# REAL-TIME GESTURE RECOGNITION: UTILIZING NINTENDO POWER GLOVE DATA FOR SIGN LANGUAGE INTERPRETATION

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**ABSTRACT**

A vital field of study aiming to overcome communication barriers between those with hearing problems and the rest of the world is gesture sign language recognition. This innovative tool closes the communication gap between those without understanding conventional sign languages and those with hearing problems. Deaf and hard-of-heared people employ rich and sophisticated visual-spatial languages called sign languages to convey thoughts, emotions, and information. For persons with hearing problems, effective communication and social inclusion depend on appropriate recognition and interpretation of these signals. Accurately capturing the subtleties of sign language motions was difficult in traditional sign language recognition systems, which sometimes depended on small datasets and rule-based approaches. These systems lacked the capacity to change with respect to various sign languages and personal signing methods. More flexible and accurate sign language recognition systems may be developed by use of machine learning approaches by integration. This dataset allows one to train machine learning systems to identify a broad spectrum of sign language motions. Particularly with datasets like Nintendo Power Glove Data, machine learning presents a viable path for more accurate and real-time sign language gesture identification. Thus, this work attempts to develop a machine learning-based method using Nintendo Power Glove Data has great possibilities in transforming gesture sign language detection. Leveraging machine learning, the suggested system generates more accurate, flexible, and real-time sign language recognition systems, thereby increasing the quality of life for those living in the deaf and hard-of-hearing groups.

**Keywords:** sign language, Nintendo power glove data, machine learning.
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## 1.INTRODUCTION

Gesture-based sign language recognition has evolved as a critical field of study, driven by the pressing need to enhance communication between individuals with hearing impairments and the broader society. This cutting-edge technology serves as a bridge between the intricate visual-spatial languages employed by deaf and hard-of-hearing individuals to convey emotions, ideas, and information—languages commonly known as sign languages.Traditional sign language recognition systems faced limitations due to their reliance on rule-based methods and constrained datasets. These methods struggled to accurately capture the nuanced nature of sign language gestures, leading to challenges in facilitating effective communication. Moreover, these systems were often unable to adapt to the diverse variations and individualized signing styles present within the sign language community.The introduction of machine learning techniques has marked a transformative shift in the development of sign language recognition systems. Leveraging machine learning algorithms allows for the creation of more adaptive

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# SECURE AND EFFICIENT: A MACHINE LEARNING APPROACH TO PRIVACYPRESERVING SPATIOTEMPORAL DATA SHARING

Mr. Venkatesh Artham,Mr. Medasani Nagaraju,Ms. Chakka Balasruthi

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## Abstract

Big data has brought great access and utilization of enormous volumes of data that have become essential for research, legislation, and corporate choices. Open data projects have made it easier for many datasets to be shared, therefore greatly advancing science and public openness. Early projects in the 1990s marked the beginning of open data; it then acquired great pace in the 2000s and 2010s as governments, companies, and scholars realized the need of freely sharing data. The complexity of the data being exchanged grew as technology developed, which created need for increasingly advanced techniques to strike a compromise between privacy and openness. But as datasets get more detailed—especially with regard to spatiotemporal trajectories—ensuring user privacy becomes increasingly difficult. In the field of open data research, a major difficulty is the capacity to anonymize these datasets thereby preserving their usefulness. Sensitive information in datasets was historically safeguarded by either deleting or encrypting identities. But it became clear from the development of sophisticated data analysis approaches that more solid

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# REFINING SARCASM DETECTION: LEVERAGING AN EXTENDED LEXICON ALGORITHM FOR TWITTER DATA ANALYSIS

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**ABSTRACT**

Sarcasm identification can enhance conventional sentiment analysis methods by recognizing cases where positive or neutral language expresses negative attitude. This may result in enhanced accuracy of insights on public sentiment and brand perception on social media. The practical applications of our project encompass the creation of customer service automation, market research, sentiment analysis, and content moderation. The current method of detecting sarcastic tweets relies on human inspection, which has limitations and fails to achieve a satisfactory level of accuracy. Conventional approaches are incapable of detecting sarcastic intent, leading to erroneous classifications and interpretations. To forecast the precise identification and comprehension of sarcasm. It frequently depends on subtle verbal signals and context, rendering typical lexical analysis methods ineffective in identification. Consequently, a more sophisticated method for lexical analysis is required to accurately identify and evaluate sarcastic statements. In the suggested method, we leverage natural language processing (NLP) methods for text preprocessing and utilize TF-IDF for feature extraction. We employ a lexical algorithm to identify sarcasm in tweets. Ultimately, we analyze the precision of sarcasm detection to evaluate the system's efficacy. Our study seeks to implement a lexical algorithm that overcomes the deficiencies of current methodologies and provides enhanced precision and nuanced text interpretation.

**Keywords**: Sarcasm Detection, Sentiment Analysis, Lexical Analysis, Natural Language Processing, Term Frequency-Inverse Document Frequency.

## 1. INTRODUCTION

### 1.1 Overview

The project introduces an extension to the lexicon algorithm for sarcasm detection, specifically tailored to analyse Twitter data. With the widespread use of emojis on social media platforms like Twitter, the study aims to leverage these visual cues alongside textual content to improve sarcasm detection accuracy. Acknowledging the pervasive nature of sarcasm and the intricate nuances involved in its portrayal via emojis on social media platforms such as Twitter, the proposed extension seeks to seamlessly integrate emoji analysis into the established lexicon-based approach. Through meticulous creation of an emoji lexicon and the subsequent assignment of sentiment scores, grounded in the nuanced contextual usage within sarcastic tweets, the augmented algorithm aims to significantly enhance the precision and efficacy of sarcasm detection. The implementation process will necessitate a comprehensive suite of procedures, encompassing meticulous data preprocessing, lexicon construction, sentiment scoring, and sarcasm identification, all facilitated by cutting-edge computational tools and sophisticated natural language processing methodologies. The efficacy and robustness of the proposed approach will be rigorously evaluated using a diverse range of metrics and

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# UTILIZING CONVOLUTIONAL NEURAL NETWORKS FOR UNDERWATER SPECIES CLASSIFICATION: A CASE STUDY ON MARINE ORGANISMS

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**ABSTRACT**

The aquatic environment is abundant with many marine organisms, serving a vital function in the Earth's ecology. Identifying and categorizing marine species in their natural habitat is a formidable challenge owing to the intricate and dynamic characteristics of undersea environments. Recent breakthroughs in computer vision and deep learning have created new opportunities for automated species categorization. Traditional techniques for classifying undersea organisms often depend on manual identification by marine biologists or taxonomists. Although these specialists hold essential information, the procedure is labor-intensive, time-consuming, and may be constrained by human subjectivity and availability. The main problem in this area is to create a system that can precisely categorize marine species using photos or videos taken underwater. This entails addressing the distinct issues of underwater imaging, such as fluctuations in illumination, water transparency, and the intricate backdrops of aquatic settings. Consequently, the precise and effective categorization of marine species is crucial for ecological study, conservation initiatives, and sustainable management of marine resources. Conventional techniques for species identification frequently depend on manual observation, which may be laborious and prone to human mistake. Utilizing technology to automate the process has the potential to significantly enhance both the speed and precision of species categorization in aquatic environments. The research, "Utilizing Convolutional Neural Networks for Underwater Species Classification: A Case Study on Marine Organisms," seeks to transform underwater species identification through the application of sophisticated computer vision methodologies, including CNNs. This project aims to create a system that can independently and reliably categorize marine species by training models on huge datasets of underwater photography. Convolutional Neural Networks (CNNs) excel at acquiring hierarchical characteristics from pictures, rendering them particularly effective for the intricate visual patterns found underwater. This innovation has the capacity to greatly enhance marine biology research, conservation initiatives, and resource management by offering an effective instrument for swift and accurate species identification in aquatic settings.

