

**AGRICULTURAL LAND IMAGE CLASSIFICATION USING KNN AND
COMPARE WITH RECURRENT NEURAL NETWORK**

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ABSTRACT

Research into agriculture has been exhibiting indications of fast expansion over the last several years. The most recent entrant is making farming easier by using a variety of computational technology. We have used LAND satellite photos, which include coverage of FOREST, AGRICULTURE, URBAN, and RANGING LAND, to execute this project. While several classifiers have been developed for use with Sentinel-2 Multispectral Imager (MSI) and similar remote sensing pictures, very few research have examined their capabilities using various training sample sizes. In this work, we used Sentinel-2 picture data to classify land use and cover using RF, kNN, and SVM classifiers. We compared their results. A total of fourteen alternative training sample sizes, ranging from fifty pixels per class to more than twelve hundred, were used to categorise a thirty by thirty km² region in the Red River Delta of Vietnam that had six distinct land use/cover classes. These sizes included balanced and unbalanced options. A high overall accuracy (OA) between 90% and 95% was shown by all categorisation findings. Using the training sample sizes as little a factor as possible, SVM generated the greatest OA across all three classifiers and fourteen sub-datasets. RNN and kNN trailed closely behind. With a sufficiently enough training sample size (i.e., more than 750 pixels/class or around 0.25 percent of the overall study area), all three classifiers showed a comparable and high OA. With both balanced and unbalanced datasets, the high accuracy was reached.

I. INTRODUCTION

In this research, we investigated the possibility of using Sentinel-1 remote



ADVANCED SECURITY IN CLOUD COMPUTING OF MILITARY WEAPONS

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ABSTRACT

Many individuals all around the globe utilise cloud storage services to save and share their own media files, documents, photos, and videos. Many organisations, both public and commercial, as well as the military, are increasingly storing their databases in the cloud. Users' confidence in media cloud service providers' offerings is an important concern, nevertheless. To protect user data during transmission to the media cloud, many conventional security measures have been suggested. But here's the rub: military users face the dilemma of how to trust the cloud to securely provide launching codes to military admirals and chiefs when scientists create new weapons for the military. Hackers may readily access sensitive information and military weapon data stored in cloud storage these days. To prevent the potentially disastrous disclosure of sensitive military weapon data stored in the cloud to terrorists or hostile nations, this article suggests using a number of security measures, including steganography, watermarking, picture encryption, and visual cryptography. Using steganography, one may conceal the code to fire a weapon behind an image captcha. The number of individuals in a military group determines how visual cryptography distributes picture captchas. Every sharing of the captcha will be encrypted. Following this, the cloud and users may authenticate each share by adding a watermark. Recipients must first de-watermark images, decode them using visual cryptography, and then get the launch code and captcha. The results of our research demonstrate that the recommended strategy successfully safeguards the nation's future.



ACCESS CONTROL BY SIGNATURE-KEYS TO PROVIDE

PRIVACY FOR CLOUD

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ABSTRACT

One of the most important concerns with cloud computing and large data is the privacy of data subjects. Cloud computing and big data privacy breaches occurred as a result of many threats to data from both within and outside the organisation, according to the privacy approaches examined in earlier studies. The fact that the owner does not have control over the information pertaining to the stored transactions poses a significant danger to their privacy. In this scenario, customers entrust critical information, such as company plans or private details, to the cloud servers run by cloud providers, who they do not fully trust. One easy way to keep sensitive information private is to apply certain privacy measures to transaction data before storing it in the cloud. All three models—the cloud's architecture, the transaction manager, and the clients—are included in this paper's proposed case study. All transactions involve third parties, and data flows are realised via several layers of protection, as our case study is founded on the concept of zero trust among the three models.

I. INTRODUCTION

There has to be more study and focus on cloud computing and big data as innovative approaches. A major concern with these innovative methods is their potential impact on users' privacy.

Processing or data sharing and

Hacks such sync cookies, assaults on client profiles, restricted connections of given, etc., are more likely to occur when data is sent via third parties [1]. One

A DEEP LEARNING MODEL FOR AVERAGE FUEL CONSUMPTION IN HEAVY VEHICLES

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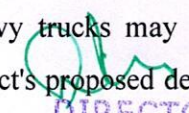
ABSTRACT ___ A deep learning model for heavy vehicle fuel consumption prediction is presented in this study. The model takes a look at how things like vehicle type, load, route parameters, and driving behaviour affect fuel economy by using sophisticated algorithms and massive datasets. Our main goal is to provide operators and fleet management precise projections that will help them make better operational choices, optimise routes, and save fuel costs. The significance of data-driven strategies in improving transportation sustainability and efficiency is further emphasised in this research.

I. INTRODUCTION

Heavy vehicles, including trucks and buses, account for a disproportionate share of the world's fuel consumption and greenhouse gas emissions, which are mostly caused by the transportation industry. Efficient management of fuel resources is becoming more important as fuel costs keep going up. Optimal fleet operations, cost reduction, and environmental impact mitigation all depend on accurate fuel consumption

forecast. Estimating fuel usage using traditional techniques often makes use of oversimplified

models or averages over time, which could not capture the intricacies of actual driving situations. A more complex knowledge of the elements influencing fuel economy in heavy trucks may be gained from this project's proposed deep learning model, which uses several data


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A MACHINE LEARNING BASED CLASSIFICATION AND PREDICTION TECHNIQUE FOR DDOS ATTACKS

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ABSTRACT

The most common name for assaults on distributed networks is Distributed Denial of Service (DDoS). Such assaults exploit certain restrictions that are applicable to any asset in the arrangement, including the authorised organization's website framework. The author of the current study used an older KDD dataset. In order to determine the present status of DDoS assaults, it is essential to use the most recent information. Classification and prediction of DDoS attack types was accomplished using a machine learning technique in this article. We used the classification algorithms XGBoost and Random Forest to achieve this goal. In order to get access to the study, a comprehensive strategy for predicting DDoS assaults was suggested. The UNWS-np-15 dataset was retrieved from the GitHub source and a Python simulator was used for the suggested study. To determine how well the machine learning models worked, we created a confusion matrix after they were applied. Both the Precision (PR) and the Recall (RE) for the Random Forest method are 89% in the first classification, according to the findings. Our suggested model has an excellent average Accuracy (AC) of 89%. The second classification demonstrated that the XGBoost algorithm achieves a Precision (PR) and Recall (RE) of about 90%. Our proposed model has a 90% average Accuracy (AC). Our study greatly enhanced the accuracy of fault assessment by around 85% and 79%, respectively, when compared to previous studies.

A DEEP LEARNING FACIAL EXPRESSION RECOGNITION BASED SCORING SYSTEM FOR RESTAURANTS

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ABSTRACT

In this research, we provide a new method for gauging diners' happiness using a facial expression detection system that relies on deep learning. Our technology uses cutting-edge convolutional neural networks (CNNs) to assess user happiness in real-time based on facial expressions recorded by in-house cameras. The method's stated goals include improving operational efficiency, providing management with relevant insights into client experiences, and raising the bar for service quality. In order to prove the system's efficacy and possible uses, we go over its design, data gathering, execution, and assessment outcomes. There has been a recent uptick in the popularity of fully automated eateries. Since no one is there to ask guests about their experiences, it's impossible to gauge how they feel about the restaurant's idea. To that end, this research introduces a grading system that uses pre-trained convolutional neural network (CNN) models to identify facial expressions. A web server, a pre-trained AI server, and an Android mobile app make it up. It is appropriate to assess both the cuisine and the atmosphere. There are now three possible outcomes supplied by the rating system: pleased, neutral, and dissatisfied.

I. INTRODUCTION

A person's facial expressions are among the most effective, inherent, and universal ways to communicate their

feelings and intentions [1, 2]. Due to its practical usefulness in social robots, medical treatment, driver tiredness detection, and several other human-



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BLOCKCHAIN BASED MANAGEMENT FOR ORGAN DONATION AND TRANSPLANTATION

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ABSTRACT

Limitations in technology, ethics, law, and clinical practice all contribute to the specific challenges and requirements of modern organ procurement, transplantation, removal, and delivery processes. Therefore, an end-to-end system is required for organ donation and transplantation to guarantee a fair and efficient operation, which will enhance patient experience and trust. This article presents an Ethereum-based solution for fully decentralised, secure, auditable, confidential, and trustworthy organ donation and transplant management. Our group develops smart contracts and documents six algorithms that include all the data needed for validation, testing, and deployment. We analyse the proposed solution in terms of privacy, security, and secrecy and compare it to other possibilities to see how well it works. You can find the smart contract code on Github.

