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Criteria 3 - Research, Innovation and Extension

Key Indicator 3.3 - Research Publication and Awards

3.3.2.1 Number of research papers published per teacher in the Journals notified on UGC care list during the year

INDEX

S. No.	Description
1	CERTIFICATE OF HEAD OF INSTITUTION
2	CONSOLIDATED LIST OF PAPERS PUBLISHED
3	FIRST PAGE OF PUBLISHED PAPERS

CERTIFICATE OF HEAD OF INSTITUTION

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Number of research papers published per teacher in the Journals notified on UGC care list during the year is listed below:

Academic Year	2023-2024
Total No. of Research Papers Published	33

R. Mercy Shanthi

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CONSOLIDATED LIST OF PUBLISHED PAPERS

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Criteria 3 - Research, Innovation and Extension

Key Indicator 3.3 - Research Publication and Awards

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

CONSOLIDATED LIST OF PAPERS PUBLISHED

S. No.	Title of the Paper	Name of the Author	Department of the Author	Academic Year
1	Design of a 2 storeyed steel structure with 20000ltr OHT on IT Using STAADPRO Software	Mr. Nawaz Sherief M	Civil Engineering	2023-2024
2	Analysis of Severly damaged RCC column through cast-in-situ Vs Prefabricated Solution	Mr. Ranjithsingh J	Civil Engineering	2023-2024
3	Finite Element modelling of smart structures	Mr. Gokulram H	Civil Engineering	2023-2024
4	Seismic analysis and design of multistoried building in steel structure using IS800 draft code	Mrs. Geethakumari D	Civil Engineering	2023-2024
5	Attention Based Features Fusion with External Attention Transformers for Breast Cancer Histopathology Analysis	Mrs. K Anitha	Information Technology	2023-2024
6	Machine Learning Algorithms for the Detection of Threats in IOT Healthcare	Mrs. K Anitha	Information Technology	2023-2024
7	Performance Analysis of the Machine Learning Algoritms for Early Detection of Breast Carcinoma	Mrs. K Anitha	Information Technology	2023-2024
8	A Deep Learning Approach for Accurate Potato Leaf Disease Prediction	Mrs. B.A.Banupriya	Information Technology	2023-2024

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9	Utilizing Artificial Intelligence for Advanced Stock Market Prediction : A Comprehensive Analysis of Algorithms and Data Models	Mr. G Thiagarajan	Information Technology	2023-2024
10	Smart Fashion Recommendation System Using CNN RES - NET 50	Mr. I.Bildass Santhosam	Information Technology	2023-2024
11	A Novel Cad Structure with Bake Light material Inspired MRI coils for current trend in an IMOT based MRI diagnosis system	Dr.R.Chandrasekaran	ECE	2023-2024
12	Hybrid whale artificial bee colony optimized improved Landman converter for renewable energy-based microgrid application.	Mr. P. Sankar	EEE	2023-2024
13	Energy Management For Fuel Cell Hybrid Electric Vehicle	Mrs. Lakshmi Priya. G	EEE	2023-2024
14	Design of an Optimized Multi Level Inverter with Minimal Switches Employing NLC Technique	Mrs. Lakshmi Priya. G	EEE	2023-2024
15	Fetal head biometrics measurements using convolutional neural network and mid-point ellipse drawing algorithm	Mrs.P. Nisha Priya	CSE	2023-2024
16	Smart Data Processing For Energy Harvesting System Using Ambient Noise With Deep Learning	Mrs.P. Nisha Priya	CSE	2023-2024
17	Brain Memory Capturing	Mrs.P. Nisha Priya	CSE	2023-2024
18	A Model for Dynamic Frequency Adjustment of Monitoring Based on cloud security	Mrs.P. Nisha Priya	CSE	2023-2024
19	Real Time Machine Learning Detection Of Heart Disease Using Big Data Approach	Mr.M.Vijayaraj	CSE	2023-2024
20	Phishing Attack Detection Using Hybrid Deep Learning	Mrs.Aruna	CSE	2023-2024

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21	Post Covid Prediction Algorithm Using Random Forest Algorithm	Mrs.P. Nisha Priya	CSE	2023-2024
22	Augmented Ransomware Defense Strategy: Advanced Integration Of Rangan Algorithm And Hash Concealment Techniques	Ms.Ramya S	CSE	2023-2024
23	Predictive Modeling Of Dengue Fever Epidemics: Using A Machine Learning Algorithms	Mrs.P. Nisha Priya	CSE	2023-2024
24	Network Traffic Analysis And Anomaly Detection In A Simulated Environment Using Explainable AI	Mrs.Ruth Samuel	CSE	2023-2024
25	Securing Patient Health Record In Blockchain With Abe Access Control	Mrs.Saranya.R	CSE	2023-2024
26	Real Time Brain Monitoring System Using AI	Mrs.P. Nisha Priya	CSE	2023-2024
27	Image immunizer: a multi-task learning scheme for resilient Image tampering and lossless auto-recovery	Prof. Ruth Samuel	CSE	2023-2024
28	Brain Tumor Image Retrievel Using Convolutional Neural Network	Mr.Bildass Santhosam	AI&DS	2023-2024
29	Study On Heart Disease Prediction Using Deep Learning Algorithm	Mr.G.Thiyagarajan	Information Technology	2023-2024
30	A Secure Steganography Using Digital Images To Extract The Encypyted Data	Mrs.V.Priya	CSE	2023-2024
31	Achieving Efficient Secure Deduplication With User Defined Access Control In Cloud	Mrs.Banupriya	Information Technology	2023-2024

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32	Analysis And Preventing Technique Through Cyber Physical System For Environmental Monitoring And Internet Of Things	Mrs.V.Priya	CSE	2023-2024
33	Diabetes Prediction Using Convolutional Neural Network And Random Forest	Ms.Jayalakshmi J	Information Technology	2023-2024
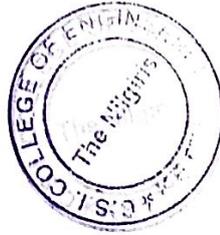
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FIRST PAGE OF PUBLISHED PAPERS

DESIGN OF A 2-STOREYED STEEL STRUCTURE WITH 20000LTR OHT ON IT USING STAADPRO SOFTWARE

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ABSTRACT

This research paper aims to Design of a 2-storeyed steel structure with 20000ltr OHT on it and find the approximate cost for its construction. At first, we assumed the basic data close to a real-life scenario. Using this data, we designed the Steel elements of this structure using StaadPro software and also referred to various IS codes, books, research papers, etc. This structure to designed to sustain various loadings, i.e., Dead Load, Live Load, Wind Load, and Earthquake loads. Various load combinations are taken into consideration to make this structure resistant to all the above loads.

Keywords: Steel Sections, Loads, Staadpro, Commercial Building, IS Codes.

I.   INTRODUCTION

Nowadays, large-span, super-high, over-weight, vibration, airtight, high-rise, and light-weight engineering structures are generally steel structures. One of these segments is industrial buildings where steel structures are widely witnessed. The reason being their added advantages over the concrete structures. Steel structures can take heavy loads despite of being light weight. Also, steel structures can be fabricated easily, hence consumes less time in constructionand also has higher scrap value.