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# PREDICTING OBESITY LEVELS: MACHINE LEARNING APPROACHES ANALYZING EATING HABITS AND LIFESTYLE FACTORS

Ms. Nusrath Begum Mohammad,Mr. Chenagoni Nagaraju, Naveen Athapu

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## Abstract

Common worldwide health concern with several causes including genetic, environmental, and lifestyle aspects is obesity. Eating habits are one major factor causing obesity; so, it is important to know how dietary decisions affect obesity levels. This study investigates how machine learning (ML) methods could be used to forecast obesity levels depending on dietary patterns. Here, one considers a whole dataset including various demographic data, food habits, and obesity degrees of people. Predictive models are developed using several machine learning techniques including Random Forests, Neural Networks, Support Vector Machines, and Decision Trees. Most important dietary elements influencing obesity are found using feature selection techniques. The suggested method evaluates the performance of the model applying accuracy, precision, recall, and F1-score. ML models also show great predictive power; certain algorithms surpass others in dependability and accuracy. Furthermore, feature relevance study reveals particular food groups and consumption patterns significantly linked with obesity, thereby offering important information for individualized

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# ENHANCING ONLINE GROCERY EXPERIENCE: AI-DRIVEN VEGETABLE CLASSIFICATION FOR E-COMMERCE

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**ABSTRACT**
Online shopping's ease has completely changed how customers purchase items, especially groceries. But when it comes to fresh produce, consumers frequently struggle to visualize and choose products correctly because they rely so much on visual cues like color, size, and shape. This problem is intended to be solved by automated vegetable classification, which uses technology to help consumers make knowledgeable decisions. Traditional e-commerce sites frequently use manual image classification and tagging. Because of the subjectivity of humans, this process takes a long time and may result in inconsistent results. Furthermore, it struggles to keep up with the growing variety of veggies and customer demand. In this case, the main difficulty is creating a system that can quickly and reliably categorize vegetables according to their visual characteristics. This entails teaching a model to identify and distinguish between different vegetable varieties based on characteristics such as color, texture, size, and form. As a result, since food shopping online is becoming more and more common, e-commerce platforms must offer a quick and easy experience. By automating the vegetable classification process, customers may choose their product more quickly and accurately, which lowers the possibility of their expectations not matching what is supplied. Customers are therefore more satisfied and confident when they buy for groceries online as a result. The goal of the project, "Automated Vegetable Classification for E-Commerce Applications: Enhancing Online Grocery Shopping," is to use cutting-edge machine learning and computer vision techniques to completely transform the online grocery shopping experience. This project aims to build a machine that can accurately categorize veggies in real-time by utilizing vast datasets of annotated photos of vegetables. Modern algorithms will be integrated into the system to give clients quick and accurate visual clues, enabling them to confidently choose their produce online. This development could greatly improve the effectiveness and happiness of supermarket shopping online, solidifying e-commerce platforms as a trustworthy source for fresh fruit.
**Keywords:** E-Commerce, Classification, Machine Learning, Computer Vision.

## 1. INTRODUCTION

Over the past decade, the landscape of retail has undergone a radical transformation, primarily propelled by the burgeoning trend of online shopping. This paradigm shift in consumer behavior has not spared the domain of grocery shopping, an essential aspect of daily life. The convenience and accessibility offered by e-commerce platforms have redefined the way consumers acquire goods,

# AI-Powered Productivity Forecasting: A Data-Driven Approach for Workforce Optimization in Garment Manufacturing

**Dr.Renikunta Ashok Kumar, Dr. P Hasitha Reddy,Mr. Jakeer Hussain Vendichutla**

**KEYWORDS:** garment industry, workforce productivity, workers.

## ABSTRACT

With millions of employees, the apparel sector is quite important for the world economy. Nonetheless, maximizing staff efficiency in this industry is a difficult undertaking influenced by several elements including production methods, working environment, and skill levels. Historically, conventional techniques like time and motion studies dominated productivity increases. Time and motion studies—where professionals watched and examined manual labor—were common traditional approaches for raising garment industry staff productivity. Although somewhat successful, these approaches might not fully account for the many complexity of elements influencing production. The main difficulty is creating a prediction model capable of fairly projecting garment industry worker production. To find trends and elements affecting production, this entails gathering and evaluating many data points about worker performance, process efficiency, and environmental circumstances. As such, the necessity of Sustainability and competitiveness in the apparel sector depend on effective workforce usage. Forecasting labor productivity will enable managers to decide with knowledge on process optimization, training, and resource allocation. More accurate forecasts can be produced using a data-driven strategy combining advanced analytics and machine learning than from conventional techniques. Using cutting-edge data analytics and machine learning methods, this initiative seeks to improve garment manufacturing productivity optimization. This effort aims to build a system able of independently and precisely forecasting staff productivity by gathering and evaluating thorough datasets. Advanced algorithms give important insights for process optimization and resource allocation as they may find complex links between several elements and output of productivity. This data-driven strategy has significant potential to transform how managers in the apparel sector maximize staff productivity, therefore fostering global market competitiveness and eventually higher efficiency.

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# AI-ENHANCED WEAPON RECOGNITION: A DEEP LEARNING APPROACH TO IMAGE DETECTION

**Dr. Patlannagari Hasitha Reddy, Yamini Dhadi, Sri Priya Nagula Malyala**

**KEYWORDS:** Weapon Detection, Conventional Weapon Recognition, Deep Learning Algorithms, Machine Learning

## ABSTRACT

An essential component of maintaining national security and public safety is the ability to identify weapons from photographs. Accurate and effective weapon detection systems are more important than ever in the current environment of rising firearm-related occurrences. Traditional computer vision techniques and handcrafted characteristics are frequently used in weapon detection systems, which limits their flexibility in handling a wide variety of weapons and ambient factors. These shortcomings put lives at risk by decreasing accuracy and raising the possibility of false positives or negatives. Our suggested solution uses cutting-edge deep learning techniques to automatically extract discriminative features from weapon photos in response to these difficulties. The capacity of the suggested system to detect many kinds of weapons, such as knives, rifles, and handguns, as well as adjust to varied backgrounds and lighting situations, demonstrates its adaptability. This study is a big step toward using machine learning to support security and safety protocols for the general population, which will ultimately lower the risks connected to events involving weapons.

