. The machine learning algorithms improve their drowsiness detection precision by learning from prior data. The high rate of accidents brought on by drowsy driving has led to an increase in the popularity of real-time driver drowsiness detection systems, identifying when a

Road accidents are widely attributed to driver inattention. To avoid accidents, it is imperative to create a system that can identify driver drowsiness in real-time. For the development of such systems, machine learning, an area of artificial intelligence, has been extensively used. Sensors like cameras, accelerometers, and microphones are used in real-time driver drowsiness detection using machine learning to gather information on the driver's behavior and physiological parameters. The machine learning algorithm then processes the collected data to look for drowsiness indicators like yawning, drooping eyelids, and changes in head position. A dataset of labeled samples, including information gathered from drivers who exhibit drowsiness and those who do not, can be used to train the machine learning algorithm. The

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Forest Fire Detection and Wild Animal Health Monitoring

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ABSTRACT

Forest fires and animal health are major environmental concerns worldwide. Early detection of forest fires and monitoring the health of animals can prevent significant damage to ecosystems. In this paper, we propose a forest fire and animal monitoring system using an Arduino board and sensors. The system consists of temperature and smoke sensors, GPS modules, and a microcontroller board. The sensors collect real-time data on temperature and smoke levels, which can indicate the presence of a fire, and GPS modules track animal movement and habitat use. The system can be integrated with other systems for effective firefighting and preventing significant wildlife loss.

***Keyword**- Internet of Things(IoT), Wireless Sensor Networks, Data Transmission, Temperature sensor and smoke sensor, Camera Trap.*

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1. INTRODUCTION

The development of the Internet has brought people closer together in a new way, but it has also enabled the connection of bias, creating a network of objects and effects with bedded intelligence and communication capabilities. This network, known as the Internet of effects(IoT), allows for flawless communication between bias and the gathering and analysis of data from the terrain. The IoT has surfaced as a result of a shift in the way the Internet is used, from connecting people to connecting bias. It involves billions of connected bias that are suitable to report their position, identity, and history over wireless connections. These biases interact with each other and with the mortal world through Internet norms and protocols for collecting and participating information. pall computing has made it possible to store and dissect the massive quantities of data generated by the IoT.

Communication between bias is automated, reducing the need for mortal intervention and saving time and trouble. In the history, wired communication systems were used for monitoring environmental parameters in diligence, but they were precious to install and delicate to maintain. To overcome these challenges, we propose an optimized system for timber fire discovery and wild beast monitoring using an Arduino board and detectors.

Temperature and bank detectors are stationed at specific locales in the timber to descry ignition and the range of carbon dioxide gas. These detectors shoot information to a microcontroller, which reacts automatically in the event of an exigency. still, this approach had some significant downsides. originally, the installation cost of a wired communication system can be veritably high, especially in large artificial installations. This is because cables need to be run throughout the structure to connect the detectors to the central garçon. also, the process of

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BLUETOOTH CONTROL WHEELCHAIR FOR PHYSICALL CHALLENGED PERSON

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ABSTRACT

The research project's objective is to develop a hand gesture-controlled wheelchair for individuals with physical disabilities who experience difficulty moving from one place to another in their daily lives, using an accelerometer as a sensor to detect movements in six axis directions, but only the X and Y axis directions are considered for this project, with the data wirelessly transmitted through an encoder and received by a microcontroller to send signals to relays to move the wheelchair forward, backward, left or right based on the accelerometer data received, with MEMS being used as the accelerometer in this study and offering gesture recognition and robustness, and the experiments presented in the study demonstrate the wheelchair's ability to move and avoid obstacles automatically while being controlled by the user via hand gestures, and advances in control software using a webcam and distance and presence sensors that are controlled by a PIC microcontroller and communicate with a Labview program.

Keyword: - *Microcontroller, gesture recognition, Intelligent wheelchair, hands free control, acceleration sensor, Wi-Fi module, mobile robot.*

1. INTRODUCTION

This study is to develop a new method for physically challenged individuals to control their wheelchair using physical gestures. According to the 2001-2011 census data, over 21 million people in India suffer from some form of disability, accounting for 2.1% of the population. Disabled individuals are primarily found in rural and urban areas, with Tamil Nadu having the highest percentage (7.75%) of disabled people in the country. To improve the status of disabled individuals, the Indian government has implemented various programs, including educational allowances, financial assistance, travel concessions, and employment opportunities. The provision of proper equipment for reliable movement can significantly enhance the quality of life of disabled individuals.