- **Structure Geometry**

The details of the geometry of structure are as follows:

- Type of structure: Commercial building
- Location: Truvandapuram
- Superstructure: Structural Steel
- Substructure: Reinforced Concrete
- Number of storey: 2
- Height of each floor: 3.6 meters
- Number of bays in longitudinal direction: 3 (5.6m,5.5m, 4.5m)
- Number of bays in lateral direction: 2 (3.7m,6.9)
- Purlin spacing: 1.5 meter
- Roofing sheet: Asbestos cement sheet
- Flooring: 6mm Steel grating
- Foundation level: 3m
- **Preliminary Drawings**

The elevation and section of structure is shown in fig-1. The column layout and the arrangement of members at different levels where the equipment rest is shown in the fig 2, fig-3, fig4 & fig-5.

Analysis of Severly Damaged RCC Column through Cast-In-Situ Vs Prefabricated Solution

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ABSTRACT
In present the results of an analytical aimed to develop and study the axial load bearing performance of damaged columns using cast-in-situ (HCP) Hybrid Composite Panels. The effectiveness of prefabricated hybrid Composite plates (HCPs) as a seismic retrofitting solution for damaged interior RC beam- column joints is analytically studied. HCP is composed of a thin plate made of strain hardening cementation composite (SHCC) reinforced with CFRP sheets/laminates. Two full-scale severely damaged interior beam-column joints are retrofitted using two different configuration of HCPs. The effectiveness of these retrofitting solutions mainly in terms of hysteretic response, dissipated energy. According to these criteria, both solutions resulted in superior responses regarding the Ones registered in their virgin states. To study the axial load bearing performance of reinforced column under various deficiencies – 20%,40%, 60%... parameters taken for study are different deficiencies of the columns, number of layers and number of bolts and their pattern output research like ultimate axial load, ultimate deflection, load vs deflection comparison, Percentage of strength are studied.
Keywords: Column damage, HCP, Column joint, Repair, Interaction, Confinement, CFRP

I. INTRODUCTION

Composites are now common materials in retrofitting existing under-designed RC structures. The use of Fiber Reinforced systems has been on the focus of many studies since the early 70s even though a broad use of the technique started much later. Until lately, composite materials used for rehabilitation of concrete or masonry structures were generally applied through organic matrix (epoxy-based), guaranteeing a significant improvement for both resistance and ductility properties of the strengthened element.

Confinement is one of the main techniques used to retrofit axially loaded elements. Fiber Reinforced polymer (FRP) systems permit to easily confine existing RC elements by wrapping continuously or partially FRP strips, enhancing their axial strength and ductility without a significant increase in weight or lateral stiffness. Confinement by FRP systems has proven to be effective also for repairing RC elements damaged due to excessive axial loading or seismic events. Several research works have been carried out to investigate repair effectiveness of FRP confinement both on plain and reinforced concrete. Saadatmanesh et al investigated the effectiveness of repairing earthquake-damaged RC columns with FRP wraps. Four different specimens were tested under lateral cyclic loading to simulate the seismic effect on the elements, which were then repaired through FRP wraps and retested under the same protocol. In general, all repaired specimens performed well under the cyclic loading test, showing an increase in lateral strength varying from 1 to 38%. Li et al. conducted an experimental campaign on 24 RC specimens tested under uniaxial compression that were formerly damaged through split tensile tests. On the other hand, Faleschini et al. investigated experimentally the effectiveness of FRP composites to repair severely damaged exterior RC beam-column joints, verifying also the contribution of the FRP system on the overall shear capacity of the joint through some analytical models. Some researchers have also experimentally investigated the effect of the combined FRP-steel confinement on the behavior

FINITE ELEMENT MODELLING OF SMART STRUCTURES

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INTRODUCTION

Health monitoring is the continuous measurement of the loading environment and the critical responses of a system or its components. Health monitoring is typically used to track and evaluate performance, symptoms of operational incidents, anomaliesdue to deterioration and damage as well as health during and after an extreme event (Aktan et al, 2000). Health monitoring has gained considerable attention in civil engineering over the last two decades. Although health monitoring is a maturing concept in the manufacturing, automotive and aerospace industries, there are a number of challenges for effective applications on civil infrastructure systems. While successful real-life studies on a new or an existing structure are critical for transforming health monitoring from research to practice, laboratory benchmark studies are also essential for addressing issues related to the main needs and challenges of structural health monitoring. Health monitoring offers great promise for civil infrastructure implementations. Although it is still mainly a research area in civil infrastructure application, it would be possible to develop successful real-life health monitoring systemsif all components of a complete health monitoring design are recognized and integrated.

A successful health monitor design requires the recognition and integration of several components. Identification of health and performance metric is the first Component which is a fundamental knowledge need and should dictate the technology involved. Current status and future trends to determine health and performance in the context of damage prognosis are reported by Farrar et al. in a recent study (2003).

New advances in wireless communications, data acquisition systems and sensor technologies offer possibilities for health monitoring design and implementations (Lynch et al, 2001, Spencer, 2003). Development, evaluation and use of the new technologies are important but they have to be considered along with our "health" and "performance" expectations of the structure. Yao (1985) defined the term damage as a deficiency or deterioration in the strength of the structure, caused by external loading or environmental conditions or human errors. So far visual inspection has been the most common tool to identify the external signs of damage in buildings, bridges and industrial structures. These inspections are made by trained personnel. Once gross assessment ofthe damage location is made, localized techniques such as acoustic, ultrasonic, radiography, eddy currents, thermal, or magnetic field can be used for a more refined assessment of the damage location and severity. If necessary, test samples may extract from the structure and examined in the laboratory. One essential requirement of this approach is the accessibility of the location to be inspected. In many cases critical parts ofthe structure may not be accessible or may need removal of finishes. This procedure of health monitoring can therefore be very tedious and expensive. Also, the reliability of the visual inspection is dependent, to large extent, on the experience of the inspector. Overthe last two decades number of studies have been reported which strive to replace the visual inspection by some automated method, which enable more reliable and quicker assessment of the health of the structure. Smart structures was found to be the alternative to the visual inspection methods from last two decades, because of their inherent 'smartness', the smart materials exhibit high sensitivity to any changes in environment.

STRUCTURAL HEALTH MONITORING (SHM): AN OVER VIEW

Increase in population necessitated the more civil infrastructural facilities in every country. Wealth of the nation can be represented by well conditioned infrastructure.Civil engineering structures under go damage and deterioration with age and due to natural calamities. Nearly all in-service structures require some form of maintenance for monitoring their integrity and health condition. Collapse of civil engineering structures leads to immense loss of life and property. Appropriate maintenance prolongs the lifespan of a structure and can be used to prevent catastrophic failure. Current schedule-driven inspection and maintenance techniques can be time consuming, labor-intensive, and expensive. SHM, on the other hand, involves autonomous in-service inspection of thestructures. The first instances of SHM date back to the late 1970s and early 1980s. The concept of SHM originally applied to aerospace and mechanical systems is now being extended to civil structures. Objectives of health monitoring are as follows.

a) To ascertain that damage has occurred or to identify damage

b) To locate the damage

c) To determine the severity of damage.

d) To determine the remaining useful life of the structure.

SHM consists of both passive and active sensing and monitoring. Passive sensing and monitoring is used to identify the location and force–time–

SEISMIC ANALYSIS AND DESIGN OF MULTI STORIED BUILDING IN STEEL STRCUTURE USING IS 800 DRAFT CODE

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MASTERIOFIENGINEERING

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1. INTRODUCTION

Seismic Analysis is a subset of structural analysis and is the calculation of the response of a building structure to earthquakes. It is part of the process of structural design, earthquake engineering or structural assessment and retrofit in regions where earthquakes are prevalent.