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# AI-POWERED FALL DETECTION: INNOVATIONS IN ELDERLY CARE WITH WEARABLE INERTIAL SENSORS AND PRE-IMPACT DETECTION

Chakka Balasruthi[1],
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# HARNESSING CNNS FOR EMOTION RECOGNITION: A MULTIMODAL APPROACH USING SPEECH AND FACIAL EXPRESSION DATA

**Mounika Valavoju, Dr Algubelly Yashwanth Reddy**

**Keywords:** Human-Computer Interaction, Multimodal Emotion Detection, Rule-Based Systems, Convolutional Neural Networks.

## ABSTRACT

The widespread usage of the internet has made online interactions an essential part of modern communication. However, the rise in deceptive practices like identity theft, fraud, and misinformation has also coincided with the expansion of digital interactions. To maintain integrity and confidence in online communities, it is increasingly essential to recognize and deal with these dishonest tactics. The primary challenge is developing a dependable, automated system that can identify false information among the thousands of online conversations. In the lack of advanced AI-based solutions, deception detection in online interactions has mostly relied on human monitoring, rule-based algorithms, and keyword-based filters. These conventional methods' limited effectiveness stems from their incapacity to adapt to the development of deceptive techniques and their tendency to provide false positives or negatives. As a result, the demand for effective deception detection systems in online interactions has never been higher. Since social media, e-commerce, and other online forums have grown in popularity, there is now a context in which acting dishonestly can have far-reaching consequences. These platforms need to be dependable and secure for user confidence, cybersecurity, and the overall wellbeing of online communities. Therefore, the purpose of this research is to develop a powerful tool that uses behavioral pattern recognition, advanced linguistic analysis, and machine learning algorithms to consistently discriminate between genuine and fraudulent online encounters. The proposed approach integrates feature engineering and multi-modal techniques to enhance the precision and effectiveness of deception detection in digital communities. In the end, this would offer a more dependable and secure online environment.

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# DATA-DRIVEN CUSTOMER RETENTION: INSIGHTS FROM PURCHASING INTENTIONS IN THE E-COMMERCE SECTOR

**Dr.Patlannagari Hasitha Reddy,Dr.Renikunta Ashok Kumar,Dr. G Manikandan**

**KEYWORDS:** customer retention, e-commerce, purchasing intention data.

## ABSTRACT

Rising rapidly in recent years, e-commerce is becoming a major player in retail. But with this expansion comes fierce competitiveness, hence e-commerce companies have to give client retention first priority. Not only is keeping clients affordable, but it also greatly helps long-term profitability and growth of the company. For millennia, the idea of client retention has been fundamental in company plans in many different sectors. The difficulty is creating efficient client retention plans fit for the special dynamics of e-commerce. Deep knowledge of consumer behavior, interests, and buying intents is therefore essential. Examining purchase intention data offers insightful information that may guide focused plans meant to keep consumers involved and devoted. In e-commerce, historically, attempts at customer retention depended on email marketing, loyalty programs, and occasional discounts. Although these techniques are still useful, they sometimes lack the personalizing and data-driven insights required to really grasp and meet particular consumer preferences. Consequently, the suggested method uses cutting-edge data analytics methods to extract understanding from purchase intention data. Analyzing consumer behavior, browsing habits, and interactions inside the e-commerce platform helps companies find important markers of purchase intention. These realizations can help to customize marketing campaigns, give tailored advice, and present incentives relevant to certain consumers. Moreover, suggested algorithms use past data to forecast future buying intentions, so helping companies to interact with clients before they decide what to buy. This data-driven strategy not only raises customer satisfaction but also maximizes resource allocation and marketing campaigns.

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# DYNAMIC VIRTUALIZATION IN CLOUD STORAGE: SOLVING DATA DUPLICATION CHALLENGES FOR OPTIMIZED STORAGE SOLUTIONS

**Dr. Arun Elias, Chakka Balasruthi, Mr. Jakka Lingeshwar**

**KEYWORDS:** Cold Storage, Data Duplication,MD5.

## ABSTRACT

Network computing, virtualization, and online developments are the three primary factors that have contributed to the development of cloud computing. As the usage of cloud storage becomes more widespread, it is imperative that effective solutions be implemented in order to reduce the expenses associated with the equipment, fulfill the requirements for data transfer, and improve the efficiency of stockpiling. Using data duplication is one method that can be utilized to achieve this goal. Using this, there will be less information on the server, which will result in a reduction in the amount of equipment that is required. Additionally, users will have the opportunity to store more data in the greater space that is available. In the present day, the use of cloud storage is growing, and in order to address the growing number of information problems, data deduplication techniques are being deployed. It is not possible to apply information deduplication techniques in a straightforward manner with security devices. Within the scope of this article, we are removing duplicate information in order to conserve storage space and expedite the organizing process. In this case, we utilized MD5 hashing to produce a hash value (when the file was uploaded to cloud storage), and then we compared those values with one another (when the same file was uploaded with a different name) in order to identify any duplicate data that may be present in the cloud environment. After the deduplication process has been completed, the company will implement a framework strategy for the changing of secure information. Encryption and decoding of the information are the means by which security is achieved. The technique of secure deduplication is investigated in this work. Once duplicate data has been removed, pointers will provide a reference to the file that was originally created.

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# Development of a Multi-Security Authenticated Personal Device Access System Leveraging IoT Technology

**Dhiravath Sumitha, Parvatham Sathish, Biroju Ravikiran**

**KEYWORDS:** Personal Device Access, Security Authenticated, IOT, Arduino UNO.

## ABSTRACT

The project aims to create a locker security system using fingerprint and IOT technology. Banks, companies, and houses can organize this. This technology allows only the authenticated person to retrieve papers or money from lockers. This security system uses fingerprints and IOT. First person registers user name and password. Fingerprints are stored with ID if user name and password match. If ID matches. Authorized users will receive four-digit unlock codes on their phones. This system can also log user check-in and checkout and basic information. The fingerprint-based locker system improves on the key-based one. Keys can now be copied and produced by knowledgeable thieves. Keys must be kept and can be lost if neglected. Fingerprint-based bank lockers eliminate all these problems. The fingerprint-authenticated bank locker system is safe and simple to maintain. Additionally, the controller controls the driving motor to open the bank locker door for authorized customers. Locker doors are locked to unauthorized users. Personal security is a top priority at work, home, etc. The multi-locker security system in this project uses fingerprint, password, voice, and IoT technologies. System uses Arduino UNO and Embedded "C" to capture biometric data for locker assignment to authorized users. IoT allows only authorized users secure access and alerts for rapid response to unauthorized activity. To restrict locker access, the system uses real-time fingerprint, voice, and password authentication. Its innovative door locking mechanism qualifies people for secure entrance and remote monitoring for added security.