I. INTRODUCTION

Organ failure or damage may occur as a result of injuries or illnesses. Death and a decline in quality of life are unfortunate results. One of the most selfless acts a person can do is give an organ so that others might live longer via

transplantation. A proper operational environment is required for the organ, which includes

It is unacceptable to endanger the life of the donor in order to remove donor-recipient matching [1]. The first



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BLOCKCHAIN-BASED FEDERATED LEARNING WITH SMPC MODEL VERIFICATION AGAINST POISONING ATTACK FOR HEALTHCARE SYSTEMS

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ABSTRACT

Federated learning (FL) has gained a lot of traction and found use in many domains, such as smart cities, intelligent healthcare systems, and sectors reliant on the internet of things (IoT). This is all because people are becoming more conscious of the need to protect user data while using machine learning. Through FL, customers are able to work together to train a global model, even without having access to their local training data. Nevertheless, adversarial attacks may exploit the weaknesses of existing FL methods. Because of its design, protecting against harmful model changes and identifying them are both made difficult. Not enough has been investigated in the most current research on protecting the model's privacy while detecting FL from harmful updates. This study presented a solution to the problem of poisoning assaults on healthcare systems: federated learning based on blockchain technology with SMPC model verification. To begin, we use an encrypted inference method to verify the FL players' machine learning models and discard any compromised ones. Following the verification of each participant's local model, the models are safely collected and forwarded to the blockchain node. We tested our suggested framework with various medical datasets in a series of studies.

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TRANSPARENCY AND PRIVACY: THE ROLE OF EXPLAINABLE AI AND

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ABSTRACT

Many people are worried about the lack of transparency and privacy caused by the widespread use of artificial intelligence (AI) in many industries. Although AI systems have been great at automating decision-making, their opaque design makes them difficult to understand and trust, which is particularly problematic in delicate fields like medicine, banking, and law enforcement. In this work, we take a look at how explainable AI (XAI) can help with these issues by revealing how it can make AI models more transparent without letting users' privacy be compromised. In order to help stakeholders understand how and why particular results are reached, explainable AI strategies try to simplify the decision-making process of complicated models. Simultaneously, methods that safeguard personal information don't compromise AI systems' ability to do their jobs. This article discusses the potential of explainable AI and privacy-preserving AI to find a middle ground between openness, accountability, and privacy by reviewing the existing state-of-the-art approaches in these areas. The research goes on to provide a paradigm that would allow for more trustworthy, interpretable, and transparent AI systems by integrating explainable AI with privacy protection. Our purpose is to provide a thorough study that will help people understand how XAI and privacy strategies work together to make people more trust AI-driven systems and promote the ethical deployment of AI.

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DIABETIC RETINOPATHY DETECTION USING RESNET101 AND DENSENET121.

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ABSTRACT

Using Graph Neural Networks (GNNs), this research introduces a novel method for categorising degrees of Diabetic Retinopathy Disease (DRD). The suggested technique seeks to improve the accuracy of DRD classification by converting retinal pictures to graph representations and then extracting topological characteristics. To get a more detailed knowledge of the retinal anatomy and disease development, GNNs are used to exploit complicated linkages in graph-structured data. This strategy offers useful insights for early diagnosis and personalised treatment plans, since the findings show that classification accuracy is greatly improved compared to standard approaches. This development has the potential to enhance patient outcomes by facilitating better treatment of diabetic retinopathy.

INTRODUCTION

Damage to the blood vessels in the retina over time is known as diabetic retinopathy (DR), and it is a serious eye

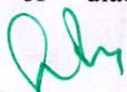
consequence of diabetes mellitus. For successful care and appropriate intervention, it is vital to accurately classify the phases of diabetes

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A MACHINE LEARNING MODELING FOR BITCOIN MARKET PRICE PREDICTION BASED ON THE LONG SHORT-TERM MEMORY RECURRENT NEURAL NETWORK

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ABSTRACT

The rising popularity and widespread acceptance of cryptocurrency is giving it a significant role in the transformation of the financial system. Numerous individuals are putting their money into cryptocurrency, but the characteristics, volatility, and predictability of this asset class are still mainly unknown, posing a significant danger to investors. Identifying what influences value creation is a question of investigation. Here, we examine the price movements of Bitcoin, Ethereum, and Ripple using state-of-the-art AI frameworks such as fully connected Artificial Neural Networks (ANNs) and Long Short-Term Memory (LSTM) Recurrent Neural Networks. The results show that LSTM is more efficient at using the valuable information that is concealed in historical memory compared to ANN, as LSTM relies more on short-term dynamics while ANN relies more on long-term history. On the other hand, when presented with sufficient historical data, ANN may match the accuracy of LSTM. The unique proof that the price of cryptocurrencies may be predicted is given by this research. The specifics of the machine-learning model at play may dictate, however, how the predictability is explained.

BLOCK CHAIN-BASED FILE REPLICATION FOR DATA AVAILABILITY OF IPFS CONSUMERS

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ABSTRACT

Users of the Interplanetary File System (IPFS) may work together to replicate data and safeguard it against hardware failures. Despite the fact that IPFS makes use of replication techniques originally developed for usage in P2P networks, these approaches are either inflexible or antagonistic to peers with low availability, making it impossible for them to achieve sufficient data availability. If replication were perfect, it would optimise data availability in a way that was fair to all peers and flexible enough to meet their needs. This article presents a file replication technique that is based on the blockchain in order to do this. Our method accomplishes safe storage and reliable inquiry of peer information used in file replication by capitalising on the immutable and traceable characteristics of blockchain technology. Our approach uses an Arweave-inspired file replication algorithm, which optimises the availability of all files in the system by first replicating the ones that are less accessible. This makes it different from most previous methods. By following these types of preset system-wide cooperation norms, file replication may be done in a timely manner in reaction to changes in the P2P system and peers' selfishness can be limited. Furthermore, our system promotes trustworthy peer-to-peer collaboration without the need for a middleman by using smart contracts to identify and eliminate dishonest peers.

CONTROL CLOUD DATA ACCESS PRIVILEGE AND ANONYMITY WITH FULLY ANONYMOUS ATTRIBUTE- BASED ENCRYPTION

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ABSTRACT

The data is sent to certain computers in the cloud, which raises a number of privacy issues; yet, cloud computing is a game-changing paradigm in computing that allows for flexible, on-demand, and inexpensive use of computing resources. To protect data stored in the cloud, many methods have been suggested, all based on attribute-based encryption. Nevertheless, privilege control and identity privacy get less attention than data contents privacy and access control, which receive the lion's share of research efforts. To solve the problem of data privacy and user identity privacy in current access control techniques, we introduce AnonyControl, a semianonymous privilege control scheme. To achieve semi-anonymity, AnonyControl decentralises the central authority in order to restrict the leaking of identities. In addition, it expands the concept of file access control to include privilege control, allowing for fine-grained management of privileges for all actions on cloud data. Next, we introduce the AnonyControl-F, a completely anonymous solution that stops any trace of your identify from leaking out. Our performance assessment demonstrates the practicability of our schemes, and our security analysis confirms that AnonyControl and AnonyControl-F are safe under the decisional bilinear Diffie-Hellman assumption.

IMAGE STEGANOGRAPHY WITH CNN BASED ENCODER- DECODER MODEL STEGANOGRAPHY

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ABSTRACT

The practice of picture steganography, which involves hiding information inside an image, has recently attracted a lot of interest because of the secure communication problems it may solve. Simple pixel changes, used by many older steganographic techniques, are now readily identified by state-of-the-art detection algorithms. Using an Encoder-Decoder model based on Convolutional Neural Networks (CNNs), this study investigates a new method of picture steganography. In order to retrieve both the original picture and the hidden message effectively, the suggested system uses deep learning methods to insert messages into an image's least significant bits (LSBs) and trains an encoder-decoder architecture concurrently. To maximise the concealed data's imperceptibility and resilience against typical picture alterations like compression and resizing, the CNN-based encoder-decoder model is meticulously built. While one part of the system reconstructs the stego-image and deciphers the concealed information, the other part gathers characteristics from the input picture and encodes the secret message. The stego-picture is guaranteed to be of high quality by using a loss function that strikes a compromise between the perceptual quality of the image and the accuracy of the message extraction.