The most important earthquakes are located close to the borders of the main tectonic plates which cover the surface of the globe. These plates tend to move relative to one another but are prevented by doing so by friction until the stresses between plates under the epicenter point become so high that a move suddenly takes place. This is an earthquake. The local shock generates waves in the ground which propagate over the earth"s surface, creating movement at the bases of structures. The importance of waves reduces with the distance from the epicenter. Therefore, there exists region of the world with more or less high seismic risk, depending on their proximity to the boundaries of the main tectonic plates

Besides the major earthquakes which take place at tectonic plate boundaries, others have their origin at the interior of the plates at fault lines. Called „intra plates" earthquakes, these less energy, but can still be destructive in the vicinity of the epicenter

The action applied to a structure by an earthquake is a ground movement with horizontal and vertical components. The horizontal movement is the most specific feature of earthquake action because of its strength and because structures are generally better designed to resist gravity than horizontal forces. The vertical component of the earthquake is usually about 50% of the horizontal component, except in the vicinity of the epicenter where it can be of the same order.

Steel structures are good at resisting earthquakes because of the property of ductility. Experience shows that steel structures subjected to earthquakes behave well. Global failures and huge numbers of casualties are mostly associated with structures made from other materials. This may be explained by some of the specific features of steel structures. There are two means by which the earthquake may be resisted:

- Option 1 structures made of sufficiently large sections that they are subject to only elastic stresse
- Option 2 structures made of smaller sections, designed to form numerous pla...

RESEARCH ARTICLE

Attention-Based Feature Fusion With External Attention Transformers for Breast Cancer Histopathology Analysis

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ABSTRACT Breast cancer, a common malignancy impacting women globally, involves the uncontrolled growth of breast cancer cells. Timely identification and accurate classification of breast cancer into non-cancerous (benign) and cancerous (malignant) categories are crucial for effective treatment planning and enhanced patient outcomes. Conventional diagnostic techniques depend on histopathological examination of breast tissue samples, a process that can be subjective and time-consuming. The problem statement revolves around developing a computational model to automatically classify images from histopathology into non-cancerous or cancerous categories, addressing the limitations of manual diagnosis. Existing methodologies leverage various machine learning and deep learning techniques, particularly Convolutional Neural Networks (CNNs) being prominently utilized due to their effectiveness in image recognition tasks. However, these methods often require substantial computational resources and can suffer from overfitting due to the complex architecture. The objective of this study is to introduce an External Attention Transformer (EAT) model that utilizes external attention mechanisms, providing an approach to breast cancer image classification. This model aims to achieve high accuracy while maintaining computational efficiency. The primary metrics to assess the model's performance include precision, recall, F1-score, and overall accuracy. The EAT model demonstrated outstanding performance achieving an accuracy of 99% on the BreaKHis dataset, indicating its potential as a reliable tool for breast cancer classification.

INDEX TERMS Breast cancer histopathology, external attention transformer (EAT) model, machine learning in medical diagnostics, histopathological image analysis, transformer models in healthcare, computational pathology, image recognition in oncology, automated medical image classification, precision oncology, AI.

I. INTRODUCTION

Breast cancer is one of the most prevalent cancers affecting women globally. It happens when cells within the breast multiply uncontrollably. The specific type of breast cancer is identified by determining which cells in the breast have become cancerous. It affects women, although it can also occur in men.

The breast comprises lobules, ducts, and connective tissue. Lobules function as the glands responsible for producing milk, and ducts act as channels that carry milk from the lobules to the nipple. The connective tissue, consisting of fibrous and fatty substances, offers structure and support [1]. Most breast cancers originate in either the ducts of the lobules.

The associate editor coordinating the review of this manuscript and approving it for publication was Seifedine Kadry.

Machine Learning Algorithms for the Detection of Threats in IoT Healthcare

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Abstract— IoT (Internet of Things) technology enables the connectivity and communication of healthcare-related equipment, medical devices, and sensors. This connectivity enables better monitoring, data collecting, and analysis, which leads to better patient outcomes and more effective healthcare delivery. However, with the rising use of linked devices, it is critical to detect and prevent Cyberattacks in order to secure sensitive patient information. In order to tackle this problem, the article delves into the application of machine learning methods like Support Vector Machine (SVM), K-Nearest Neighbor (KNN), Logistic Regression (LR), Random Forest (RF), and Naive Bayes (NB), These algorithms were evaluated using the WUSTL EHMS2020 dataset and demonstrated the highest level of accuracy.

Keywords—Cyberattack, WUSTL EHMS2020, Machine Learning, KNN, SVM

I. INTRODUCTION

The Internet of Things (IoT) is transforming several industries, including healthcare, by allowing data to be collected and exchanged between various medical devices, sensors, and systems. IoT technology applied in the healthcare sector, often referred to as "IoT healthcare" or "Healthcare IoT" holds promise for enhancing patient care, streamlining operational processes, and fostering progress in medical research. Wearable fitness trackers, smartwatches, and medical sensors have the capability to continuously track patients' vital signs, activity levels, and medication adherence. This real-time data empowers healthcare providers to actively monitor patients' well-being and intervene, when necessary, thereby enhancing chronic disease management and reducing hospital readmissions. IoT is utilised to build smart healthcare facilities with networked devices and systems. Automated temperature control, lighting, inventory management, and patient flow optimization are all part of this.

A specific subset of the larger Internet of Things, the Internet of Medical Things (also known as IoMT) is devoted to connecting medical devices and sensors. Internet of Things applications enable medical apps to remotely monitor patient data and deliver appropriate therapy as needed. It is critical in a healthcare setting to protect patient information. A subsection of the Internet of Things (IoT) that consists of networking medical equipment and sensors together is known as the Internet of Medical Things (IoMT). Any breakdown in communication due to a cybersecurity breach can result in severe consequences for a patient, including potential loss of life. Some IoT device manufacturers offer cost-effective solutions on tight timelines, often prioritizing speed over security and inadvertently creating vulnerabilities that may allow remote access to the devices. The Internet of Things (IoT) has transformed several industries, including healthcare, by enabling data gathering and interchange from numerous medical devices, sensors, and systems. The application of IoT devices and technologies in the medical sector, also referred to as "IoT healthcare" or "Healthcare IoT," holds the promise of enhancing patient care, streamlining operational processes, and driving progress in medical research.

II. LITERATURE SURVEY

In [1] a robust Intrusion Detection System (IDS) for Internet of Medical Things (IoMT) devices was developed, utilizing Gradient Boosting Machine techniques like XGBoost, LightGBM, and CatBoost. [2] employed a network intrusion detection model based on tree classifiers. [3] utilized the Recursive Feature Elimination (RFE) and Multilayer Perceptron (MLP) methods, with RFE selecting relevant features and MLP parameter tuning through hyper-parameter optimization. Detection of cyberattacks was achieved through Random Forest, Gradient Descent, and Support Vector Machine methods [4].