1.1 Proposed System

In this paper, the methodology of Bluetooth control wheelchair for physically challenged persons involves the integration of various technologies and processes to create a system that is both efficient and sustainable. The methodology of Bluetooth control wheelchair for physically challenged persons is constantly evolving as new technologies are developed and implemented. The goal is to create a system that is sustainable, efficient, and capable of meeting the increasing demand for user welfare.

1.2 Objective

The primary goal of the project is to expand the efficiency of the mobility of physically challenged and aged persons as well as with amount. It comprises of two primary parts, ThingSpeak and IoT

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"CORONARY ARTERY DISEASE DETECTION BASED ON ECG USING MACHINE LEARNING APPROACH"

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ABSTRACT

The well known (ECG)electrocardiogram is one of the commonly employed tools to diagnose cardiovascular issues. The electrical and muscular functions of the heart are frequently assessed using a diagnostic instrument called an electrocardiogram (ECG or EKG). Although the test itself is relatively straightforward, it takes a lot of training to interpret the ECG charts. Such paper ECG records can be digitally digitized for automated analysis and diagnosis. The main goal of this project is to transform paper recordings of electrocardiograms into a 1-D signal using machine learning. The P, Q, R, S, and T waves that are available in ECG data may be extracted in order to illustrate cardiac electrical activity by applying a variety of methods. The techniques include splitting the original ECG report into 13 Leads, extracting and converting into the signal, smoothing, converting them to binary images using threshold and scaling. Post-feature extraction, dimension reduction techniques like Principal Component Analysis are applied to understand the data. Multiple classifiers like the use of k-nearest neighbor (KNN), logistic regression (LR), Support Vector Machine (SVM), and voting-based ensemble classifier will result in to the the conclusion of the model once it satisfies the necessary standards for precision, recollection, accuracy, f1-score, and support. This final model will aid in the diagnosing of cardiac diseases, to detect whether a patient has/had Myocardial Infarction, Abnormal Heartbeat, or the patient is hale and healthy by inferring the ECG reports.

Keyword- *Internet of Things(IoT), Wireless Sensor Networks, Data Transmission, Temperature sensor and smoke sensor, Camera Trap.*

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1. INTRODUCTION

Heart disease is the primary major reason of mortality in high-income nations and the second main reason of death in low-income countries, according to the World Health Organisation (WHO). For the last two decades, it has continued to be the reason for death on a global scale. This research examines several approaches to data mining used in recent years to identify coronary artery disease. At present, there are plenty of algorithms available that could detect and predict heart anomalies from clinical reports. However, in this project, the focus is more on discovering and extracting patterns from Electrocardiogram (ECG or EKG) image reports.The majority of ECG readings were formerly preserved on paper. Therefore, manually reviewing and rereading the ECG paper copy can frequently be a tedious and difficult process. The amount of time-consuming manual intervention to understand the report may be removed by the digitization of ECG recordings. With digitization, the automation of diagnosis and analysis can be achieved quicker.

2. RELATED STUDY

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"MORSE CORE BASED SECURED AUTHENTICATION SYSTEM THROUGH ARTIFICIAL INTELLIGENCE"

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ABSTRACT

Data science is a multidisciplinary blend of data inference, algorithm development and technologyin order to solve analytically complex problems .Data science is used by almost all the industries like educational institutions, finance, healthcare, business to handle large volume of data .The practical applications range from predicting stock movement to predicting cancer; used in image processing to identity recognition, audio processing for speech to text prediction. Since most of the people in the world are facing problems in the field of authentication and security. We are able to provide a real time eye tracing for password authentication for people who authenticate themselves using Morse code. Gaze-based authentication refers to finding the eye location across sequential image frames, and tracking eye center over time.Password authentication will done using Morse code, where numbers will be represented in dots and dashes. This model presents a real-time application for gaze-based PIN entry, and eye detection and tracking for PIN identification using a smart camera.