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IMPLEMENTATION OF DATA MINING TECHNIQUES IN UPCODING FRAUD DETECTION IN THE MONETARY DOMAINS

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ABSTRACT

Banking, insurance, healthcare, government, and law enforcement are just a few of the many sectors that rely on effective fraud detection systems. The yearly loss of billions of dollars as a result of fraud has increased the importance of fraud detection in recent years. The practice of upcoding, in which service providers falsely claim a higher level of complexity or expense for a service they really execute at a lower level, is a serious kind of fraud. To detect and avoid these types of fraudulent actions and cut down on financial losses, it is crucial to combine data mining with statistical analysis and artificial intelligence (AI). Millions of transactions may be analysed using sophisticated data mining methods to find trends and identify possible fraud. This article delves into several data mining algorithms that excel at identifying upcoding fraud, specifically looking at how they might be used in the Indian healthcare insurance industry.

I. INTRODUCTION

Financial, banking, insurance, and healthcare industries are just a few that

have made detecting fraud a top priority. The demand for cutting-edge techniques to identify and stop fraud is rising in tandem with the frequency and

IMPLEMENTATION OF DNA CRYPTOGRAPHY IN CLOUD COMPUTING

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ABSTRACT

Traditional cryptographic methods are becoming less efficient and less resilient in the face of the increasing need for data security in cloud computing settings. An innovative method for protecting private data stored in the cloud is presented in this project. It is called DNA cryptography, and it is based on biological principles. To encode and decode data, it uses the specific characteristics of DNA sequences. Integrating DNA cryptography into cloud-based systems to increase data privacy and security is the major purpose of this study. The method involves encoding data using DNA-based operations after it has been translated into DNA sequences using a mapping technique. For a strong, multi-layered encryption system, the approach uses DNA sequence modification (including transposition, hybridisation, and replacement) in conjunction with conventional cryptographic methods. The information is decrypted after the reverse operation, guaranteeing the safe retrieval of the original data. The suggested DNA cryptography system works well in a cloud computing environment, according to the experimental findings. The system is designed to provide robust data secrecy, attack resistance, and efficient performance even in large-scale settings. Genome cryptography stands out from other cryptographic approaches due to its exceptional computational complexity and secure integration of the two, making it a prime contender for highly secure cloud applications. By investigating the possibilities of

OPTIMIZATION OF WEARABLE BIOSENSOR DATA FOR STRESS CLASSIFICATION USING MACHINE LEARNING

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ABSTRACT

Examining the efficacy of meditation audio in reducing stress after academic exposure, this research also delves into the usage of wearable sensors for real-time stress monitoring. The MIST records physiological signals, including HRV, BVP, and EDA that are extracted from the IBI. Using Genetic Algorithms and Mutual Information, a hybrid classification strategy is implemented to reduce feature redundancy. The hyperparameters of the machine learning system are then fine-tuned using Bayesian optimisation. Findings show that when EDA, BVP, and HRV are combined, the GB algorithm performs better for 2-level and 3-level stress categorisation. On the other hand, findings from EDA and HRV alone are encouraging as well. Also, according to SHAP Explainable AI (XAI) research, the two most important characteristics for stress categorisation are HRV and EDA. The results provide credence to the idea that meditative music might help alleviate stress. These findings demonstrate the promise of wearable technology integrated with machine learning for the immediate identification and alleviation of academic stress.



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BIRDS SPECIES IDENTIFICATION USING DEEP LEARNING

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Abstract

Some bird species are becoming harder and harder to find these days, which makes classifying them a real task. Birds naturally display a broad variety of traits, including different sizes, shapes, colours, and human-perceived orientations. Because there is such a wide variety of bird species in terms of appearance, visual identification using photos is usually more accurate than audio-based categorisation. A technique that makes use of the deep convolutional neural network (DCNN) algorithm has been developed; it is trained and tested on the Caltech-UCSD Birds 200 [CUB-200-2011] dataset. The first step is to analyse the photos in TensorFlow, which generates many comparison nodes, and then converts them to greyscale. A score sheet is generated by comparing these nodes to the testing dataset. The program uses this score sheet to determine which bird species are most probable based on the highest score. Results from experiments using the Caltech-UCSD Birds 200 [CUB-200-2011] dataset show that bird recognition accuracy ranges from 80% to 90%. The Ubuntu 16.04 operating system was used to run these tests, using the TensorFlow library.

I. INTRODUCTION

In ornithology and ecological study, identifying bird species is a crucial undertaking for understanding avian biodiversity and ecosystem dynamics.

Field guides and manual observation have been the mainstays of this process up until recently, necessitating a great deal of knowledge and effort. However, because to developments in computer



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AUTOMATIC ASSESSMENT OF COMMUNICATION SKILL IN NON-CONVENTIONAL INTERVIEW SETTINGS: A COMPARATIVE STUDY

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ABSTRACT

In this research, we take a look at several alternative ways of predicting interviewees' communication abilities and compare them to other technologies. Video, audio, and essay-based evaluations are the three modes that are investigated in this research. Video analysis makes use of candidates' eye movements and facial expressions to determine their level of confidence or bewilderment. In the audio domain, confidence levels are determined by processing audio recordings using Mel-Frequency Cepstral Coefficients (MFCC) characteristics and applying deep learning algorithms. To predict writing abilities, which are applicable to both written and spoken language, for essay-based assessments, characteristics retrieved from text are input into an XGBoost model. Prior research has shown that essay-based prediction accuracy ranges from 80 to 90%; however, after using XGBoost, we were able to obtain an improvement in performance, with an accuracy of 95 to 96%. The findings establish a new standard in the area and demonstrate the efficacy of our method in improving evaluations of communication skills using state-of-the-art machine learning and deep learning algorithms.

I.INTRODUCTION

Conventional interview settings, in long relied on the evaluation of which evaluators actively engage with communication skills as a foundational applicants to evaluate their talents, have component of the recruiting process.



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AUTOMATED EMERGING CYBER THREAT IDENTIFICATION AND PROFILING BASED ON NATURAL LANGUAGE PROCESSING

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ABSTRACT

The time window between the disclosure of a new cyber vulnerability and its use by cybercriminals has been getting smaller and smaller over time. Recent episodes, such as Log4j vulnerability, exemplifies this well. Within hours after the exploit being released, attackers started scanning the internet looking for vulnerable hosts to deploy threats like cryptocurrency miners and ransomware on vulnerable systems. Thus, it becomes imperative for the cybersecurity defense strategy to detect threats and their capabilities as early as possible to maximize the success of prevention actions. Although crucial, discovering new threats is a challenging activity for security analysts due to the immense volume of data and information sources to be analyzed for signs that a threat is emerging. In this sense, we present a framework for automatic identification and profiling of emerging threats using Twitter messages as a source of events and MITRE ATT&CK as a source of knowledge for threat characterization. The framework comprises three main parts: identification of cyber threats and their names; profiling the identified threat in terms of its intentions or goals by employing two machine learning layers to filter and classify tweets; and alarm generation based on the threat's risk. The main contribution of our work is the approach to characterize or profile the identified threats in terms of their intentions or goals, providing additional context on the threat and avenues for mitigation. In our experiments, the profiling stage reached an F1 score of 77% in correctly profiling discovered threats.

SECURE ACCESS CONTROL FOR ELECTRONIC HEALTH RECORDS IN BLOCKCHAIN-ENABLED CONSUMER INTERNET OF MEDICAL THINGS

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ABSTRACT

Electronic health records (EHRs) have the potential to greatly enhance the efficiency of illness detection and treatment. However, with their widespread use comes the risk of patients' privacy being compromised, necessitating a more robust and adaptable system for access control. Furthermore, there is a significant regulatory lag since the medical ministry (MM) often probes unlawful medical actions after they have occurred and caused injury. A blockchain-based system that allows patient-leading fine-grained access control versus EHRs is proposed as a solution to these difficulties. To allow MM to regulate medical actions before they happen, this approach combines attribute-based encryption with blockchain and employs blank EHRs as the medium, which is different from the present systems. We use the chameleon hash function to compute file storage addresses in the interplanetary file system in an effort to lower the overall storage cost of the system. Also, implementing single sign-on may make telemedicine vital sign transmissions more secure and efficient, and using proxy re-encryption can make EHR authorisation more efficient. The system is secure and feasible, according to theoretical study and experimentation.