The study introduced a framework known as

Performance Analysis of the Machine Learning Algorithms for the Early Detection of Breast Carcinoma

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Abstract— Breast Carcinoma, generally known as breast cancer, primarily affects women, though men can develop it as well. Because of the existence of breast tissue and exposure to female hormones, notably oestrogen, women are at a higher risk It's critical to diagnose breast tumors early. Several techniques based on machine learning (ML were used in this study to classify breast cancer using a dataset that was made available to the public. F-score, recall, precision, preciseness, and other performance metrics were used to evaluate these ML algorithms. Previous research and experimental findings indicate that Random Forest achieved the highest accuracy, with a remarkable accuracy rate of 99.12%.

Keywords—breast cancer, performance, Machine Learning, KNN, SVM

I. INTRODUCTION

When aberrant cells begin to multiply uncontrollably, cancer of the breast develops. The two most common types of breast cancer in women are spheric and duct tumours. There are two types of risk factors for breast cancer: inherited and developed. Family background, early beginning of menstruation, the late start of menopause, and dense breast tissue are examples of unmodifiable genetic variables. Obesity, smoking, and alcohol usage are all environmental factors that can be modified [1]. The success of breast cancer treatment is dependent on early detection. Mammograms, which are X-ray images of the breast, are a valuable tool for early detection of breast cancer. The competent radiologist assesses and examines screening mammograms. Breast cancer is most common in the Chinese and Malaysian populations, respectively.

Machine learning, a branch of artificial intelligence, has the capacity to analyze vast volumes of data. This capability makes it a potent tool for diagnosing breast cancer, as it can uncover patterns that might be challenging for human radiologists to identify. Deep learning has been demonstrated to be more accurate than standard methods for detecting breast cancer. The main challenge is to provide comprehensive and efficient diagnostic and treatment services. Mammography, a widely used imaging technique, can identify normal, non-cancerous (benign), or cancerous (malignant) abnormalities, and it is among the primary modalities employed for early breast cancer screening.

The method primarily improves image categorization, tumour prediction, and performance and analysis. This is performed by categorizing certain areas of the image that have a distinct and distinct appearance. These areas are differentiated by a variety of tissues that can be employed to improve cancer prediction precision. This could lead to earlier detection and better patient outcomes.

Breast cancer symptoms vary greatly between persons, and some people have no symptoms at all, especially in the early stages of the disease [2]. Regular self-examinations and testing, such as mammography, are critical for early detection. It is, however, critical to be aware of potential breast cancer signs, which may include: The existence of a mass or malignant in the breast is an often noticed early symptom of breast cancer, albeit pain is not always evident.; Changes in the size, shape, or contour of one or both breasts can be an indication of breast cancer; Check for redness, dimpling, puckering, or discomfort on the breast. The skin may have the appearance of an orange peel; Changes in the nipple, such as it being inverted (turned inward), retracting, or changing location; Unusual nipple discharge, especially if bloody, should be checked; While breast discomfort is a frequent symptom that is typically unrelated to cancer, persistent, unexplained pain in the breast or armpit can be concerning; Unexplained swelling or enlargement of one breast may be an indication of malignancy; Underarm Axillary Swelling or lumps in the underarm area may be signs of breast cancer that has migrated to the lymph nodes.

A Deep Learning Approach for Accurate Potato Leaf Disease Prediction

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Abstract: In the provided field instruction, deep learning is described as mimicking the brain using artificial neurons to automatically extract layered patterns from diverse data, such as images and text, for tasks like disease recognition and language translation. The challenges include data availability and quality, particularly in collecting extensive and high-quality images of potato leaves with varying diseases and growth stages. Model generalizability is highlighted as a concern, with a focus on convolutional neural networks (CNNs), such as VGG16 and ResNet, for image recognition. The proposed system suggests leveraging transfer learning by utilizing pre-trained models for potato disease classification and employing data augmentation to artificially expand datasets. Emphasizing the increase in quantity and diversity of training data is recommended to enhance the model's ability to generalize to unseen data and improve robustness in various scenarios.

Keywords: Potato, Leaf, Disease, Prediction, Deep learning, CNN, Agriculture, Crop health, Image classification

I. INTRODUCTION

In the ever-evolving landscape of technology, deep learning stands out as a beacon of innovation, drawing inspiration from the intricate neural processes of the human brain. This transformative technology employs artificial neurons to autonomously decipher complex patterns across diverse data types, including images and text. Beyond its applications in disease recognition and language translation, deep learning holds immense promise in revolutionizing the agricultural domain.As we delve into the intricacies of this groundbreaking technology, its ability to autonomously recognize intricate patterns becomes particularly significant in the context of agriculture. The profound potential of deep learning unfolds in its capacity to revolutionize the identification and understanding of diseases affecting potato crops. The implications extend beyond mere pattern recognition; they reach into the realms of crop health, yield optimization, and sustainable agricultural practices. However, with great potential comes formidable challenges.

The field instructionastutely identifies key obstacles, placing a spotlight on the critical importance of data availability and quality. In the realm of potato disease recognition, acquiring high-quality images depicting diverse diseases and growth stages emerges as a pivotal challenge. This hurdle, when addressed with precision, becomes the linchpin for unlocking the full potential of deep learning in agriculture.One of the primary challenges highlighted is the potential bottleneck of model generalizability.

Recognizing the unique characteristics of potato varieties and the dynamic environmental conditions in which they thrive, the instruction strategically emphasizes Convolutional Neural Networks (CNNs). With the spotlight on CNNs, renowned architectures like VGG16 and ResNet emerge as powerful tools, specifically tailored for effective image recognition in the agricultural landscape. To address these challenges head-on, the proposed system introduces strategic solutions that go beyond conventional approaches. The spotlight falls on transfer learning – a tactical maneuver involving the utilization of pre-trained models.

This proven approach, particularly effective in the nuanced domain of potato disease classification, marks asignificant leap forward in optimizing the performance of deep learning models.In parallel, the instruction underscores the indispensable role of data augmentation. By artificially introducing variations into datasets, this technique becomes a cornerstone in enhancing the model's generalizability. This nuanced strategy is not merely a technical requirement; it signifies a profound understanding of the intricacies involved in training a model to navigate the complexities of real-world agricultural scenarios.

UTILIZING ARTIFICIAL INTELLIGENCE FOR ADVANCED STOCK MARKET PREDICTION: A COMPREHENSIVE ANALYSIS OF ALGORITHMS AND DATA MODELS

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Abstract: The intricate dance of the Indian stock market demands innovative solutions to unveil its future trends. This research project embraces the transformative power of deep learning, wielding it to construct a robust predictive model from a rich tapestry of historical market data, economic indicators, and sentiment analysis. Rigorous evaluation metrics will be our compass, guiding us towards a model that captures market movements with unparalleled accuracy. But the journey doesn't end there. We envision this research to illuminate the potential of deep learning in financial forecasting, empowering investors with data-driven insights and guiding policymakers towards informed strategies. Ultimately, we strive to write a new chapter for the Indian market, one marked by stability, predictability, and flourishing investment opportunities. This research is not just an exploration of data, but a quest to unlock the potential for a brighter future, fueled by the power of deep learning.

Keywords: Stock Market Prediction, Deep Learning, ARIMA (Auto Regressive Integrated Moving Average), Predictive Modeling, Technical Indicators, Financial Time Series Analysis.

I. INTRODUCTION

In the fast-paced and intricate world of financial markets, the ability to foresee stock price movements stands as a critical pursuit for investors and analysts alike. Amidst the multifaceted factors that shape financial markets, the study aims to develop a sophisticated predictive model capable of analyzing historical data with precision, identifying subtle patterns, and offering informed insights into future stock prices. With the United States' financial landscape as a reference point, characterized by its dynamic nature influenced by a myriad of variables, the research seeks to adapt and refine deep learning methodologies to navigate the intricacies of the Indian market.