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# Real-Time QR Code Authentication for Metro Stations Using AI and IoT Technologies

**Parvatham Sathish, Saresh Kumar Ellamla, Akula Rajini**

**KEYWORDS:** Metro Station, IOT, AI-Camera, QR Pass, ESP32-CAM, DC Motor.

## ABSTRACT

QR Pass Design and Development for IOT Metro Stations. Paper passes are used for regular entrance. India uses tons of gate pass paper daily. Destroying trees uses a lot of paper. Electronic systems let us solve any problem. QR codes are becoming more popular and can be utilized in many fields. We wish to use QR codes for entry passes. Adding IOT makes remote monitoring easy. Project title: IOT metro station QR pass. This technology can let metro station users use QR codes. ESP32-CAM reads QR codes. QR codes are black-and-white square boxes in various patterns. This pattern stores text-based data. The ESP32-CAM gate opens when it reads the QR code in this text. DC motor controlled by l293D and ESP32-CAM digital pins. Digital pins connect buzzer and LED to ESP32-CAM. QR code scanning turns these two on. Scan the QR code to open the gate, which will close after a time.

# Advancements in Road Safety with IoT-Enabled Vehicle-to-Infrastructure Intelligent Systems

**Mohammad Amanullah Khan, Konatham Priyanka, Biroju Ravikiran**

**Keywords:** Road Safety, Vehicle-To-Interface(V2I), IOT-Based Intelligent, Global Positioning System, Global System for Mobile Communication.

## ABSTRACT

IOT, GPS, and GSM-SMS are used to localize cars in this project. The technology may localize the car and send the owner an SMS with its location. It can be connected to the car alarm and alert the owner by phone. This tracking system has a GPS receiver, Microcontroller, and GSM Modem. GPS receivers receive latitude and longitude from satellites. The microcontroller processes this data and sends it to the user/owner via GSM modem. This technology uses ultrasonic sensors to avoid automobile collisions. This monitors engine temperature and auto-cools with dc fan. The provided program is a low-cost solution for automobile position and status, beneficial in car theft cases, parental monitoring of adolescent drivers, and car tracking systems. Other applications that seek information rarely and irregularly can use the proposed method.

# Embedded System for Autonomous Shopping Carts with Android IoT App for Social Distance Shopping

**Konatham Priyanka, Kaki Ajay, Kurva Chaithanya**

**Keywords:** Social Distance Shopping, Auto Cart, Android IOT, RFID Reader.

## ABSTRACT

Technology has transformed how much individuals of all ages like technological equipment. Smart card readers, barcodes, and RFID scanners are employed in numerous industries. Supermarkets need these tools too. Everyone in the mall buys the trolley merchandise. After buying, the person must wait for billing. A worker scans each product's barcode and bills it to the final. Holidays, special discounts, and weekends can make this procedure even longer. Mall shopping has been made smarter to overcome this. Each product has an RFID tag instead of barcode. RFID, LCD, and IOT modules are in the Smart Trolley. Any product placed on the trolley is scanned and its cost, name, and expiration date are shown. The whole cost will be applied to the final bill. The bill is stored in the microcontroller's memory and transferred via IOT module for android app counter checkup. The IOT module sends the customer purchase details after the purchase. The central android application receives this information from the trolley's IOT transmitter and the phone's IOT receiver via Telnet. To remove an added product, scan it again. The charge will be reduced by the product's cost. Programming is done with Raspberry pi IDE and simulation is checked with Proteus before hardware implementation.

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# Energy Optimization in Buildings with Visitor-Sensing Power Control Systems

**Biroju Ravikiran, Prakash Jogi, Dhiravath Sumitha**

**Keywords:** Visitor Sense, Power Management, IR Sensors, IOT.

## ABSTRACT

As living standards rise, the necessity for automatic appliances grows, and circuits to simplify life are needed. The goal of this project is to create a controller-based model to count room visitors and show on the IOT. Our project detects people using IR sensors. According to this project, two IR sensors are separated by a given distance. When someone interrupts IR rays in the first sensor, the count-up timer begins. If the count is collected from a second sensor, the IOT will lower the count based on the audience, turning lights on or off. When the room count drops, the lights turn off. A microcontroller that processes input and output from IR sensors and IOT modules was suggested.



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# IoT-Driven Approach for Efficient Slot Management in Electric Vehicle Charging Stations

**Javvaji Ramadevi, Dhiravath Sumitha, Senthil Kumar Murugesan**

**KEYWORDS:** Electric Vehicle Charging Station, Slot Reservation, IOT.

## ABSTRACT

Design and development of RFID petrol pump automation. Manual petrol pumps are common. Vehicle owners must engage with operators. Automating these saves vehicle owner's time. Removing manual power reduces maintenance costs. We suggested RFID-based petrol pump automation. RFID reader (EM-18) Interfaced to Arduino via UART. Relay attached to Arduino digital pin powers AC pump/DC EV charge station. Arduino digital-pin 4X4 matrix keypad. This project requires RFID card swipe and password. If password is correct, amount is asked. After entering quantity, petrol pump or EV charging machine will turn on and dispense fuel. Buzzer activates for erroneous password. Entering amount reduces RFID card amount. Buzzer activates for inadequate amount. All these information will be on 16X2 LCD.

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# Biometric and Smart Card-Based E-Voting System for Fraud-Resistant Elections

**Revathi Sasana, M Srikanth, Kurva Chaithanya**

**KEYWORDS:** Smart Card Based E- Voting System, Fingerprint, Fraud Resistant Polling.

## ABSTRACT

For security and transparency, computerized voting machines are replacing traditional voting systems. Two types of E-voting exist. The first involves visiting a polling booth and pushing buttons on electronic devices instead of paper voting cards. The second type of E-voting system uses smart technology. Electros usually vote remotely or at polling centres using computers. We design an embedded electronic voting machine with RFID-encrypted smart card and fingerprint authentication. Traditional systems are slower and less secure than ours.