I.INTRODUCTION

The need for quick and tailored
communication in today's hectic



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DISEASE DIAGNOSIS USING CHATBOT USING VOICE AND TEXT CHATBOT

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ABSTRACT

In recent years, chatbots have gained significant attention as a convenient means of providing customer support, information retrieval, and task automation. With advancements in artificial intelligence (AI) and natural language processing (NLP), these chatbots have become increasingly sophisticated, offering more personalized and efficient interactions. This project aims to develop an AI-based FAQ chatbot with voice assistance, leveraging state-of-the-art NLP techniques and voice recognition technology. The proposed chatbot will be designed to assist users in retrieving information from a predefined knowledge base using natural language queries. Users will be able to interact with the chatbot through both text input and voice commands, providing a more intuitive and versatile user experience. The system will employ machine learning algorithms to understand user queries, extract relevant information from the knowledge base, and generate appropriate responses in real-time.

I.INTRODUCTION:

The AI Chatbot with Voice-Assisted Answer project aims to develop an intelligent, interactive system capable of delivering real-time responses to user queries through both text and voice interfaces. This system combines natural language processing (NLP), machine learning (ML), and speech recognition technologies to offer a seamless, user-friendly experience. The chatbot will be designed to understand and respond to text-based queries, while the voice-assisted feature enables hands-free communication, making it more accessible, especially for users on the go or those with disabilities.

In today's digital landscape, chatbots have become an essential part of customer service, virtual assistance, and information retrieval, significantly improving user engagement and experience. By integrating voice recognition technology into the chatbot, this project takes user interaction to the next level, enhancing the way users access information. Whether for educational, entertainment, or business purposes, this AI-powered system can effectively address user needs in an efficient and personalized manner.

The primary objective of this project is to create a hybrid model that not only provides accurate text-based responses but also



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TWITTER SENTIMENT ANALYSIS USING MACHINE LEARNING

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ABSTRACT

Twitter is a platform widely used by people to express their opinions and display sentiments on different occasions. Sentiment analysis is an approach to analyze data and retrieve sentiment that it embodies. Twitter sentiment analysis is an application of sentiment analysis on data from Twitter (tweets), in order to extract sentiments conveyed by the user. In the past decades, the research in this field has consistently grown. The reason behind this is the challenging format of the tweets which makes the processing difficult. The tweet format is very small which generates a whole new dimension of problems like use of slang, abbreviations etc. We review some papers regarding research in sentiment analysis on Twitter, describing the methodologies adopted and models applied, along with describing a generalized Python based approach. So, this project aims to build a system that identifies the human emotions and opinions expressed in text. This system uses machine learning models to collect the tweets-related data, classify them as positive, negative, or neutral, and evaluate the results.

I. INTRODUCTION

Now-a-days social networking sites are at the boom, so large amount of data is generated. Millions of people are sharing their views daily on micro blogging sites, since they contain short and simple expressions. We shall discuss about a paradigm to extract the sentiment from a famous micro blogging service, Twitter, where users tweet their opinions about different things. In this project, we will discuss the sentiment analysis of twitter dataset with data mining approach. An approach is introduced that automatically classifies the sentiments of

Tweets taken from Twitter dataset. These messages or tweets are classified as positive, negative or neutral. In this procedure of sentiment analysis, we will take the Twitter dataset as input and train the system to understand the positive, neutral and negative tweets and cluster them as individual data chunks. The training data consists of tweets which can be plain-text, acronyms, emoticons and abbreviations. This is very useful for the companies who want to know the feedback about their product brands and customer purchase product details which in



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SYMPTOM-BASED DIET RECOMMENDATION SYSTEM

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ABSTRACT

This project presents a machine learning-based system designed to provide personalized recommendations focused on diet, precautions, and workout routines based on user symptoms. By analyzing the user's health inputs, such as symptoms or conditions, the system leverages advanced machine learning algorithms to generate tailored suggestions aimed at improving overall wellness. The recommendations encompass dietary plans, precautionary measures and ensuring a holistic approach to health management. Developed using technologies like Python, Flask, and Jupyter Notebook, the system delivers a user-friendly interface with reliable, data-driven outputs. This platform is intended to support individuals in adopting healthier habits and maintaining long-term well-being, offering solutions that adapt to personal health requirements.

I.INTRODUCTION

The Symptoms-Based Diet Recommendations System is a machine learning-based platform that provides personalized health management suggestions. Users input their symptoms into the system, and based on this data, the platform generates tailored recommendations related to diet, workout routines, and precautionary measures. The system is designed to help users adopt healthier

lifestyles by offering data-driven, individualized advice that focuses on improving overall well-being.

1.1 PROBLEM STATEMENT

Many individuals face challenges in managing their health due to a lack of

personalized, accessible, and reliable guidance. With varying symptoms and health conditions, people often require customized diet and workout routines that cater specifically to their needs. Current solutions often fail to consider the unique health profiles of individuals, leading to generalized advice that may not be effective. The goal of this project is to develop a system that can provide tailored recommendations based on user-reported symptoms.

1.2 DESCRIPTION

This project aims to build a web-based application where users can input symptoms and receive personalized recommendations for diet, exercise, and precautions. The system leverages machine learning models to analyze the symptoms and generate reliable



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AI BASED CHATBOT FOR MENTAL HEALTH CARE

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ABSTRACT

In recent years, the integration of artificial intelligence (AI) into healthcare has paved the way for innovative solutions addressing mental health challenges. This paper presents the conceptual design and development of a mental healthcare Chabot aimed at providing accessible, scalable, and non-stigmatizing support for individuals experiencing mental health difficulties. The Chabot leverages natural language processing (NLP) and machine learning techniques to engage in empathetic, context-aware conversations while ensuring user safety and data privacy. The proposed Chabot features a modular architecture comprising an NLP engine, a sentiment analysis module, a dynamic response generator, and an escalation mechanism for high-risk situations. Designed to assist with a broad range of mental health concerns, including stress, anxiety, and depression, the Chabot provides evidence-based resources, coping strategies, and crisis intervention guidance. Furthermore, it incorporates multilingual capabilities and personalization to enhance accessibility and user experience. A preliminary evaluation of the Chabot's performance, conducted with a diverse user group, demonstrates its potential to foster meaningful interactions and provide timely support. The findings underscore the importance of ongoing collaboration with mental health professionals to ensure clinical efficacy and ethical considerations. This abstract lays the groundwork for further development, testing, and deployment of AI-driven tools to augment traditional mental healthcare services and reduce barriers to care globally.

1. INTRODUCTION

Introduction to the Mental Health Care Chatbot Project

In recent years, mental health awareness has grown significantly, yet access to timely and affordable care remains a challenge for many. A mental health care chatbot project aims to bridge this gap by offering a supportive, accessible, and cost-effective platform for mental health assistance. Combining

advancements in artificial intelligence, natural language processing (NLP), and psychological research, the chatbot provides users with a conversational interface for emotional support, coping strategies, and resources for further help. The chatbot serves as a virtual companion, designed to listen to users, understand their concerns, and provide empathetic, non-judgmental responses. It can assist individuals with mild to moderate

A Review of the Use of Nanosilica and Silica Fume in Cement and Concrete

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Abstract:

The use of silica fume (micro-silica) and nano-silica for the sustainable growth of the concrete industry is reviewed in this study along with current advancements. By reducing trash, this will not only save energy and natural resources but also safeguard the environment. There is a dearth of research on the application of nano- and micro-silica in paste, mortar, and concrete, and what is known about their effects on the development of mechanical strength and durability characteristics is very conflicting. To comprehend the impact of micro and nano-silica on the fresh, hardened, and microstructural characteristics of paste, cement mortar, and concrete, a variety of literature has been reviewed. Utilizing technologies and materials for nanostructure and microstructure characterization, the optimal usage of micro-silica and nano-silica separately and simultaneously will provide a novel concrete mixture that will lead to long-lasting concrete structures in the future.

Keywords: Micro-silica, Nano-silica, mortar, concrete, compressive strength.

1. Introduction

In the most customary sense, cement is a binder that sets and hardens independently as well as binds other materials together. Cement mortar is a building compound created by mixing fine aggregate and a selection of cementing material with a specified amount of water. Mortar has been used for centuries as a means of adhering bricks or concrete blocks to one another. Cement mortar continues to be used in many different types of construction such as the binder between bricks in walls, fences, and walkways, to make quick repairs in patio slabs and reset loosened stones or bricks in a walkway or retaining wall. Unfortunately, construction industry is not only one of the largest consumers of natural resources and energy, but is also responsible for large emissions of green house gases (GHGs) such as carbon dioxide responsible for global warming.

It is estimated that one ton of Portland cement clinker production yields one ton of GHGs. In addition, due to the accumulation of natural aggregate extraction from quarries; it poses an immediate concern for sustainable construction development.