Recognizing the inherent complexity of the Indian stock market, this research places a strong emphasis on understanding and addressing the unique challenges it presents. Unlike traditional methods, which often struggle to capture the nuanced dynamics of stock price movements, the study turns to the capabilities of deep neural networks, particularly recurrent neural networks (RNNs) or long short-term memory networks (LSTMs), renowned for their adeptness in handling temporal complexities embedded in financial time series data.

Anchored on a foundation of comprehensive data collection and preprocessing, spanning various financial instruments and indices within India, the research aims to build a robust predictive model primed to unravel the intricacies of the market and offer valuable insights to stakeholders.

As financial markets continuously evolve amidst a backdrop of interconnected variables, the demand for advanced forecasting tools becomes increasingly urgent. Beyond solely relying on historical data, this study explores the potential integration of external factors such as macroeconomic indicators, news sentiment, and market sentiment to enhance the predictive capabilities of the model further.

SMART FASHION RECOMMENDATION SYSTEM USING CNN RES-NET 50

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Abstract : A fashion recommender system is a methodology that is based on Artificial intelligence usually associated with machine learning that suggests clothing items to users based on their preferences and previous shopping behavior. A recommender is used to predict the preference and ratings of the user for an item based on the profile and the search history of the user. It is a powerful technique in terms of business because Google, Facebook and e-commerce websites use recommender systems to expand their business. There are mainly two types of recommender system that exists. First, Content-based filtering is based on the profile of the user and the featurization of items, and Second, Collaborative filtering involves the user's past behavior and the user's previous utility with the different items. Our proposed system aims to develop a fashion recommender system using a pre-trained Res-Net 50 CNN model. We strive to build a fashion recommender system that is programmed to recommend the predicted clothing images or items from a large set of collected images. Our proposed system is implemented using collaborative filtering techniques and also considers the privacy and security concerns related to collecting and storing user data. Our proposed system is expected to provide accurate and diverse recommendations to users, thereby assisting them in their clothing choices.

IndexTerms - Res-Net 50, CNN (Convolutional Neural Network), Collaborative Filtering, Privacy, AI, Image Classification.

I. INTRODUCTION

Machine learning is a subfield of Artificial Intelligence that involves the development of algorithms and statistical models that can learn from data and make predictions without the need for explicit instructions. One of the primary applications of machine learning is in building recommendation systems, which use big data and user behavior to provide personalized recommendations to users.

There are two main types of recommendation systems: Content-Based Filtering and Collaborative Filtering. Content-Based Filtering relies on user profiles and product descriptions to generate recommendations, while Collaborative Filtering looks for patterns in user behavior to generate recommendations. A hybrid filtering approach that combines both methods can create a more diverse and personalized set of recommendations. Generally, there are two types of recommended system. Namely, Content Based Filtering that is based on the profile of the user and Collaborative Recommended system aggregates ratings, recognize similarity between the users on the basis of the ratings and recommend new item to the user.

AI web scraping increases the speed of data extraction, and is able to classify data in a matter of hours, which can take weeks if collected manually. Web Scraping is the act of programmatically retrieving data from the internet. Web Scraping in its most basic form lacks any sort of generalizing capabilities, when a website is altered, even slightly, the scraper breaks. The basic principles of Web Scraping are to create a program that in an automated fashion retrieves unstructured data from a website and adds structure to it.

From the last few years, with the increase of online platform such as Amazon, Netflix and other E-commerce websites. Recommendation system plays a major role in our day-to-day life. Switching from offline shopping to online shopping, recommended system are inevitable in our virtual life.

The three types of recommender systems are:

- Content Based Filtering technique depends on the description of the product and user profile. Comparatively, this method is superior for the situation where there is known data of the various users such as name, age, location and description but not the user. Content based recommendation system learns the likes and dislikes of a used based on featurization. This technique involves analysing the content of items to generate recommendations

- Collaborative filtering: This technique involves finding patterns in user behavior and generating recommendations based on those patterns. It does not rely on the content of the items being recommended. One of the problems that these systems

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A Novel CAD Structure with Bakelite Material-Inspired MRI Coils for Current Trends in an IMoT-Based MRI Diagnosis System

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Abstract

The research work proposed for the X-band microstrip line-based magnetic resonance imaging (MRI) coils has been accomplished with coplanar waveguide feeding and ha highlighted the design parameters to be employed in the internet of medical things (IoMT) features. The proposed research has focused on the wireless body area networks (WBAN) phenomenon in simulated human organs. It has been employed to study the electro-magnetic (EM) parameters of the simulated human organ and the functioning of wearable MRI coils on the human body. Therefore, these coils have been configured in triangle-shaped hierarchical structures, and each layer has been printed on both sides of the conductive strips. These proposed coils utilize a Bakelite substrate with a 1.6-mm thickness and an equivalent dielectric strength of 1.2. It has $69.9 \times 85.2 \times 1.6$ mm^3 dimensions and was fabricated using microwave integrated circuits (MIC). These coils have been generated at 8 GHz and this spectrum has been justified with the microwave X band (8–12 GHz) using the standard measured results. Hence, these coils have demonstrated 45.81-dB signal attenuation with a 1-dB standing wave ratio (SWR). Therefore, this research has extended to the different kinds of virtual simulation scenarios in diagnosis applications. Additionally, the research delves into the electromagnetic characteristics, encompassing electric and magnetic fields, the specific absorption ratio (SAR), and temperature. These characteristics are thoroughly analyzed using MRI phantom models within virtual environments. As a result of this comprehensive analysis, the suitability and efficacy of these MRI coils have met rigorous standards. These coils are highly demanded by complicated systems functioning in these bands for IoMT and MRI diagnosis applications.

Keywords Microstrip patch antennae · MRI coils · RF surface coils · MRI imaging methods · hyperthermia · IoMT · RF therapy

Introduction

The medical industry continues to grow rapidly on a worldwide scale in the internet of medical things (IoMT) market. It includes a variety of healthcare components with associated electronics and information technology applications.

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For example, it offers machine-to-machine communication. These medical devices are connected to the cloud infrastructure under various wireless architectures, such as WiFi, WPAN, WBAN, etc. The IoMT highlighted the comparative analysis of captured data with medical big data in various parts of the world and also provided contactless treatment due to tangible reality. IoMT employs wireless connectivity on single-point care devices practiced by medical professionals, healthcare professionals, and the medical industry. The microstrip patch antenna is a backbone component used in IoMT devices. It plays a major role in offering interaction between the human body and external devices.[1,2] In the modern world, the medical industry provides numerous IoMT products. The global internet, which integrates a variety of physical parameters, or "things," is known as the "Internet of Things". Hence, these IoMTs primarily provide self-care healthcare systems. The medical professionals access the patient's real-time data through the IoT.[3] IoMT utilizes

Hybrid whale artificial bee colony optimized improved Landsman converter for renewable energy-based microgrid application

P. Sankar[1] · A. Sheela[2]

Abstract

A major challenge with the integration of renewable energy sources (RES) into microgrids is their inherent variability and intermittency, affecting the power supply's reliability and quality. Photovoltaic (PV) and wind power conversion systems (WECS) are two examples of RES. The hybrid optimization and control techniques addressed in this work contribute to stable, reliable and efficient microgrid operation, which is essential for the successful integration of RES and the overall resilience of energy systems. Enhancing a PV system's performance within a hybrid energy microgrid is the main goal of this effort. Microgrid components consist of a PV system, a doubly fed induction generator (DFIG)-based WECS and a supercapacitor because power generated from PV and WECS sources is intermittent. To effectively manage the PV system's output, a control strategy is employed using an improved Landsman converter and a hybrid whale artificial bee colony optimization (WABCO)-based proportional–integral (PI) controller. Pulse width modulation (PWM) rectifier coupled to the WECS produces a DC output that is stabilized with the help of the PI controller. A synchronous PI current controller approach is also utilized to synchronize grid voltage. The proposed control methodology is validated through comprehensive simulations conducted in MATLAB, demonstrating the dependable and consistent operation of the designed microgrid.