# ENHANCING CYBERSECURITY RESILIENCE: PREDICTIVE CYBER INSURANCE POLICY ANALYSIS FOR EFFECTIVE RISK MANAGEMENT

**Dr. Persis Urbana Ivy B, Dr. Arun Elias, Ms. Hema Bandari**

**KEYWORDS:** cybersecurity, cyber insurance, TF-IDF,cyber threats, ransomware.

## ABSTRACT

The reality of current cyberattacks and their serious consequences has become clear in today's environment, underlining the need of organizational cybersecurity management on not depending just on risk reducing strategies. Cyber insurance has thus become essential in supplement to current security measures. NotPetya and WannaCry in 2017, which caused devastation on thousands of businesses all over different sectors and geographies, are two well-known cybersecurity incidents with significant seriousness. Furthermore impacted by a ransomware assault were important US government agencies including the Departments of Defense, Homeland Security, State, Treasury, Energy, Commerce, and others. These events highlight how urgently cybersecurity protections have to be strengthened. Advanced cyber dangers of high degree abound in the digital terrain today: crypto jacking, malware, supply-chain assaults, ransomware, business email intrusion, and more. Given the always rising threat of cyberattacks and data breaches, cyber insurance has become increasingly more crucial in this environment. Correct forecast of cyber insurance policy trends might be rather important in order to handle this important problem. Predicting these trends helps insurance firms to better evaluate risk, determine suitable rates, and create efficient coverage plans. This paper suggests a new approach to reach this by combining two effective methods: Term Frequency-Inverse Document Frequency feature extraction combined with a multinomial naive Bayes classifier Policy papers are represented as numerical feature vectors using the TF-IDF technique, which also captures the importance of phrases inside the texts. The multinomial naive Bayes classifier then is used to categorize the policy patterns depending on the acquired characteristics. Through predictive cyber insurance policy analysis, this method shows a good technique to improve cybersecurity management. Using cutting-edge technologies and algorithms helps companies better equip themselves for possible cyberattacks, therefore guiding their actions to protect their assets and interests.

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# DETECTING FAKE NEWS WITH N-GRAM FEATURE SELECTION AND LSTM: A MACHINE LEARNING APPROACH

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## ABSTRACT

The emergence of the World Wide Web and the swift embrace of social media platforms, such as Facebook and Twitter, facilitated an unprecedented level of information distribution in human history. In addition to many applications, news organizations have gained from the extensive utilization of social media platforms by delivering timely news updates to its customers. The news media transitioned from traditional formats like newspapers, tabloids, and magazines to digital ones, including online news platforms, blogs, social media feeds, and various other digital media formats. Consumers found it increasingly convenient to access the newest news at their fingertips. Seventy percent of traffic to news websites originates from Facebook recommendations. The present iteration of these social media platforms is highly influential and beneficial, facilitating user discussions, idea sharing, and debates on topics such as democracy, education, and health. Nonetheless, these channels are also exploited by certain groups for financial profit, as well as for fostering prejudiced viewpoints, influencing perceptions, and disseminating satire or absurdity. This tendency is widely referred to as misinformation. The proliferation of misinformation has escalated significantly over the past decade, most evident during the 2016 US elections. The widespread dissemination of factually inaccurate material online has resulted in several issues, extending beyond politics to encompass different fields such as sports, health, and science. The financial markets are one sector impacted by misinformation, where a single rumor can lead to catastrophic outcomes and can disrupt market operations. Consequently, an automated method for the precise classification of authentic and fraudulent news is essential. Although some research have been completed, greater investigation and focus are necessary. The suggested initiative seeks to eradicate the dissemination of rumors and misinformation by facilitating the automated classification of news sources as credible or not. Initially, N-gram Feature Selection is employed to select the most pertinent features from the dataset. Subsequently, long short-term memory (LSTM) is employed to execute the categorization task.

**Keywords**: social media, misinformation, LSTM, N-gram feature selection.

## 1. INTRODUCTION

### 1.1 Research Motivation

The proliferation of fake news poses significant challenges to society, impacting various aspects of public discourse and decision-making. The motivation behind the proposed research lies in addressing the pressing need for effective tools to combat the spread of misinformation and disinformation.


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# HARNESSING MICROBLOGGING DATA FOR FINANCIAL FORECASTING: XGBOOST MODEL FOR ALPHA AND SIGNAL PREDICTION

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**ABSTRACT**
One of the most important factors to consider when evaluating the performance of a financial asset in comparison to the general market benchmark is the presence of alpha signals, which are also known as excess returns. The capability to properly and rapidly identify alpha signals is of tremendous benefit to investors and financial analysts. This is because it has the potential to significantly impact decisions about portfolio optimization and risk management with significant implications. Traditional techniques of alpha signal prediction, on the other hand, which mainly rely on previous financial data, have inherent limits when it comes to catching real-time market sentiments and movements. In order to circumvent these restrictions, academics have begun investigating other data sources, notably data from social media platforms, with the goal of gaining more profound insights into the feelings of the market and improving their ability to forecast alpha signals. Understanding investor mood, market views, and collective behavior may be accomplished through the utilization of a novel technique that is presented by the incorporation of data from social media platforms into financial analysis. Twitter and StockTwits are two examples of microblogging systems that provide as rich sources of real-time information. These platforms represent thoughts and reactions to financial events as they occur. The utilization of such data for the purpose of alpha signal prediction has the potential to supplement and reinforce conventional techniques of financial analysis, which would ultimately result in forecasts that are more accurate and reliable. As a result of this, the primary objective of this research is to make use of the data associated with microblogging on social media platforms in order to forecast alpha signals in the financial markets. The solution that was selected makes use of the XGBoost model, which is a strong machine learning algorithm that is well-known for its capacity to manage complicated and unstructured data that comprises a high number of dimensions. In order to evaluate the predicted performance and accuracy of the model, it is first trained using historical data and then evaluated with data that is not selected from the main sample. The purpose of this proposed effort is to contribute to the progress of alpha signal prediction techniques and to strengthen decision-making processes in the financial arena. This will be accomplished by utilizing the real-time and sentiment-rich information that is captured from social media.

**Keywords:** Boosting, Xgboost, NLP, TF-IDF, Tokenization.

## 1.INTRODUCTION

Alpha signal in the context of microblogging data from social media typically refers to a metric or value that is calculated to assess the significance or impact of a particular piece of content (such as a tweet or post) on a social media platform [1]. This signal is often used in social media analytics and sentiment analysis to measure the level of engagement, influence, or attention that a post has received within a specific community or network

# MUSIC AND EMOTION: A MACHINE LEARNING APPROACH TO MOOD CLASSIFICATION FOR PERSONALIZED PLAYLIST CURATION

**Sai Kumar Rapolu, Venkataamarnadh Godugunuri, Dr Algubelly Yashwanth Reddy**

**Keywords:** Machine Learning, Random Forest,Mood Detection, Music Classification, Pattern Recognition

## ABSTRACT

A vital component of human existence, music elicits a range of feelings and moods. In recent years, research on understanding and classifying music based on its emotional content—also referred to as music mood classification—has grown significantly. Applications like mood-based playlist creation, emotion-aware music therapy, and tailored music recommendations depend heavily on the analysis of music's emotional content. Traditionally, to classify music moods, music specialists would listen to each track and manually tag each one with a mood (happy, sad, quiet, energetic, etc.). Because of human biases, this procedure was quite subjective and prone to discrepancies. Afterwards, the annotated data would be utilized to create manually constructed rule-based systems or basic statistical models that would categorize music into various moods. These methods have limitations in terms of accuracy, scalability, and generality even if they offered some new insights. Furthermore, hand annotation is subjective, costly, and time-consuming. Furthermore, differences in how a given piece of music is interpreted emotionally among human listeners may result in inconsistent labeled data. There is a need for automated and data-driven methods to get over these obstacles and enable large-scale mood analysis of music collections. By using computational models to extract patterns and correlations from data, machine learning techniques provide a viable answer to this issue and allow music to be automatically classified according to its emotional content. In light of this, this project creates an emotion recognition-based music recommendation system that analyzes user moods before recommending songs based on those moods. The suggested mood categorization system may