1.1 Concrete and Sustainability

Concrete is probably unique in construction, it is the only material exclusive to the business and therefore is the beneficiary of a fair proportion of the research and development money from industry. Concrete is a composite construction material composed primarily of aggregate, cement, and water, which is a nano structured, complex, multi-phase material that ages over time. Sustainability is defined by the World Commission on Environment and Development as the development that meets the needs of the present, without compromising the ability of the future generations to meet their



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DEEP CONVOLUTIONAL NEURAL NETWORK FOR ROBUST DETECTION OF OBJECT-BASED FORGERIES IN ADVANCED VIDEO

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ABSTRACT

Video forgery detection is a critical aspect of digital forensics, addressing the challenges posed by the manipulation of video content. This paper presents a novel approach for video forgery detection using Deep Convolutional Neural Networks (CNN). Leveraging the power of deep learning, our method aims to improve the accuracy and efficiency of object-based forgery detection in advanced video sequences. In the proposed approach, we build upon the foundation of an existing method, which utilizes Convolutional Neural Networks, and introduce innovative modifications to the DCNN architecture. These modifications include data preprocessing, network architecture, and training strategies that enhance the model's ability to detect tampered objects in video frames. We conduct experiments on the SYSU-OBJFORG dataset, the largest object-based forged video dataset to date, with advanced video encoding standards. Our DCNN-based approach is compared with the existing method, demonstrating superior performance. The results show increased accuracy and robustness in detecting object-based video forgery. This paper not only contributes to the field of video forgery detection but also underscores the potential of deep learning, particularly DCNN, in addressing the evolving challenges of digital video manipulation. The findings open avenues for future research in the localization of forged regions and the application of DCNN in lower bitrate or lower resolution video sequences.

I.INTRODUCTION

The detection of object-based forgeries in videos is becoming increasingly important as multimedia content manipulation techniques have evolved. With advancements in digital media editing software, it has become relatively easy to alter or insert objects into video footage, making it difficult to distinguish between authentic and tampered

content. Object-based forgeries refer to instances where specific objects, characters, or parts of a video are inserted or modified. Detecting such forgeries is critical for various fields, including security, law enforcement, journalism, and social media, where authenticity is paramount. Deep Convolutional Neural Networks (DCNN)

Studies on the comparative strength of self-compacting concrete (SCC) by preventing steel fibers from entering the mixture

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ABSTRACT:

A flowing concrete mixture that may solidify under its own weight is known as self-compaction concrete (SCC). Concrete placement issues in crowded reinforced areas can be reduced or even eliminated with SCC technology. This project calls for the development of SCC through the use of mineral and chemical admixtures. A rational method of mix design is to be adopted using EFNARC (European federation of national associations representing for concrete) guidelines. SCC is to be created utilizing chemical and mineral admixtures once the proportions of an M40 grade mix are first determined using IS 10262:2009. Later SCC is altered by changing the aforesaid mix's steel fiber volume percentages. The experimental approach outlined in the EFNARC recommendations must be used to investigate the fresh state qualities of SCC flowability, fill-ability, and pass-ability. The stress-strain behavior and compressive and tensile strength testing of SCC with and without the addition of steel fibers for 14, 28, and 60 days, using varying volume fractions of steel fibers (1%, 2%, 3%, and 4%).

1.0 INTRODUCTION:

GENERAL

The world is currently seeing the creation of extremely complex and demanding civil engineering facilities. Concrete is frequently

the most crucial and Widely used material is called upon to feature very high strength and sufficient workability qualities. In the field of concrete technology, efforts are being made to create concrete with unique properties. By adding different admixtures to concrete up to specific ratios, researchers worldwide are trying to create high-performance concrete. Self Compacting Concrete (SCC) is one of the most notable developments in concrete technology during the past ten years. The qualities in the fresh state are the primary features of SCC. The ability of the mix to flow under its own weight without vibrating, to flow through highly crowded reinforcement under its own weight, and to maintain homogeneity without segregation are the main goals of the mix design. Because of its unique qualities, SCC has the potential to greatly enhance the caliber of concrete structures and create new concrete application opportunities.

HISTORY OF SCC

Self-compacting concrete was first developed in 1986 in Japan to achieve durable concrete structures. For several years, the problem of the durability of concrete structures is a major topic of interest for construction Engineers. Sufficient compaction is needed for conventional concrete and that causes segregation. With plain concrete, it is

BAT: DEEP LEARNING METHODS ON NETWORK INTRUSION DETECTION USING NSL-KDD DATASET

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ABSTRACT

Intrusion detection has shown to be a successful method of network security since it can detect unknown attacks from network traffic. These days, most network anomaly detection techniques are based on conventional machine learning models, such as KNN, SVM, etc. Despite the fact that these techniques can yield some exceptional features, they have a low accuracy rate and mostly rely on human traffic feature design, which is out of date in the big data era. A traffic anomaly detection model, or BAT, is suggested as a solution to the issues of low accuracy and feature engineering in intrusion detection. Bidirectional Long Short-Term Memory (BLSTM) and attention mechanisms are included in the BAT model. The network flow vector made up of packet vectors produced by the BLSTM model is screened using an attention mechanism in order to extract the essential characteristics for classifying network traffic. To capture the local aspects of traffic data, we also use numerous convolutional layers. We call the BAT model BAT-MC since it uses several convolutional layers to process data samples. Network traffic is classified using the softmax classifier. The suggested end-to-end model can automatically learn the hierarchy's essential features without the need for feature engineering expertise. It can effectively explain the behavior of network traffic and enhance anomaly detection capabilities. We evaluate our model using a publicly available benchmark dataset, and the experimental findings show that it outperforms alternative comparison techniques.

1. INTRODUCTION

With the development and improvement of Internet technology, the Internet is providing various

convenient services for people. However, they are also facing various security threats. Network viruses, eavesdropping and malicious attacks are on the rise, causing network security to become the focus of attention of the society and government departments. Fortunately, these problems can be well solved via intrusion detection. Intrusion detection plays an important part in ensuring network information security. However, with the explosive growth of Internet business, traffic types in the network are increasing day by day, and network behavior characteristics are becoming increasingly complex, which brings great challenges to intrusion detection. How to identify various malicious network traffics, especially unexpected malicious network traffics, is a key problem that cannot be avoided.

In fact, network traffic can be divided into two categories (normal traffics and malicious traffics). Furthermore, network traffic can also be divided into five categories: Normal, DoS (Denial of Service attacks), R2L (Root to Local attacks), U2R (User to Root attack) and Probe (Probing attacks). Hence, intrusion detection can be considered as a classification problem. By improving the performance of classifiers in effectively identifying malicious traffics, intrusion detection accuracy can be largely improved.

2. LITERATURE SURVEY

A SURVEY: INTRUSION DETECTION TECHNIQUES FOR INTERNET OF THINGS

AUTHORS: Sarika Choudhary and Nishtha Kesswani (1991)

The latest buzzword in internet technology now a days is the Internet of Things. The Internet of Things (IOT) is an ever-growing network which will transform real-world objects into smart or intelligent virtual objects. IOT is a heterogeneous network in which devices with different protocols can connect

AI-Powered Plant Disease Detection, Monitoring, and Prediction for Farmers

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ABSTRACT

Plant diseases pose significant threats to farmers, consumers, the environment, and the global economy. In India, crop losses attributed to pathogens and pests account for 35% of farmers' harvests. The use of pesticides, while common, raises serious health concerns due to the toxic nature of many chemicals, which can have harmful effects on living organisms. Effective disease detection, crop monitoring, and tailored treatment strategies can mitigate these issues. Traditionally, agricultural experts identify diseases by searching for visible symptoms; however, farmers often lack direct access to these specialists.

Our initiative introduces the first comprehensive, collaborative platform for the automatic diagnosis, tracking, and forecasting of plant diseases. Through a user-friendly smartphone application, farmers can quickly and accurately identify diseases by capturing images of afflicted plant parts. This process leverages advanced AI algorithms for real-time cloud-based image processing. The AI model continually enhances its accuracy based on data collected from user-uploaded images and feedback from experts. Additionally, farmers can consult local specialists directly through the platform.

The system generates disease density maps and forecasts the likelihood of disease spread using a cloud-stored database of geo-tagged images and micro-climate data for preventative strategies. Agricultural experts can conduct geographically focused disease assessments via a web interface. Our research involved training a convolutional neural network (CNN) AI model with extensive datasets of plant disease images, collected from multiple farms over a span of seven months. Validation of the automated CNN model was performed by plant pathologists, resulting in a remarkable diagnostic accuracy of over 95%. This innovative tool empowers farmers and agricultural experts in managing plant diseases effectively, enabling them to sustainably maximize crop yields.