Keywords DFIG-based WECS · PV system · WABCO algorithm-based PI controller · PI controller · Grid voltage synchronization · Improved Landsman converter

1 Introduction

A microgrid is generally described as small-scale interlinked structure, which encompasses many distributed energy resources (DERs) that are basically interfaced with power electronic converters, energy storage devices and distributed loads [1, 2]. The microgrids are developed mainly to fulfil local energy demands, and they have the ability to function in two different modes, namely grid-connected and islanded modes [3–6]. The application of microgrid has grown rapidly during the recent times owing to its advantages over traditional centralized power systems of power quality,

reliability and flexibility. It also offers local ancillary services with low transmission losses and incorporate significant amount of RESs and loads for establishing low- and medium-voltage distributed power systems [7–10]. Traditional energy sources, such as nuclear power, and fossil fuels have historically been the primary providers of electricity, despite their environmentally unfriendly nature. These conventional sources are typically situated at a considerable distance from the actual points of electricity consumption. The drawbacks associated with these traditional methods include environmental concerns and substantial power losses during the long-distance transmission of energy. Consequently, there is a growing emphasis from both researchers and industries on exploring alternative power generation solutions, with a particular focus on renewable energy sources [11]. The awareness about the environmental consequences that occur due to fossil fuel-based energy generation causing emission of greenhouse gases coupled with the need for a more sustainable energy sources has prompted the energy sector to shift its focus to RESs [12]. Due to their widespread availability and steadily decreasing investment costs, wind and solar energy

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ENERGY MANAGEMENT FOR FUEL CELL HYBRID ELECTRIC VEHICLE

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ABSTRACT

The use of internal combustion engines is being increasingly scrutinized because of their high emission levels. The research and development of electric and hybrid vehicles has been prompted by the demand for cleaner energy technologies. Fuel cell vehicles are gaining attention because they are clean, sustainable, and have a high energy density. Thus, fuel cell hybrid vehicles have the potential to compete with vehicles powered by internal combustion engine in the future, yet there are challenges for fuel cell such as slow dynamics requiring that their operation together should be managed favourably. The main aim of the thesis is to tackle the issue of energy management in fuel cell vehicles. The power train model is the first thing developed for this purpose. Deep deterministic policy gradient (DDPG) is a model-free reinforcement learning algorithm used to achieve efficient energy management. The energy management strategy focuses on running the fuel cell in its high efficiency range while limiting the deviation of state of charge of the lithium-ion battery from a target value. It is found that the DDPG agent trained simply with step power inputs can achieve up to 2.7% less energy consumption compared to commonly used rulebased energy management strategies while maintaining the state of the charge of the battery within a certain interval. Our findings indicate that the DDPG algorithm has a promising potential for use in such applications.

DESIGN OF AN OPTIMIZED MULTI LEVEL INVERTER WITH MINIMAL SWITCHES EMPLOYING NLC TECHNIQUE

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Abstract: This paper presents a novel multilevel inverter topology for overcoming some of the limitations of the existing topologies. The proposed MLI has a reduced quantity of power electronic switches, thus making is more efficient. The architecture may be expanded to a modular higher voltage level inverter, which uses less DC supplies and uses them correctly without the need of an extra H-bridge circuit. To determine their optimum capabilities, the proposed inverter parameters' simplified formulas are constructed. Furthermore, the extended model of the proposed architecture is used to generate an optimum PMLI design for lowering the total standing voltage (TSV) of the inverter. To demonstrate its advantages over recent MLIs of similar types, comparison studies are given to justify the proposed inverter. Through proper simulation, the MLI obtained a higher efficiency of 95.54%. On the other hand, the optimized 17-level version of PMLI obtained total harmonic distortions (THD) of only 5.15% which successfully attained IEEE 519 standard performance.

Index Terms - Inverter, PMLI design ,Total standing Voltage

I. INTRODUCTION

Multilevel inverters (MLIs) have gained significant attention in recent years and are widely studied in the field of power electronics. MLIs have several advantages over traditional two-level inverters, such as reduced harmonic distortion, improved voltage waveforms, and increased efficiency. Currently, MLIs are being researched and developed for a variety of applications, including renewable energy systems, electric vehicles, and high power industrial drives. In addition, several topologies of MLIs have been proposed and evaluated for their performance, including the Neutral Point Clamped (NPC) inverter, the Flying Capacitor (FC) inverter, and the Cascaded H-Bridge (CHB) inverter. There is ongoing research in the field of multilevel inverters, with an emphasis on overcoming the limitations of current designs, increasing switching frequency, improving efficiency, and reducing cost.

A proposed topology of a minimized component 9-level inverter constructed with just two DC supplies is presented in this project. Many of the suggested low component multilevel inverters (MLIs) use DC

Fetal head biometrics measurements using convolutional neural network and mid-point ellipse drawing algorithm

P. Nisha Priya[1] · S. Anila[2]

Abstract

During pregnancy, it is considered to be necessary to monitor and measure fetal development. There are different fetal biometrics among which the fetal head biometrics are useful for finding out the fetus age, diagnosing malformations, and lowering the fetal mortality rate. Accurate measurement of fetal biometry is difficult because of a variety of factors such as the ultrasound image's low quality, inter-and intra-observer variability, and human error as a result of manual estimation. As a result of these issues, new-born babies are born with defects. To track and test fetal head biometrics, several automated and semi-automated methods have been proposed. However, most of the techniques are inaccurate, and the procedure is time-consuming. This work presents the creation of a new process for the segmentation of two-dimensional ultrasound images of fetal skulls based on convolution neural network combination U-Net architecture (UNet-C) and finding the circumference of the fetal head using the Midpoint ellipse drawing algorithm. A new strategy is developed based on U-Net for pre-processing, drop-out, evaluation of different activation layers, activation function, data augmentation, loss function and depth of the network. The computational results reveal the feasibility of the proposal in the correct segmentation of fetal skulls and head circumference measurements and achieved an accuracy of 98.55%. Validation loss and overall loss is calculated to be 0.287 and 0.0390. Validation accuracy and overall accuracy is calculated to be 0.9891 and 0.9840. The mean difference of the proposed method is between − 1.68 and 1.10 and the mean absolute difference is − 1.5 to 0.97. The proposed method is used to detect fetal head and measure circumference of head (HC), bi-parietal diameter (BPD) and occipito frontal diameter (OFD) of a fetus.