1.INTRODUCTION

Throughout history technology has been the driving force of change. From movable type, to television, to the Internet, technology has been embraced and incorporated into our daily lives. Within the constructs of civilized society, the vast rewards of technological innovations have far outweighed the negatives. With the improved technology comes different ways in which we can make our lives better and more efficient. This led to the introduction of many branches ,one of them is Data Science To put it in simpler words Data science is the study of where information comes from, what it represents and how it can be turned into a valuable resource in the creation of business. Mining large amounts of structured and unstructured data to identify patterns can help an organization rein in costs, increase efficiencies, recognize new market opportunities and increase the organization's competitive advantage. Machine learning is a field of computer science that often uses statistical techniques to give computers the ability to "learn" (i.e., progressively improve performance on a specific task) with data, without being explicitlyprogrammed. Machine learning is employed in a range of computing tasks where designing and programming explicit algorithms with good performance is difficult or infeasible. Within the field of data analytics, machine learning is a method used to devise complex models and algorithms that lend themselves to prediction. These analytical models allow researchers, data scientists, engineers, and analysts to "produce reliable, decisions and results" and uncover "hidden insights" through learning from historical relationships and trends in the data. Usable security is concerned with the study of how security information should be handled in the system, both at the user interface and in the back-end process, without discarding consideration for resources and costs. Balancing usability and security to achieve optimal result has been defined by the principle of psychological acceptability. According to this principle, MORSE CORE BASED SECURED

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SENDER AUTHENTICATION AS A METHOD FOR LEGITIMATE MAIL SERVER DETECTION

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ABSTRACT

Anti-spam tactics include, for example, ways to distinguish unsolicited Online mail from the email content and ways to make use of sender information. By using email content with a high processing load to assess whether the Online mail should be received based on the sender's Internet Protocol address and Web Address, it is feasible to minimize the amount of time the spam filter spends processing spam. In this inquiry, sender authentication technology is meant to analyze the sender emails that have been forwarded. Since we think the sender of this forwarded email is a legitimate email sender, we suggest using this as an allow list. In this post, we offer a suggestion to improve the approach we previously offered and reduce allow list confusion..We validated the effectiveness of this novel approach using the log data from the emails that were really received..

Keyword:*BEC*- *Business email compromise,* ***DNSBL****- Domain Name System-based Black hole List,* ***DNSWL****-DNSbased white list,****SPF****- Sender Policy Framework,* ***DKIM*** *- Domain Keys Identified Mail,* ***DMARC****-Domain-based Message Authentication Reporting & Conformance,****MD5****- message-digest algorithm*

1. INTRODUCTION

Spam problems are not just annoying; they also contribute to a number of security problems. For instance, using tricks like phishing attacks and business email compromise (BEC), email may be exploited to propagate false information for financial advantage. Additionally, dangerous malware that converts PCs into "bots," or externally controllable computers, and steals data is sent through email. On the receiving end, spam filters can be made to protect email users against spam. Innumerable methods have been created for the technology used in spam filters, and they have demonstrated to be largely successful. However, spammers are also seeking to circumvent these spam filters' detection, and as a result, the issue of inaccurate spam filter detection has gotten worse and cannot be avoided. The problem of false positives, which classify valid communications as spam, is quite concerning, especially for users of corporate email. Sender reputation, which uses email sender information, is hence useful for lowering false positives from email filters. DNSBL, which utilises the source IP address as a blocklist, has been used generally for sender reputation. DNSWL is used as an allowlist as well, but it is rarely very well-liked. Because sender authentication technologies like SPF, DKIM, and DMARC have been suggested and made it feasible to prevent sender domain name spoofing, sender reputation utilising these authorised domains is also projected. In this study, we propose a method for locating trustworthy email servers, like a method for boosting sender trustworthiness.Utilising email forwarders allows legal email servers to collect data. This method is superior to the previously suggested techniques,since it aims to reduce false positives. We checked the validity of the obtained valid email server using the judgement results from the spam filter. This is how this essay is organised. We give a brief overview of sender authentication technology as well as the characteristics of each authentication method. We will also go through relevant research on the process of establishing