Keywords: CNN, Machine learning, Neural Network. Artificial Intelligence

INTRODUCTION

Plant diseases pose significant threats to farmers, consumers, the environment, and the global economy. In India, crop losses attributed to pathogens and pests account for 35% of farmers' harvests. The use of pesticides, while common, raises serious health concerns due to the toxic nature of many chemicals, which can have harmful effects on living organisms. Effective

SMART AGRICULTURE: A CLIMATE DRIVEN APPROACH

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ABSTRACT

An innovative Integrating Climate Projection for Smart Agriculture System tailored to smallholder farmers is poised to revolutionize crop prediction and management practices in India. With the adverse impacts of climate change increasingly affecting crop yields over the past two decades, the ability to predict crop outcomes in advance is paramount for both policymakers and farmers. This project addresses this need by providing farmers with a user-friendly mobile website where they can input real-time data on weather, soil, and crop management practices. By incorporating climate projections and predicting seasonal diseases into our models, we enable farmers to plan and adapt their strategies to cope with changing environmental conditions effectively. Furthermore, our system prioritizes collaboration by adopting open data platforms, allowing researchers and stakeholders to share relevant agricultural data, fostering continuous improvements and innovation in crop prediction. In addition to climate change adaptation, we recognize the importance of disease detection in ensuring crop health and productivity. Thus, we are integrating a disease detection module into our website, empowering farmers with a comprehensive toolset to make informed decisions and manage resources effectively. By leveraging transfer learning, mobile-based solutions, explainable AI, Random Forest, PyTorch and a focus on smallholder farmers' unique needs, our project aims to enhance livelihoods, bolster food security, and promote sustainable agriculture practices, ultimately benefiting agricultural communities worldwide.

Keywords: Crop Prediction, Disease detection, Fertilizer Recommendation, Random Forest, PyTorch

I. INTRODUCTION

Integrating climate projections for smart agriculture is a fundamental component of modern agriculture, driven by the imperative to optimize food production amidst

increasing global demands and unpredictable environmental conditions. This study aims to delve into the intricate landscape of crop yield prediction, utilizing advanced methodologies to provide accurate forecasts



SERENITY SYNC YOUR MENTAL HEALTH COMPANION

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ABSTRACT

The Mental Health Companion, developed using Python and Django-ORM, provides a comprehensive platform for users to monitor their mental well-being through mood tracking, activity logs, and personalized assessments. The web application includes a user-friendly interface, enabling easy interaction and data entry, while login credential ensures security for each individual user and real-time synchronization. Additionally, the application offers resources like articles, videos, and music to support mental health improvement. With built-in authentication, users' data privacy is maintained and the integrated questionnaire assesses mental health, offering insights and suggestions for better management of mental well-being.

I. INTRODUCTION

In today's fast-paced and increasingly digital world, mental health has become a critical concern for individuals of all ages. The growing prevalence of stress, anxiety, and other mental health challenges underscores the need for accessible, effective support systems. "Serenity Sync: Your Mental Health Companion" aims to bridge this gap by providing users with a comprehensive, user-friendly platform designed to promote mental well-being. Through a combination of personalized tools, resources, and community support, Serenity Sync empowers users to take charge of their mental health journey. The application incorporates evidence-based practices, including mindfulness exercises, mood tracking, and guided journaling, tailored to individual needs and preferences. Users can set personal

goals, track their progress, and receive insightful feedback to foster self-awareness and resilience. Furthermore, the platform encourages community engagement by connecting users with peers and mental health professionals, creating a supportive environment for sharing experiences and strategies. By leveraging technology to enhance mental health support, Serenity Sync seeks to reduce stigma, promote emotional well-being, and ultimately improve the quality of life for its users. Whether navigating daily stressors or seeking deeper self-reflection, Serenity Sync stands as a compassionate companion on the path to mental wellness.

II. LITERATURE REVIEW

Title: Digital Mental Health Interventions: A Review of Efficacy and User Engagement



SECURING DATA IN IMAGES USING SHA AND ECC

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ABSTRACT

With the rapid advancement in digital technology, ensuring data security has become paramount, particularly in image transmission and storage. The paper proposes a method for securing data within images using cryptographic hashing (SHA - Secure Hash Algorithm) and Elliptic Curve Cryptography (ECC). Secure Hash Algorithm (SHA) is utilized to generate a fixed-length hash value from the input data. This hash value is unique to the input data and is nearly impossible to reverse-engineer. By embedding this hash value into the image, we can ensure data integrity, as any alterations to the image will be detected by recalculating the hash value. Elliptic Curve Cryptography (ECC) is employed for key generation and encryption. ECC offers smaller key sizes compared to other encryption algorithms, making it particularly suitable for constrained environments like images. The sender generates an ECC key pair: a public key for encryption and a private key for decryption. The data is encrypted using the public key and embedded into the image to further enhance security, the hash value generated by SHA can also be encrypted using ECC before embedding it into the image. This ensures that even if an attacker intercepts the image, they cannot tamper with the hash value. The proposed method provides robust data security within images, ensuring data integrity and confidentiality. Experimental results demonstrate the effectiveness of the proposed approach in securing data within images against various attacks.

1. INTRODUCTION

In today's digital age, the transmission and storage of sensitive data, such as personal information, financial transactions, and corporate secrets, are ubiquitous. With the increasing volume of digital data, ensuring its security has become a critical concern. Among various forms of digital data, images represent a significant portion, being used in fields ranging from social media to medical imaging. Securing data within images presents unique challenges due to the large

size and complex structure of image files. Traditional cryptographic techniques may not be directly applicable, as they often require extensive processing and memory resources, which can be impractical for images. The paper proposes a method for securing data within images using a combination of cryptographic hashing and elliptic curve cryptography (ECC). Secure Hash Algorithm (SHA) is employed to ensure data integrity, while ECC is utilized for key generation and encryption. SHA, particularly SHA-256, is a widely adopted cryptographic hash function



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Optimizing e-commerce Supply Chains with Categorical Boosting: A predictive modelling frame work

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ABSTRACT

Managing various aspects of the Supply Chain (SC) has become increasingly challenging in today's complex business landscape. To improve profitability, boost sales, and enhance customer satisfaction, it is crucial to explore future possibilities by adjusting key relational parameters. However, traditional forecasting methods often fail to provide accurate insights and are time-consuming. These limitations can be overcome using Artificial Intelligence (AI) algorithms such as Machine Learning (ML) and Deep Learning (DL). CatBoost algorithm is an ensemble-based ML model that can handle categorical variables effectively in its architecture, whereas other ML and DL models fail and require explicit encoding techniques. In this study, a predictive modeling approach using CatBoost to optimize supply chain processes using a mathematical approach was proposed. CatBoost evaluates the model on an e-commerce dataset through empirical analysis by tuning various hyperparameters to enhance prediction efficiency. A computational time limit of ten minutes was used to ensure practicality. Using regression and classification frameworks, this approach involves predicting sales, profit, and delivery times, and identifying potential customers. Consequently, analyzing the behavior of the learning rate and its impact on the performance metrics indicated that increasing the learning rate can lead to improved model performance.

I.INTRODUCTION

In the modern world, **e-commerce** has revolutionized the way businesses operate and deliver goods to customers. However, as the demand for online shopping continues to grow, e-commerce businesses face increasing challenges in managing and optimizing their **supply chains**. The complexity of supply chains—ranging from inventory management, supplier coordination, shipping logistics, to customer satisfaction—requires

efficient strategies to ensure timely deliveries and cost-effective operations. A key factor in addressing these challenges lies in the ability to predict demand, manage resources, and optimize processes in real-time. **Optimizing E-Commerce Supply Chains with Categorical Boosting: A Predictive Modelling Framework** aims to provide a solution by developing an advanced **predictive modeling framework** utilizing



MACHINE LEARNING FOR FAST AND RELIABLE SOURCE LOCATION ESTIMATION IN EARTHQUAKE EARLY WARNING

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ABSTRACT

We develop a random forest (RF) model for rapid earthquake location with an aim to assist earthquake early warning (EEW) systems in fast decision making. This system exploits P-wave arrival times at the first five stations recording an earthquake and computes their respective arrival time differences relative to a reference station (i.e., the first recording station). These differential P-wave arrival times and station locations are classified in the RF model to estimate the epicentral location. We train and test the proposed algorithm with an earthquake catalog from Japan. The RF model predicts the earthquake locations with a high accuracy, achieving a Mean Absolute Error (MAE) of 2.88 km. As importantly, the proposed RF model can learn from a limited amount of data (i.e., 10% of the dataset) and much fewer (i.e., three) recording stations and still achieve satisfactory results (MAE)