Keywords Convolutional neural network-combination · Head circumference · Biparietal diameter · Occipito frontal diameter · Mid-point ellipse drawing algorithm

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Smart Data Processing for Energy Harvesting System Using Ambient Noise with Deep Learning

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Abstract: Electrical energy makes our lives simpler and fuller. One of the not much researched and developed but abundantly available non-conventional energy sources is noise. The method of conversion from sound energy to electrical energy based on the Piezo Electric principle is one of the efficient ways. To recognize the maximum energy efficiency the noise is classified based on signal processing. The proposed system classifies ambient noise that produces high energy output from the piezoelectric material. The process begins with the noise files, convert them into spectrograms, generate the attention part, feed it to the backbone, VGG16-CNN, and produce predictions about the class to which the noise belongs.

Keywords: Noise classification, Neural networks, Deep learning, Energy Harvesting.

I. INTRODUCTION

Sound is a mechanical wave which is carried over a medium. Commonly, the properties of sound can be understood through its characteristics such as amplitude, frequency, speed, direction and pressure. When this sound becomes undesirable it causes harm to humans. Different alternatives have been used to fully neutralize the noise and which is indeed better for all mankind. There has been ample amount of approaches that were used to sort out this issue. This undesirable form of energy can be converted into useful electricity which could benefit mankind. This could be achieved by using Peizoelectric materials. To get the maximum amount of electricity, the frequency has to be high. This requires classification of the noise from the environment based on its frequency. In order to obtain this setup, classification models can be used. Particularly, deep convolutional neural networks (CNN) are very much suitable to the problem of environmental noise classification. Deep learning is almost similar to Machine learning but the main difference between deep learning and machine learning is, that machine learning models functions efficiently but the model requires some leading from our side. Whereas, the neural networks tries to learn the functioining of the human brain by learning from huge amount of data. This model comproises of three types of layers: input, hidden layers, and output. The signal is received by the input layer, the processing is done by the hidden layer and finally the output layer makes a decision or predicts about the input data. The computation is done by the interconnected nodes. To construct an ML model that can do predictions, specification of what input features the model will analyse in predicting an output is done. The neural networks learn the features right from the data by which they are trained, so there is no need to get the features manually.

The introduction of convolution neural networks has been a game changer for the field of Image Classification. Now this is utilized to get higher level of the features in the image. When the eyes are looking at a picture, our brain takes in large amount of data. Each neuron in our brain functions in its own receptive field and is attached to other neurons in such a manner that they cover the complete visual field. Similar to a neuron that reacts to the changes only in the restricted region of the visual field that is the receptive field, each neuron in a CNN initiates data analysis only in its receptive field. The layers of the CNN are arranged in a manner that they detect basic patterns first and more complex patterns later on.

II. RELATED WORK

This section will present the other works that have been conducted by several people regarding the conversion of ambient noise into electricity by the Deep Learning method. The main objective of this section is to compare the work between various works and find the problem for improvement. The work done is analyzed by different authors in this field and added our work to it. The work done by different authors is as follows:

Mustaqeem, Soonil Kwon, *"CNN-Assisted Enhanced Audio Signal Processing for Speech Emotion Recognition"*, proposed an artificial

BRAIN MEMORY CAPTURING

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ABSTRACT

Brain memory capture is a futuristic technology that records brain waves and signals, aiming to convert human memories into hardware memory for use in AI robots. These robots can then mirror human behavior in multiple scenarios. Advanced signal sensing and enhancement technology are used to collect precise EEG signals, offering insights into cognitive states during various tasks. EEG-based Brain-Computer Interface (BCI) enables control of multiple AI robots simultaneously and holds potential for capturing human thoughts and even dreams. Recent advancements in neuroscience and technology, such as wearable sensors and machine learning, have driven interest in EEG-based BCIs for healthcare and translational applications. EEG, which records brain activity non-invasively, is a valuable tool for characterizing brain function in various contexts.

Keywords: Brain Computer Interaction, Electroencephalogram And Brain Memory Capture.

I.   INTRODUCTION

Brain-Computer Interfaces (BCIs) are computer-based systems that acquire and interpret brain signals, translating them into commands for controlling external devices without using traditional pathways like peripheral nerves or muscles. BCIs strictly deal with signals from the central nervous system (CNS). For instance, voice or muscle-activated systems are not considered BCIs. Additionally, an Electroencephalogram (EEG) alone is not a BCI, as it merely records brain signals without generating output for interaction with the environment. BCIs should not be confused with mind-reading devices; they enable users, after training, to generate brain signals encoding intentions, which are then decoded by the BCI to control external devices. BCIs respect user intention and cooperation. EEG is a common non-invasive technique for mapping brain signals, which has evolved from subjective visual inspection to quantitative analysis methods. Research in BCI has grown significantly, with Information Transfer Rates (ITR) improving from 5-25 bits/min to 84.7 bits/min, mainly benefiting individuals with conditions like "locked-in" syndrome. Advances in technology and interdisciplinary research have fueled BCI progress.

The initial concept of brain memory capture introduces an innovative transmission channel that doesn't rely on the traditional output paths of peripheral nerves and muscles within the brain. In its early stages, this concept involved the measurement and interpretation of brainwave signals to control a prosthetic arm and execute specific actions. Brain-Computer Interface (BCI) systems are designed to understand and capture human cognitive patterns through brain activities. They utilize recorded brain activity to establish communication with computers, enabling the control of external devices or environments in alignment with human intentions. This capability extends to tasks like controlling wheelchairs or robots, making BCIs a valuable technology for enhancing the quality of life for individuals with physical disabilities. By bridging the gap between human cognition and artificial intelligence, brain memory capture opens doors to a new era of human-machine collaboration and understanding. As research continues and technology evolves, the boundaries of what we can achieve with brain memory capture are bound to expand, paving the way for exciting discoveries and innovations in the realm of brain-computer interfaces and cognitive science.

II.   METHODOLOGY

Hardware

A MODEL FOR DYNAMIC FREQUENCY ADJUSTMENT OF MONITORING BASED ON CLOUD SECURITY

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ABSTRACT

The study addresses the important issue of cloud security in organizations that rely on cloud services. It introduces a dynamic monitoring frequency tuning model designed to improve cloud security without compromising performance. This model combines machine learning and cloud security measures to continuously assess security risks and adjust monitoring frequency accordingly. Simulations using real data demonstrate that the model strikes a better balance between safety and performance than traditional monitoring methods. Essentially, the proposed model provides a practical solution to improve cloud security while minimizing performance disruptions.

Keywords: Cloud security, Dynamic monitoring, Machine learning, Performance optimization.

I. INTRODUCTION

The article discusses the growing threat of cyberattacks in the digital age, especially intranet attacks, in the context of online financial transactions and network usage. society is increasing. It highlights vulnerabilities in existing security measures and attackers' use of sophisticated tools. The article proposes a new approach to monitor and identify cyber-attacks, focusing on protecting specific target systems. This approach classifies network elements into whitelists, gray lists, and blacklists for threat analysis and protection. It also provides an example of how this approach can prevent Man-in-the-Middle attacks by monitoring the movement of data packets. Essentially, this document provides a comprehensive solution to address the growing cybersecurity challenges in today's digital world.