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# PREDICTING PATIENT LENGTH OF STAY IN HEALTHCARE SETTINGS: A TWO-STAGE MACHINE LEARNING APPROACH UTILIZING ELECTRONIC RECORDS

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## ABSTRACT

The need for healthcare is increasing in Australia and globally. The healthcare system in Australia consists of a combination of commercial and governmental entities, including hospitals, clinics, and aged care institutions. The Australian healthcare system is notably economical and accessible, as around 68% of its funding is provided by the Australian government. In 2015-16, healthcare expenditure amounted to AUD 170.4 billion, or 10.0% of GDP. Escalating healthcare expenses and rising demand for services are intensifying the strain on the viability of the government-funded healthcare system. To achieve sustainability, we must enhance the efficiency of healthcare service delivery. If the demand for services is accurately understood, we can appropriately arrange the care delivery process and so enhance system efficiency. Nonetheless, the unpredictability of service demand contributes to inefficiencies in the healthcare delivery system. Escalating healthcare expenses and increasing service demand necessitate the more effective utilization of healthcare resources. The unpredictability of resource requirements diminishes the efficiency of the care delivery process. Our purpose is to diminish the ambiguity around patients' resource needs, which we do by categorizing individuals into analogous resource utilization categories. The traditional random forest and k-nearest neighbors (KNN) approaches yielded subpar classification and prediction results.
**Keywords**: Healthcare, K-Nearest Neighbors, Random Forest.

## 1. INTRODUCTION

### 1.1 History

The history of healthcare delivery has been marked by a constant struggle to optimize resource utilization while ensuring quality care for patients. Over the years, healthcare systems worldwide have faced challenges related to rising costs, growing demand, and the need for efficiency. In Australia, a country with a mixed healthcare system comprising both public and private entities, these challenges have been particularly pronounced.

In Australia, the healthcare landscape has evolved significantly, driven by factors such as population growth, aging demographics, and advances in medical technology. As a result, healthcare expenditure has steadily increased, reaching substantial proportions relative to the country's GDP. For instance, in 2015-16, healthcare expenditure accounted for 10.0% of Australia's GDP, amounting to AUD 170.4 billion. Despite the substantial government funding, there has been increasing pressure on the sustainability of the healthcare system due to rising costs and growing demand.

# REAL-TIME VISIBILITY ENHANCEMENT: REMOVING RAIN, FOG, AND HAZE FROM TRAFFIC CAMERA FEEDS USING OPENCV

**Dr. G Manikandan, Sarveswara Rao Jarupula, Srinivas Nayini**

**KEYWORDS:** realtime rain, haze, traffic camera, openCV, image processing.

## ABSTRACT

Particularly in bad weather, atmospheric events including rain, fog, and haze greatly lower visibility. These kinds of weather seriously compromise road safety as they could obscure drivers' eyesight and cause collisions. By means of rain, fog, and haze detection and removal from traffic camera or vehicle-mounted sensor-captured images, visibility may be greatly improved, therefore facilitating driver navigation and accident avoidance. Often based on image processing methods and filters, traditional systems These techniques try to improve vision by lowering the effect on photos of rain streaks, fog, or haze. Still, these conventional methods are sometimes less successful, particularly in real-time applications and in changing weather. Therefore, in the framework of traffic safety, the demand for a strong system for rain, fog, and haze elimination takes front stage. Together with efficient removal methods, accurate and real-time identification of these meteorological events can improve driver vision, lower accidents, and even save lives. Autonomous cars notably depend on these systems as safe navigation depends on good, unhindered eyesight. Thus, this work intends to construct a system using the well-known open-source computer vision library OpenCV. With its extensive suite of tools and algorithms, OpenCV offers a strong basis for creating systems of rain, fog, and haze identification and removal. It provides several image processing methods to handle these difficulties: machine learning algorithms, morphological procedures, and filtering among other ones. Intelligent algorithms combined with OpenCV allow one to generate precise and quick solutions for real-time applications, therefore helping to reduce traffic accidents under unfavorable weather.

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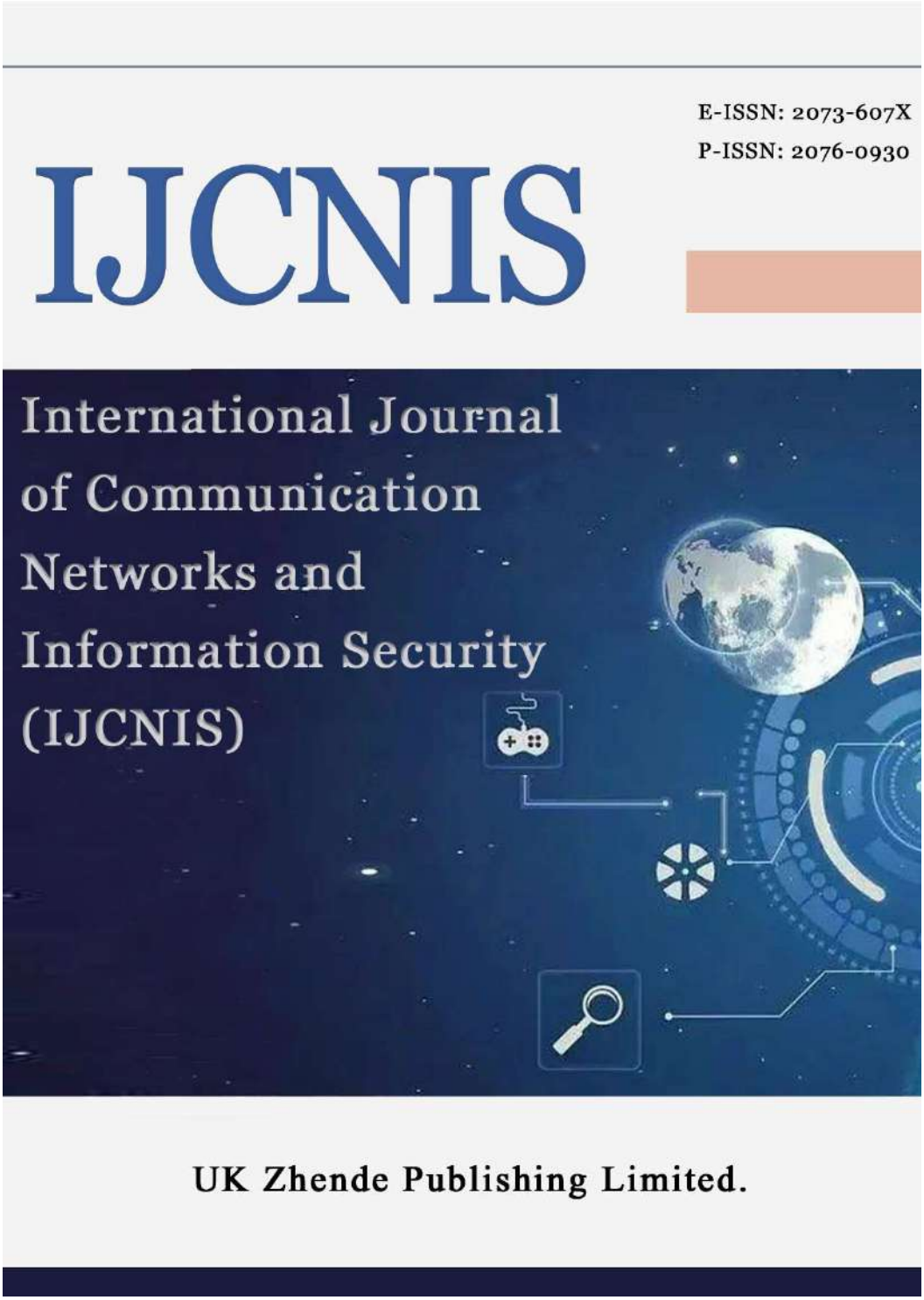