I.INTRODUCTION

Earthquake hypocenter localization is essential in the field of seismology and plays a critical role in a variety of seismological applications such as tomography, source characterization, and hazard assessment. This underscores the importance of developing robust earthquake monitoring systems for accurately determining the event origin times and hypocenter locations. In addition, the rapid and reliable characterization of ongoing earthquakes is a crucial, yet challenging, task for developing seismic hazard mitigation tools like earthquake early warning (EEW) systems . While classical methods have been

widely adopted to design EEW systems, challenges remain to pinpoint hypocenter locations in real-time largely due to limited information in the early stage of earthquakes. Among various key aspects of EEW, timeliness is a crucial consideration and additional efforts are required to further improve the hypocenter location estimates with minimum data from the first few seconds after the P-wave arrival and the first few seismograph stations that are triggered by the ground shaking. The localization problem can be resolved using a sequence of detected waves (arrival times) and locations of seismograph stations that are triggered by



HAND MOUSE INTERFACE USING VIRTUAL MONITOR IN CONCEPT FOR NATURAL INTERACTION

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ABSTRACT

In this paper the “Hand Mouse Interface Using Virtual Monitor Concept for Natural Interaction” presents the development of a Virtual Mouse Control System utilizing hand gestures for clicking actions, implemented using Python. This project promotes an approach for the Human Computer Interaction (HCI) where cursor movement can be controlled using a real-time camera. It will proceed to compare the existing gesture within the frames with a list of gesture tip combinations, where different combinations consist of different mouse functions. If the current gesture combination found a match, the program will execute the mouse function, which will be translated into an actual mouse function to the user’s machine.

I. INTRODUCTION

1.1 Project purpose

In the evolution of human-computer interaction, the quest for more natural and intuitive input methods has been ongoing. Traditional interfaces, such as mouse and keyboard, although effective, can sometimes feel cumbersome and detached from human movements. Gesture-based interaction systems have emerged as a promising solution to bridge this gap. By leveraging computer vision technologies, these systems interpret hand movements and gestures, offering users a more fluid and intuitive means of interaction with digital interfaces. This is an approach to virtual mouse control,

focusing specifically on enabling clicking actions through hand gestures. Rather than relying solely on physical input devices, users can navigate and interact with applications using natural hand movements. By harnessing the capabilities of libraries such as Media Pipe, OpenCV, NumPy, and Py Auto GUI, our system provides an intuitive and efficient way for users to interact with digital interfaces. This approach holds significant potential for improving accessibility and user experience across a wide range of applications. The simplicity and effectiveness of our approach make it suitable for various applications, from enhancing accessibility for individuals with disabilities to facilitating hands-free



J1970 AUTHENTICATION BY ENCRYPTED NEGATIVE PASSWORD

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ABSTRACT

Secure password storage is a vital aspect in systems based on password authentication, which is still the most widely used authentication technique, despite its some security flaws. In this paper, we propose a password authentication framework that is designed for secure password storage and could be easily integrated into existing authentication systems. In our framework, first, the received plain password from a client is hashed through a cryptographic hash function (e.g., SHA-256). Then, the hashed password is converted into a negative password. Finally, the negative password is encrypted into an Encrypted Negative Password (abbreviated as ENP) using a symmetric-key algorithm (e.g., AES), and multi-iteration encryption could be employed to further improve security. The cryptographic hash function and symmetric encryption make it difficult to crack passwords from ENPs. Moreover, there are lots of corresponding ENPs for a given plain password, which makes precomputation attacks (e.g., lookup table attack and rainbow table attack) infeasible. The algorithm complexity analyses and comparisons show that the ENP could resist lookup table attack and provide stronger password protection under dictionary attack. It is worth mentioning that the ENP does not introduce extra elements (e.g., salt); besides this, the ENP could still resist precomputation attacks. Most importantly, the ENP is the first password protection scheme that combines the cryptographic hash function, the negative password and the symmetric-key algorithm, without the need for additional information except the plain password.

1.INTRODUCTION

O WING to the development of the Internet, a vast number of online services have emerged, in which password authentication is the most widely used authentication technique, for it is available at a low cost and easy to deploy. Hence, password security always attracts great interest from academia and industry. Despite great research achievements on password security,

passwords are still cracked since users' careless behaviors. For instance, many users often select weak passwords they tend to reuse same passwords in different systems. they usually set their passwords using familiar vocabulary for its convenience to remember. In addition, system problems may cause password compromises. It is very difficult to obtain passwords from high



EMERGENCY PATIENT CARE SYSTEM USING CHATBOT

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ABSTRACT

Digital assistant bots, also known as Chatbots, are one of the emerging technologies that are growing in popularity as a result of the continued growth in demand for artificial intelligence (AI) and machine learning. Most medical apps on the market today focus on a few conveniences, such as making appointments online, sending messages, streaming videos, etc. The technologies behind artificial intelligence, and machine learning have greatly aided the healthcare industry. This effort concentrated on the prediction of diseases based on user symptoms, describing the diseases, and the reservation system. The disease prediction chatbot is made with the help of machine learning and natural language processing. In this study, four classification algorithms were used to make the prediction system: Naive Bayes, neural networks, random forests, and support vector machines. In the performance evaluation, this work compared the four classifiers with accuracy, precision, recall, and f1-score calculation. After comparing how well different models worked, the best one was chosen for predicting diseases and making medical chatbots. As per performance results, the support vector machine algorithm performed well compared to other models.

I. INTRODUCTION

Since the past few decades, humans have been tirelessly working day in and day out that they fail to prioritize their health on a regular basis. In the longer run, this problem leads to jeopardizing the quality of life. Nevertheless, with the aid of Artificial Intelligence, we can now provide health care services to individuals at their convenience at reasonable prices. One of

the biggest blessings we possess is a healthy body. A healthy body and enhanced quality of life is something each one of us looks up to. The primary focus of this paper is to provide these services to fulfill the above mentioned purpose. It is difficult to imagine our lives without high tech gadgets because they have become an essential part of our lives. Therefore the field of Artificial Intelligence is prospering due to the various applications of it in the research field. Disease prediction is one of the main



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EFFECTIVENESS EVALUATION OF EMERGENCY RESCUING PLANS ORIENTED TO URBAN WATERLOGGING BASED ON A NEURAL NETWORK MODEL

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ABSTRACT

In response to the significant impact of urban waterlogging on residents, the economy, and urban infrastructure in recent years, this study introduces an innovative wargame-based evaluation approach for emergency rescue plans. The primary goal of this research is to improve emergency rescue capabilities while minimizing costs and identifying gaps in existing emergency rescue plans. To effectively evaluate these capabilities, we extract specific content related to OODA (Observe, Orient, Decide, Act) dynamics in rescue actions. Furthermore, a comprehensive index system is developed to evaluate emergency rescue capabilities in the context of urban waterlogging scenarios. To address the challenges associated with intelligent optimization and evaluation of such systems, we employ a radial basis function neural network and conduct wargame experiments to obtain data and measure capability indices. The evaluation model is trained using data samples to ensure robust performance. In addition to the proposed model evaluation and analysis framework, we also present an evaluation and analysis method for RBF (Radical Basis Function) neural networks and compare the prediction results with those obtained from GRNN (Generalized Regression Neural Network), PNN (Product-based Neural Network), and BP (Back Propagation) neural network algorithms. This model efficiently processes and fits data by simulating expert experience for evaluation purposes. Such an approach takes advantage of machine learning's sensitivity to data characteristics, effectively avoiding the influence of human factors while stably reflecting the mapping relationship between indicators and performance outcomes. This research presents a novel solution with significant implications for the development of urban emergency rescue systems that address the challenges posed by urban waterlogging incidents.

I. INTRODUCTION

The city, acting as a crucial regional center in the realms of politics, economics, and culture, continues to be susceptible to diverse calamities. Human activities often undermine

the city's capacity to prevent and withstand disasters, thereby diminishing its safety resilience and exacerbating the impact of natural calamities. Revealing the persisting



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DISEASE DIAGNOSIS USING CHATBOT USING VOICE AND TEXT CHATBOT

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ABSTRACT

In recent years, chatbots have gained significant attention as a convenient means of providing customer support, information retrieval, and task automation. With advancements in artificial intelligence (AI) and natural language processing (NLP), these chatbots have become increasingly sophisticated, offering more personalized and efficient interactions. This project aims to develop an AI-based FAQ chatbot with voice assistance, leveraging state-of-the-art NLP techniques and voice recognition technology. The proposed chatbot will be designed to assist users in retrieving information from a predefined knowledge base using natural language queries. Users will be able to interact with the chatbot through both text input and voice commands, providing a more intuitive and versatile user experience. The system will employ machine learning algorithms to understand user queries, extract relevant information from the knowledge base, and generate appropriate responses in real-time.