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REAL-TIME ANOMALY DETECTION USING VIDEO SURVEILLANCE FOR ENHANCING THE SECURITY

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ABSTRACT

For a real-time video surveillance system, AED (Anomalous Event Detection) is especially helpful in terms of safety as well as security. Today, monitoring objects and movement in low resolution video is a particularly challenging task due to the loss of specific viewpoint in the external appearance of moving objective article. Additionally, the demand has not been met by the number of strangeness kinds that real-time machine checking could detect. The identification of abnormalities is extremely important and usually becomes absolutely necessary in high-risk situations. When the system discovers or detects any unexpected or anomalous actions while video surveillance is being conducted in real-time, alerts are generated. The suggested remedy may also be used by any source and doesn't require a high limit of capacity structure to achieve the best outcome. The arrangement also includes a simple but sophisticated approach to deal with the rapid alerting and anomaly detection framework of today. Object recognition and tracking, which is widely employed in many industries such as medical care observation, autonomous driving, irregularity identification, and so forth, is one of the most important and difficult fields in computer vision. Due to its numerous practical applications in various domains, including event analysis, human-computer interaction, crowd analysis, video surveillance, behavior analysis, etc., the tracking of moving objects in movies has been extensively explored during the past 20 years. We can satisfy the requirements to give the citizens of the nation the essential security with the use of machine learning algorithms. Additionally, we can somewhat reduce the global crime rate. Nowadays, it is extremely dangerous to walk down the street, even in broad daylight, so the proposed system will help to reduce all anomaly activities.

Keyword: - *Anomaly Detection, Deep learning (DL), Graphics Processing Unit (GPU), Surveillance video, Artificial Intelligence, Machine Learning, Image Processing, CNN, Object detection.*

1. INTRODUCTION

In recent years, interest in surveillance films for public security has increased as a result of anomaly event identification in congested areas [2]. Due to three key factors, anomaly event identification in crowded settings is particularly difficult. The first concern is the tiny sample size of the datasets, the second is the lack of objectives and definitions for anomalies, and the third is temporal complexity. Anomaly detection is essential, followed by anomaly

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VIRTUAL STYLING ROOM USING A LIVE VIDEO

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ABSTRACT

A platform called Virtual Styling Room allows users or consumers to choose from a large selection of clothing designs before replicating those ensembles on virtual humans. This creates an entertaining, interactive, and very realistic virtual system. We have proposed a technique that facilitates the synchronisation of daily clothes in this study. The Virtual Styling Room with Live Video Feed project may change how someone shops for clothing and how they try on outfits, just like they would in a trial room. By utilising "Virtual Reality," customers may try on a variety of things without really wearing them, which shortens the shopping process. The quantity and style of clothing worn may differ depending on physical stature, gender, as well as social and geographic considerations.

Real-time fittings for customers are possible, but they take too long when there aren't enough trial rooms. Our objective is to develop a virtual system that is dynamic, engaging, and astonishingly realistic and that enables users or clients to choose from a wide range of clothing designs before putting those outfits on virtual humans.

We have proposed a technique that facilitates the synchronisation of daily clothes in this study. How a person shops for and attempts on clothes may change as a result of the virtual styling room initiative employing live video feed.

Keyword: - *Virtual Styling Room, Virtual Styling Room with Live Video Feed, replicating, Virtual Reality, entertaining, interactive, and very realistic virtual system, synchronisation.*

1. INTRODUCTION

There are two universes: the real world and the virtual world. When people first learned how to use computers, they started to live digital lives. Virtual reality is a software that combines the virtual and physical worlds.
Numerous devices that allow users to simultaneously experience the real and virtual worlds have been made possible by smart technologies.
Consider how quickly online shopping evolved. People are more used to using online shops, auction sites, etc. to purchase the items they are interested in.
The inability for customers to try on clothing before buying it is a disadvantage of online apparel shopping. How a client feels after dressing affects whether or not they decide to purchase the things.

1.1 Motivation of the Task

It enables customers to choose more carefully. The main objective of the project is to establish an actual relationship between the user and virtual clothing.
Provides shoppers with a way to try on various articles of clothes without touching them in order to make a purchase.