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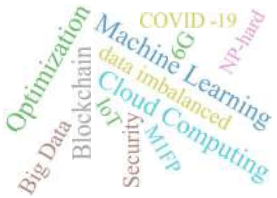

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SECTION

Research Articles

# TRANSFORMING AIR QUALITY MONITORING WITH DEEP LEARNING: A PREDICTIVE APPROACH VIA IOT SENSORS

**Akavaram Swapna, Sri Priya Nagula Malyala, Chigurlapalli Swathi**

**Keywords:** Artificial Intelligence, Air Quality, Machine Learning, Big Data Analytics, Respiratory, Cardiovascular

## ABSTRACT

The ability to forecast and analyze air quality has significantly improved over time. We previously placed a great deal of reliance on conventional techniques like statistical models and simple equations. These methods, however, found it difficult to convey the dynamic and intricate character of air pollution. In an effort to enhance air quality forecasts, scientists and researchers have been using artificial intelligence (AI), machine learning, and big data analytics. Conversely, air pollution is a major worldwide problem that impacts not only our surroundings but also our health and welfare. Additionally, it is connected to cardiovascular and respiratory conditions, which raises the number of illnesses and fatalities. Precise forecasts of air quality enable public authorities, governments, and people to respond promptly in order to mitigate pollution, protect public health, and enhance urban development. We require precise study and forecast of air quality in order to address this urgent issue. The shortcomings of conventional approaches for predicting air quality are what drove us to create this AI model. As we've shown, these approaches frequently lack precision and have trouble taking into account the many variables driving air pollution. With its capacity to analyze enormous volumes of real-time data and spot intricate patterns, artificial intelligence (AI) presents a promising way to improve the precision and dependability of air quality forecasts. As a result, this work presents a cutting-edge Artificial Intelligence (AI) model that is intended to accurately and efficiently forecast and assess air quality. This model attempts to satisfy the increasing need for trustworthy real-

# REVOLUTIONIZING PEDIATRIC RETINAL DISEASE DIAGNOSIS: ENSEMBLE MODEL-BASED CLINICAL DECISION SUPPORT SYSTEM

**Dr. G Manikandan, Sarveswara Rao, Jarupula, Srinivas Nayini**

**KEYWORDS:** clinical decision,inherited retinal diseases, IRD, pediatric age, CDSS.

## ABSTRACT

Especially in relation to inherited retinal disorders (IRD) impacting the juvenile population, developments in healthcare technology have opened the path for creative ideas to clinical decision support systems (CDSS). IRD are a collection of genetically passed disorders influencing the structure and operation of the retina, therefore causing visual handicap or blindness. Particularly susceptible to these disorders is the pediatric age group, hence early and precise diagnosis is essential for efficient treatment and intervention. Conventional IRD diagnosis methods can depend just on one method, such imaging tools, clinical tests, or genetic analysis. Although these techniques have greatly advanced our knowledge of these disorders, their shortcomings in managing the complexity of genetic variants and the variability of disease expressions highlight the necessity of a more advanced and combined approach. By integrating the qualities of several models, ensemble models provide a break from the constraints of conventional systems, therefore enhancing diagnosis accuracy and dependability. This study thus suggests an ensemble model based on CDSS for juvenile hereditary retinal disorders. This method can give doctors a more complete and accurate evaluation of the fundamental genetic causes and illness development by using the strength of several models. Furthermore integrated within the proposed ensemble model based on CDSS are many prediction models to improve diagnosis accuracy and support the management of IRD in young patients. In the end, the relevance goes to enhancing patient outcomes, allowing for early interventions, and helping to create focused treatments for IRD in the younger population.

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# REVOLUTIONIZING INTERNET LOAN SECURITY: A DEEP LEARNING FRAMEWORK FOR EFFECTIVE FRAUD PREVENTION

Ms.Uma Rani Koppula, Mr. Venkataamarnadh Godugunuri, Nusrath Begum Mohammad

DOI: 10.48047/nq.2024.22.5.nq25028

**Abstract**

Internet money has lately becoming somewhat trendy. Still, bad debt now poses a major danger to Internet financial firms. Usually utilized in traditional financial firms, logistic regression is the fraud detection model. While the logistic regression is interpretable, its accuracy still has to be raised. This article investigates the possibilities of using deep neural networks for fraud detection using a big public loan dataset, like Lending club. Using a random forest, we first address the missing data. The most discriminatory characteristics are then chosen using an XG Boost technique. To handle the sample imbalance after that, we suggest to apply a synthetic minority oversampling approach. We build a deep neural network using preprocessed data to detect Internet loan fraud. To show the out performance of the deep neural network against the widely used models, many tests have been carried out. Such a basic but powerful model might improve the use of deep learning in anti-fraud for Internet loans, so benefiting the financial engineers in small and medium Internet financial firms.