I.INTRODUCTION:

The AI Chatbot with Voice-Assisted Answer project aims to develop an intelligent, interactive system capable of delivering real-time responses to user queries through both text and voice interfaces. This system combines natural language processing (NLP), machine learning (ML), and speech recognition technologies to offer a seamless, user-friendly experience. The chatbot will be designed to understand and respond to text-based queries, while the voice-assisted feature enables hands-free communication, making it more accessible, especially for users on the go or those with disabilities.

In today's digital landscape, chatbots have become an essential part of customer service, virtual assistance, and information retrieval, significantly improving user engagement and experience. By integrating voice recognition technology into the chatbot, this project takes user interaction to the next level, enhancing the way users access information. Whether for educational, entertainment, or business purposes, this AI-powered system can effectively address user needs in an efficient and personalized manner.

The primary objective of this project is to create a hybrid model that not only provides accurate text-based responses but also



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DEEP CONVOLUTIONAL NEURAL NETWORK FOR ROBUST DETECTION OF OBJECT-BASED FORGERIES IN ADVANCED VIDEO

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ABSTRACT

Video forgery detection is a critical aspect of digital forensics, addressing the challenges posed by the manipulation of video content. This paper presents a novel approach for video forgery detection using Deep Convolutional Neural Networks (CNN). Leveraging the power of deep learning, our method aims to improve the accuracy and efficiency of object-based forgery detection in advanced video sequences. In the proposed approach, we build upon the foundation of an existing method, which utilizes Convolutional Neural Networks, and introduce innovative modifications to the DCNN architecture. These modifications include data preprocessing, network architecture, and training strategies that enhance the model's ability to detect tampered objects in video frames. We conduct experiments on the SYSU-OBJFORG dataset, the largest object-based forged video dataset to date, with advanced video encoding standards. Our DCNN-based approach is compared with the existing method, demonstrating superior performance. The results show increased accuracy and robustness in detecting object-based video forgery. This paper not only contributes to the field of video forgery detection but also underscores the potential of deep learning, particularly DCNN, in addressing the evolving challenges of digital video manipulation. The findings open avenues for future research in the localization of forged regions and the application of DCNN in lower bitrate or lower resolution video sequences.

I.INTRODUCTION

The detection of object-based forgeries in videos is becoming increasingly important as multimedia content manipulation techniques have evolved. With advancements in digital media editing software, it has become relatively easy to alter or insert objects into video footage, making it difficult to distinguish between authentic and tampered

content. Object-based forgeries refer to instances where specific objects, characters, or parts of a video are inserted or modified. Detecting such forgeries is critical for various fields, including security, law enforcement, journalism, and social media, where authenticity is paramount. Deep Convolutional Neural Networks (DCNN)



CREATING ALERT MESSAGES BASED ON WILD ANIMAL ACTIVITY USING HYBRID DEEP NEURAL NETWORK

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ABSTRACT

The issue of animal attacks is increasingly concerning for rural populations and forestry workers. To track the movement of wild animals, surveillance cameras and drones are often employed. However, an efficient model is required to detect the animal type, monitor its locomotion and provide its location information. Alert messages can then be sent to ensure the safety of people and foresters. While computer vision and machine learning-based approaches are frequently used for animal detection, they are often expensive and complex, making it difficult to achieve satisfactory results. This paper presents a Hybrid Visual Geometry Group (VGG)-19+ Bidirectional Long Short-Term Memory (Bi-LSTM) network to detect animals and generate alerts based on their activity. These alerts are sent to the local forest office as a Short Message Service (SMS) to allow for immediate response. The proposed model exhibits great improvements in model performance, with an average classification accuracy of 98%, a mean Average Precision (MAP) of 77.2%, and a Frame Per Second (FPS) of 170. The model was tested both qualitatively and quantitatively using 40, 000 images from three different benchmark datasets with 25 classes and achieved a mean accuracy and precision of above 98%. This model is a reliable solution for providing accurate animal-based information and protecting human lives.

1. INTRODUCTION

In general, animal activity detection creates numerous challenges for researchers due to the continuous streaming of inputs and the cluttered backgrounds. There are huge varieties of wildlife categories with different facial, nose, body, and tail structures. The detection and classification of such animals in video sequences and the processing of

huge feature maps demand the need to develop a robust framework. Such developments in real-time cases need large-scale video data for training and testing purposes and high GPU-based computing resources. Moreover, the incorporating techniques should handle the data in an intelligent way to produce plausible results.



CONTENT BASED IMAGE RETRIEVAL USING DEEP LEARNING

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ABSTRACT

Content-based image retrieval (CBIR) systems play a crucial role in efficiently managing and retrieving images based on their visual content. Traditional CBIR methods often rely on handcrafted features, limiting their ability to capture and abstract visual information. With the advent of deep learning, particularly convolutional neural networks (CNNs) in enhancing CBIR systems directly from image data. This paper proposes a novel approach for CBIR leveraging deep learning techniques. To evaluate the effectiveness of our method, we conduct experiments on standard image datasets and compare our results with traditional CBIR techniques. We utilize a pretrained CNN architecture, such as ResNet, Mobilenet, VGG, to extract high-level features from images, which are then used to measure similarities between query images and images within a database.

INTRODUCTION

Content-based image retrieval (CBIR) has emerged as a critical technology in managing and retrieving images based on their visual content rather than relying on textual annotations or metadata. Traditional CBIR methods often used handcrafted features such as color histograms, texture descriptors, and shape features, which may not capture the complex and abstract characteristics of images effectively. With the advent of deep learning, particularly convolutional neural networks (CNNs), there has been a paradigm shift towards learning hierarchical representations directly from raw image data. Deep learning techniques have demonstrated

remarkable success in various computer vision tasks, including image classification, object detection, and semantic segmentation. Leveraging deep CNNs for CBIR allows us to extract high-level features that encode rich information about image content, enabling more accurate and efficient retrieval systems. In this paper, we propose a deep learning-based approach for content-based image retrieval. We utilize pretrained CNN models, such as VGG, ResNet, or EfficientNet, which have been trained on large-scale datasets like ImageNet. These models are capable of learning discriminative features from images through multiple layers of convolutional and pooling operations,



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AI BASED CHATBOT FOR MENTAL HEALTH CARE

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ABSTRACT

In recent years, the integration of artificial intelligence (AI) into healthcare has paved the way for innovative solutions addressing mental health challenges. This paper presents the conceptual design and development of a mental healthcare Chabot aimed at providing accessible, scalable, and non-stigmatizing support for individuals experiencing mental health difficulties. The Chabot leverages natural language processing (NLP) and machine learning techniques to engage in empathetic, context-aware conversations while ensuring user safety and data privacy. The proposed Chabot features a modular architecture comprising an NLP engine, a sentiment analysis module, a dynamic response generator, and an escalation mechanism for high-risk situations. Designed to assist with a broad range of mental health concerns, including stress, anxiety, and depression, the Chabot provides evidence-based resources, coping strategies, and crisis intervention guidance. Furthermore, it incorporates multilingual capabilities and personalization to enhance accessibility and user experience. A preliminary evaluation of the Chabot's performance, conducted with a diverse user group, demonstrates its potential to foster meaningful interactions and provide timely support. The findings underscore the importance of ongoing collaboration with mental health professionals to ensure clinical efficacy and ethical considerations. This abstract lays the groundwork for further development, testing, and deployment of AI-driven tools to augment traditional mental healthcare services and reduce barriers to care globally.

1. INTRODUCTION

Introduction to the Mental Health Care Chatbot Project

In recent years, mental health awareness has grown significantly, yet access to timely and affordable care remains a challenge for many. A mental health care chatbot project aims to bridge this gap by offering a supportive, accessible, and cost-effective platform for mental health assistance. Combining

advancements in artificial intelligence, natural language processing (NLP), and psychological research, the chatbot provides users with a conversational interface for emotional support, coping strategies, and resources for further help. The chatbot serves as a virtual companion, designed to listen to users, understand their concerns, and provide empathetic, non-judgmental responses. It can assist individuals with mild to moderate

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