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Cervical Cancer Prediction Using Deep Learning

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Abstract - Given that gynecological cancers are among the most frequently diagnosed cancers, they pose a serious public health concern for women. Many women have a tendency to report their cancer at advanced stages in undeveloped countries with little cancer awareness programs, such as India, inconsistent pathology, and insufficient screening facilities, which negatively affects their prognosis and clinical outcomes. While cervical cancer continues to be second-most prevalent cancer after breast cancer, ovarian cancer is becoming more common in Indian women. Smoking, oral contraceptives, HPV (Human Papilloma Virus), and multiple pregnancies are just a few of the many causes of cervical cancer. Through early detection Adult women can avoid cervical cancer by getting timely treatment and taking tests like the PAP and HPV tests. PAP and HPV tests can detect.

Key Words: Machine Learning (ML), Convolution Neural Network (CNN), Deep Learning, Cervical Cancer.

1. INTRODUCTION

The most normal form of cancer in women, cervical cancer is brought on by abnormal cell growth in the cervix and has the potential to spread to other body organs. While there are typically no symptoms at first, later symptoms could include abnormal vaginal bleeding and pelvic pain. Cervical cancer is significantly more likely to occur in people who have certain types of the Human Papilloma Virus (HPV) infection, as well as in people who smoke cigarettes both actively and passively. Loss of appetite, weight loss, fatigue, back pain, leg pain, swollen legs, and vaginal bleeding are some of the symptoms of cervical cancer. In rare circumstances, the virus may spread to the liver, lungs, and bones. Cervical cancer can spread to nearby vaginal and various other uterine structures.

1.1 LITERATURE SURVEY

An automated computer based technique has been a reliable method [1] as cervical cancer is more common in women and worldwide it is most feared disease. Due to abnormal growth in the cervix cells, cervical cancer occurs and slowly it also spreads to the other organs of human body. Numerous factors, including the human papillomavirus, birth control pill use, smoking, and others, contribute to the development of cervical cancer. Cervical cancer does not initially exhibit any symptoms. However, if it is discovered earlier, it can be successfully treated. Many computer vision-based methods have been developed recently to recognize the stages of cervical cancer. The development of cervical cells out of control leads to cervical cancer because these cells do not die but instead continue to divide. According to the literature, cervical cancer is brought on by the HPV virus, smoking, a weakened immune system, among other things. By detecting cervical cancer in its early stages using the Pap smear test, the death rate from the disease is now significantly lower.

Here, image processing methods are suggested to find cervical cancer early [2] as the most prevalent cancer among females is cervical cancer. It is born in the cervix. Primary surgery, primary radiotherapy, chemotherapy, and combination therapy are a few examples of the various treatments. While there are many methods for diagnosing cervical cancer, the crucial ones include biopsies, LBC tests, HPV tests, Pap smears, and various screening methods. The use of morphological image processing techniques has enabled the automatic detection of cervical malignant growth cells. Cervical cancers are manually screened using the Pap test and LCB test, which do not provide accurate classification results in classifying the normal and uncommon cervical cells inside the cervix region of the female reproductive system..

The paper [3] proposed here is Cervical Cancer Diagnosis using Cervix Net - A Deep Learning Approach. Cervical cancer is caused due to the Human Papilloma Virus (HPV)

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The Implementation and detection of Keyloggers in a System

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Abstract

Keyloggers are a type of malware that nefariously monitors client input from the console in an effort to recover personal and confidential information. The goal is to identify and caution the client about the presence of a keylogger in the framework. Keystroke logging is the action of recording (logging) the keys struck on a Keyboard, typically covertly, so that the person using the keyboard is unaware that their actions are being monitored. Data can then be retrieved by the person operating the Logging Program. A keylogger can be either software or hardware.Keyloggers are most often used for stealing passwords and other confidential information.We will be focusing on software based Keyloggers. Software keyloggers work by setting up a Windows hook that tells Windows that Whenever the user presses a key or uses their mouse to tell the keylogger what keys were Pressed, where your mouse moves, and where your mouse clicks. A software keylogger will be created and implemented to simulate an attack and a system to detect the keylogger is also created.