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# SMART FIRE PREVENTION: AI-POWERED IMAGE-BASED DETECTION FOR EARLY FIRE WARNING SYSTEMS

**Venkatesh Artham, Renikunta Ashok Kumar, Sowbhagya Juttu**

**KEYWORDS:** Fire Detection, Image Preprocessing, SVM, Classification.

## ABSTRACT

The inability of the heart to provide adequate perfusion to target tissues and organs at the physiological filling pressures to fulfill their metabolic needs highlights the chronic, progressive disease known as chronic heart failure (CHF). Given its 2% yearly increase in incidence, CHF is already in epidemic proportions in the population. CHF affects 10% of those over 65 years and 1-2% of the overall population in the developed nations. At now, CHF diagnosis and treatment consume around 2% of the yearly healthcare expenditure. The USA spent around 35 billion USD to treat CHF in 2018 alone, absolute terms; the expenses are likely to treble in the following ten years. By looking at the patient and by noting typical changes in the heart failure biomarkers —determined from the patient's blood—an experienced physician may currently detect the worsening of HF. Unfortunately, clinical deterioration of a CHF patient usually indicates that we are already dealing with a fully formed CHF episode that will most certainly call for a hospital admission. Furthermore, certain individuals may be heard with phonocardiography and have distinctive alterations in heart sounds accompanying heart failure progression. Thus, this project uses recent development in machine learning and deep learning models to implement the detection of chronic heart failure from phonocardiography (PCG) data using end-to- end average recording model built with extracted features from both machine learning and deep learning. Additionally compared with individual ML and DL models were the suggested ChronicNet model results.

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# STRESS AFFECT DETECTION USING WESAD DATA: A MACHINE LEARNING APPROACH TO MENTAL HEALTH MONITORING

**Mr.Venkatesh Maheshwaram,Mr. Venkatesh Artham,Ms. Subburu Mamatha**

**KEYWORDS:** stress affect,wesad data, demographics.

## ABSTRACT

Stress has become a common issue influencing people in many different spheres in the fast-paced environment of today. Maintaining both physical and psychological health depends on the ability to recognize and control stress. The increased knowledge of the influence of stress on health and productivity leads to the necessity of automated stress impacts detection. Conventional methods of stress evaluation can depend on subjective and time-consuming self-reported questionnaires or clinical assessments. Therefore, it is feasible to give people quick and accurate feedback by using machine learning models, therefore empowering them to take proactive actions to control their stress level. Developing machine learning models that can efficiently interpret physiological data from wearable sensors (like those given by the WESAD dataset) to precisely detect and categorize stress affect states is the main difficulty of this work. This entails building strong features from the unprocessed sensor data and training models able to generalize among several people and situations. Although physiological measurements have been applied, integration of machine learning marks a major progress above traditional statistical methods. This use of machine learning for stress impact identification marks a paradigm change in our approach of stress management. This suggested system offers people immediate insights on their stress levels by using wearable sensor data and sophisticated algorithms, therefore enabling them to take proactive action towards improved mental and physical well-being.

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# UTILIZING CONVOLUTIONAL NEURAL NETWORKS FOR UNDERWATER SPECIES CLASSIFICATION: A CASE STUDY ON MARINE ORGANISMS

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**ABSTRACT**

The aquatic environment is abundant with many marine organisms, serving a vital function in the Earth's ecology. Identifying and categorizing marine species in their natural habitat is a formidable challenge owing to the intricate and dynamic characteristics of undersea environments. Recent breakthroughs in computer vision and deep learning have created new opportunities for automated species categorization. Traditional techniques for classifying undersea organisms often depend on manual identification by marine biologists or taxonomists. Although these specialists hold essential information, the procedure is labor-intensive, time-consuming, and may be constrained by human subjectivity and availability. The main problem in this area is to create a system that can precisely categorize marine species using photos or videos taken underwater. This entails addressing the distinct issues of underwater imaging, such as fluctuations in illumination, water transparency, and the intricate backdrops of aquatic settings. Consequently, the precise and effective categorization of marine species is crucial for ecological study, conservation initiatives, and sustainable management of marine resources. Conventional techniques for species identification frequently depend on manual observation, which may be laborious and prone to human mistake. Utilizing technology to automate the process has the potential to significantly enhance both the speed and precision of species categorization in aquatic environments. The research, "Utilizing Convolutional Neural Networks for Underwater Species Classification: A Case Study on Marine Organisms," seeks to transform underwater species identification through the application of sophisticated computer vision methodologies, including CNNs. This project aims to create a system that can independently and reliably categorize marine species by training models on huge datasets of underwater photography. Convolutional Neural Networks (CNNs) excel at acquiring hierarchical characteristics from pictures, rendering them particularly effective for the intricate visual patterns found underwater. This innovation has the capacity to greatly enhance marine biology research, conservation initiatives, and resource management by offering an effective instrument for swift and accurate species identification in aquatic settings.

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# VISION RESTORATION: ADVANCED RAIN, FOG, AND HAZE DETECTION TECHNIQUES FOR TRAFFIC SAFETY WITH OPENCV

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## ABSTRACT

Visibility is greatly lowered by atmospheric phenomena including rain, fog, and haze, especially when bad weather is present. Because they can cause accidents and impede drivers' eyesight, these weather conditions pose a serious risk to road safety. Rain, fog, and haze may be identified and eliminated from photos taken by traffic cameras or sensors installed on vehicles to greatly improve visibility and assist drivers avoid collisions. Conventional systems frequently rely on filters and image processing methods. These techniques aim to improve vision by lessening the effect of haze, fog, and rain streaks on pictures. Nevertheless, the efficacy of these conventional methods is sometimes restricted, particularly in situations involving real-time applications and fluctuating weather conditions. For this reason, having a reliable system in place for clearing haze, rain, and fog is crucial for traffic safety. When combined with efficient removal methods, accurate and timely identification of certain meteorological conditions can improve road visibility, lower the risk of accidents, and even save lives. These devices are particularly important for driverless cars, as safe navigation depends on having clear, unhindered vision. Consequently, the goal of this project is to construct a system using OpenCV, a well-known open-source computer vision toolkit. Developing rain, fog, and haze detection and removal systems is made easier using OpenCV's extensive feature set and array of methods. To tackle these issues, it provides a range of image processing methods, such as morphological operations, filtering, and machine learning algorithms. In order to reduce road accidents during bad weather, intelligent algorithms may be used in conjunction with OpenCV to produce precise and efficient solutions for real-time applications.

**Keywords**: Rain, haze, fog, visibility, traffic cameras, sensors mounted on vehicles, image processing, real-time detection, OpenCv, filtering, morphological operations, machine learning, and real-time detection

## 1. INTRODUCTION

Detecting and mitigating the impact of adverse weather conditions such as rain, fog, and haze in the context of traffic safety using OpenCV involves a multifaceted approach. First, images or video frames are captured from cameras, typically mounted on vehicles or at strategic locations. These images often suffer from reduced visibility and image degradation due to the weather conditions. The acquired data undergoes preprocessing to enhance image quality through noise reduction and contrast adjustment. Following preprocessing, image segmentation techniques are applied to isolate critical objects in the scene, such as vehicles and pedestrians. The system then identifies the type and severity of the weather conditions using advanced computer vision methods, enabling it to determine whether it's dealing with rain, fog, or haze. Depending on the weather condition, specific image enhancement techniques, such as de-raining or dehazing, are employed to restore image clarity. Object recognition and tracking