Keywords-*keylogger, keystroke, confidential information, windows, keyboard, logging, software.*

I.INTRODUCTION

Keyloggers are a type of malware that maliciously tracks client input from the console in an attempt to recover personal and confidential data. Key lumberjacks can email or flip the logged keystrokes document back to the spying individual. These keyloggers function invisibly to capture the client's action on the console, so that all keystrokes are saved in a secure document. Because it is the most well-known UI with a PC, the console is the primary focus for Keyloggers to recover client contribution from. Although both programming and hardware Keyloggers exist, programming Keyloggers pose a significant risk if individuals have anything valuable on their PC. Keyloggers on equipment also pose a significant threat to PC users' security. For example, suitable equipment Keylogging gadgets, for example, the Spy Keylogger, act as a conduit between various PC components, for example, physical consoles, USB connectors, motherboards, and USB ports; as the "man in the middle assault".This type of device secretly records and saves all keystrokes made by customers. The software-based keylogger is a subset of Trojan stallions that are deployed by increasing physical access to the PC or by downloading programme carelessly. Their small footprint in terms of memory and processor usage renders them virtually unnoticeable. Keyloggers are apps that record keystrokes from a client's computer and relay the information to a spying individual. Given the availability of various online free software, it is not difficult to install Keyloggers on a victim's PC without the client's knowledge.

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Children's Safety Monitoring System

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ABSTRACT

Child abuse has become a major issue in the world today, with approximately 80% of cases being reported. Out of this percentage, 74% are girls and the remaining 26% are boys. Every 40 seconds, a child goes missing, which highlights the severity of the situation. Children are the backbone of a nation and their well-being is crucial for the growth and development of a country. Abusing can have serious emotional and mental effects on children, which can negatively impact their future and career. Unfortunately, due to economic conditions and parents' focus on their child's future and career, they are unable to monitor their children all the time. Our system aims to provide a solution to this problem by allowing parents to monitor their children in real-time, regardless of their location. The system uses a concealed device, equipped with GPS technology, worn by the child, which is connected to the parents' smartphone using a mobile network. This Child Monitoring system offers important features such as Heart beat monitoring, Temperature monitoring, Discrete Panic Button, and Real-Time Tracking, which helps parents to ensure the safety of their children.

Keyword: GPS, Temperature, ThinkSpeak, BPM, IoT.

1. Introduction

In the contemporary era, child safety has become a critical concern as children are susceptible to physical and sexual abuse, violence, and fear of danger, making it difficult for them to venture out of their homes at any time. Despite the rapid advancements in technology and the development of new gadgets in the 21st century, children and girls continue to face difficulties. Children possess the ability to mobilize various groups to pursue a common goal, transcending ethnic, religious, political, and cultural barriers to promote freedom. While we all acknowledge the importance of child safety, it is imperative to ensure that they are adequately protected. Children are not as physically strong as men, and during an emergency, they would require assistance from a helping hand. The most effective approach to reduce the likelihood of falling victim to violent crime such as robbery, sexual assault, rape, or domestic violence is to recognize, defend and seek help from available resources during hazardous situations.

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A comprehensive review on performance enhancement analysis of solar flat plate collector

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Abstract: Enhancement of collector efficiency and performance is important issue in case solar flat plate collectors. The present paper reviews comprehensively the experimental and numerical investigations to evaluate the enhancement of thermal efficiency. The influence of performance factors such as material of the tube and plate, thickness of the glass cover and working fluids is investigated. Most of the researches show that inserts and working fluid such as nanofluids are effective way to increase efficiency and the rate of heat transfer of the flat plat collector.

I. INTRODUCTION

Investigators are looking forward to use wind and solar energies extensively in order reduce the environmental pollution and accessibility. Solar water heaters are commonly used in many countries to supply hot water for different domestic and industrial purposes. Solar water heater acts as a heat exchanger which converts solar energy to thermal energy. There are many types of solar water heaters are available in the market, out of which flat plate solar collectors are popular due to its simple design and low cost. Solar flat plate collectors are classified in to two groups: 1) Natural circulation type 2) Forced circulation. Solar flat plate collectors consists of riser tubes to carry the working fluid, insulation to reduce the thermal losses, absorber sheet to transfer heat, and glass covers. Solar water heaters are used in low temperature heating applications like building heating and chemical industrial processes [1]. In addition, the use of selective coating on the absorber sheet can be of great support to transfer the energy through conduction process [2]. Diamantino et al. [3] investigated the effect of corrosion rate of standard samples such as carbon steel, zinc, and copper at atmospheric conditions. Dias et al. [4] investigated a composite material using steel material and found that better enhancement of heat transfer and collector efficiency. In addition, Ning et al. [5] applied ZrSiON/SiO2 as a selective coating on a steel substrate and accounted emittance of 0.059 and absorptance of 0.93 at atmospheric conditions. Some other innovators have analyzed other methods such as turbulators [6–18].

II. MODEL OF THE FLAT PLATE COLLECTOR

2.1 Heat transfer model

The thermal model of general flat plate collector is shown in Fig. 01. The solar flat plate collectors are broadly categorized as non conventional and conventional energy sources. The function of solar flat plate collector is to convert solar radiation in to useful heat gain.

Fig. 1. Thermal model of the solar flat plate collector

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DESIGN AND FABRICATION OF AUTOMATED 360° ROTATING MACHINE WITH SOUND WAVE BASED FIRE EXTINGUISHER

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Abstract : Fire, one of the most serious disasters threatening human life, is a chemical event that can destroy forests, buildings, and machinery within minutes. Within the scope of this study, a sound wave flame extinction system with 360° rotation machine was developed in order to extinguish the flame at an early stage of fire. The data used in the study were obtained as a result of experiments conducted with the developed system. Using this method, a different set of experiments were conducted to find the range of frequencies within which fire can be extinguished and found that fire can be extinguished between 50 Hz to 60 Hz. Also, we found the optimum frequency as 53Hz. From the result of the experiment, the sound waves manage to extinguish all flames of different fuel types. Nevertheless, this sound wave based fire suppression technology could be used to combat early stages of fire accidents.

Index Terms – **360° ROTATING MACHINE, SOUND WAVE, FIRE EXTINGUISHER.**

I. INTRODUCTION

Existing fire extinguishers contain different chemicals, depending upon their application. Generally, they are pressurized with Nitrogen or Carbon Dioxide (CO2), when this pressure released on fire will extinguish the fire, as we know there are many such firefighting agents such as water, potassium bicarbonate, evaporating fluorocarbons etc. All these agents have the same property of leaving an unproductive system behind it. To deal with Fire we need to have complete information on fire and its working. The formation of fire requires three elements in a proper mixture they are fuel, oxygen and heating element. There is a chance of extinguishing the fire by sound. If we remove the heating element or move it apart from fuel fire can be extinguished. This particular task is done by sound. In-depth research on sound could help. A mechanical wave of pressure and displacement, through a medium such as gases, liquids and solids. As we underlined above sound is pressure wave and displacement caused in the medium through with particles will move in a random direction, and transferring the pressure from one particle to the other, hence this how sound travel in any medium. Sound can be travel in two forms they are:

A. Transverse Wave

A transverse wave is a moving wave that consists of oscillations occurring perpendicular (or right angled) to the direction of energy transfer. If a transverse wave is moving in the positive x-direction, its oscillations are in up and down directions that lie in the y-z plane. Light is an example of a transverse wave. With regard to transverse waves in matter, the displacement of the medium is perpendicular to the direction of propagation of the wave. A ripple in a pond and a wave on a string are easily visualized as transverse waves.

B. Longitudinal Waves

Longitudinal waves are waves in which the displacement of the medium is in the same direction as, or the opposite direction to, the direction of travel of the wave. Mechanical longitudinal waves are also called compression waves because they produce compression and rarefaction when traveling through a medium.

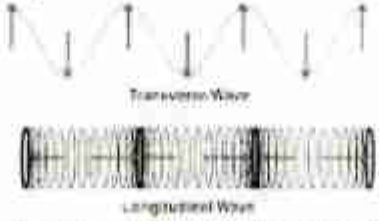

Fig.1.1: Particle movement in transverse and longitudinal wave

C. Fire

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