II. METHODOLOGY

System Overview

The document presents the intrusion detection process using host-based intrusion detection systems (HIDS) and network-based intrusion detection systems (NIDS). It describes a situation involving a suspicious third-party intruder in a network consisting of three interconnected routers and systems. The data transfer starts from the server connected to Router 3, goes through Router 2, and to the organization's system connected to Router 1. The organization's system has an IP address of 192.168.1.2, which is connected to Router 1. connected to Router 1 (IP address 10.1.1.1). The attacker lies between Router1 and Router3 with an IP address of 192.168.2.2. Communication between the attacker and Router2 takes place through the interface IP address 192.168.2.1. Router2 has two different IP addresses 10.1.1.2 when transmitting data to Router1 and 20.1.1.2 when transmitting data to Router3. The data flow from the server to the organization is closely monitored, where the attacker intercepts the data packets through Interface 2. The analysis focuses on the path between the attacker and Router 2, where the Malicious signatures affect the network and MAC layers. Router 3 connects to the server (IP address 192.168.3.2), thus providing connectivity to the organization, interface 3 has IP address 192.168.3.1. The figure in the document illustrates an attacker injecting malicious code, which requires transmission layer analysis to detect threats and monitor vulnerabilities because of the large amount of data transferred in compromised scenario.
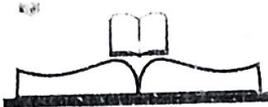
System Specification

Network traffic sniffing can be done on any network, regardless of the operating system used in the system. Each stable version of the tools used is tested against three major platforms:

- Linux 2.6 (x86, ppc)
- Windows XP/2003/Vista/2008/7
- MacOS X 10.4 (x86, ppc)

REAL TIME MACHINE LEARNING DETECTION OF HEART DISEASE USING BIG DATA APPROACH

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ABSTRACT

According to a recent report by the World Health Organization, heart-related disorders cause 17.9 million deaths per year and are on the rise. The purpose of this study is to analyses different data mining approaches, particularly Naive Thomas Bayes, Random Forest Classification, call trees, and Support Vector Machines are used to predict cardiopathy using a qualified dataset that includes various parameters such as gender, age, type of pain, blood sugar, and pressure level. Finding connections between the dataset's many properties using high-quality data processing techniques is a key component of the research, which also involves treating the attributes appropriately to forecast the likelihood of a cardiopathy. These machine learning approaches forecast illnesses with a high degree of accuracy in a shorter amount of time, which can save the loss of important lives around the globe.

Keywords: Naive Bayes, Random Forest, and Support Vector.

I.   INTRODUCTION

II.   Biggest problems facing humanity on the planet is health. Based on the report of the World Health Organization (WHO), having one's own health is a basic human right .Thirty-one percent of all deaths worldwide are related to heart disease.Due to the lack of diagnostic tools, physicians, and alternative resources capable of accurately diagnosing and treating organ-affected patients, detecting and treating cardiovascular diseases is extremely difficult, especially in underdeveloped countries. In light of this problem, engineering and machine learning methods are now being used to create software that helps doctors detect cardiovascular diseases early. Mortality rates will be reduced through early detection of disease and identification of people at risk of cardiovascular disease. To extract important patterns and data, medical knowledge uses medical data processing techniques. Redundancy, diversity, consistency, and a strong relationship with time are all characteristics of medical data. Unfortunately, the problem of mishandling large amounts of information is becoming a serious problem. The methods and technologies for turning these bodies of knowledge into data useful for decision making are provided by data processing .This cardiovascular disease identification system will help cardiologists work faster The main goal of this study was to use several machine learning algorithms on a validated dataset to predict whether a patient has heart disease or not .perfecting the relationship between completely different characteristics.The following sections provide instructions for installing Ettercap, Wireshark, and Urlsnarf on Linux operating systems.
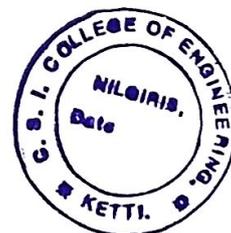
III.   METHODOLOGY

Hardware

1.   Windows 7,8,10 64 bit

2.   RAM 4GB

Software

1.   Data Set

2.   Python 2.7

3.   Anaconda Navigator

PHISHING ATTACK DETECTION USING HYBRID DEEP LEARNING

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ABSTRACT

Today, everyone is highly dependent on the internet. Everyone to perform online shopping and online activities such as online Bank, online booking, online recharge and more on internet. Phishing is a type of social engineering attack often used to steal user data including login credentials and credit card numbers. As the Internet grows in size, automatic URL detection becomes more important to provide end users with timely protection. The proposed system is developed to provide an effective and versatile malicious URL detection system with a comprehensive set of attributes that reflect many aspects of phishing webpages and their hosting platforms, including features that are difficult to fabricate by a criminal. This system will help to identify the number of suspicious emails and bringing a new level of security in the insecure world. The proposed technique exhibits optimistic results when bench marking with a range of standard phishing datasets.

Keywords: Internet Dependency, Online Activities, Phishing Attacks, Malicious URL Detection, Cybersecurity Enhancement.

I.   INTRODUCTION

The internet's widespread use has given rise to malicious activities like phishing, where attackers deceive individuals and organizations to steal sensitive information. Machine learning has proven effective in detecting phishing emails due to common characteristics. With billions of email accounts globally, attackers target email services using social engineering. This paper explores machine learning models like Multi-layer Perceptron, XGBoost, SVM, and more for phishing detection. The digital age's growth has made online transactions vital but also exposed users to cyber threats. Phishing takes various forms, including URLs and emails that mimic legitimate sources. Artificial intelligence, especially deep learning, has enhanced cybersecurity by automating feature extraction and classification. Deep learning outperforms traditional methods in identifying phishing websites, crucial for evolving threats. Despite the need to choose the right approach for specific applications, deep learning-based security solutions are increasingly employed across industries, leveraging vast datasets and neural networks for superior results.

II.   METHODOLOGY

Existing System:

Currently, the primary method for identifying phishing websites relies heavily on manual inspection, requiring users to possess a substantial degree of knowledge about cybersecurity. Users are encouraged to employ a set of guidelines to ascertain the legitimacy of websites. These guidelines include checking for the presence of a padlock symbol in the web browser's address bar and ensuring that the URL starts with 'https://' or 'shttp://'. This 's' signifies that the website employs SSL (Secure Sockets Layer) encryption, indicating a certain level of security.

Users are advised to scrutinize the overall quality of the website itself. Phishing websites often lack the polished appearance of legitimate ones. Legitimate businesses typically invest significant time and resources in creating websites with correct spelling, proper grammar, sharp graphics, and an intuitive user experience. Thus, when a website exhibits substandard features in these areas, it raises suspicion.

Users are prompted to reflect on their initial access to the website. Did they arrive there directly by entering the

POST COVID PREDICTION ALGORITHM USING RANDOM FOREST ALGORITHM

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ABSTRACT

People who were affected by COVID still didn't recover from the impact even after recovery, they struggled a lot to return to normal health conditions. People prefer doing exercises or gym workouts at their home itself. A gym workout or exercise done without following the right procedure or positions and done without the proper guidance of a trainer can damage the muscles. This application will guide the users on various body exercises with step-by-step postures. The users can keep a track of their workout data on a day-to-day basis. This application contains a list of all exercises based on different types. The users can also keep a track of the quantity of weights they used in one particular workout so that they can increase or decrease its capacity accordingly. Thus our proposed web-based gym workout application will act as a virtual guide to the users & will provide a user-friendly gym experience. In this system, the user will be able to view all kinds of exercises based on type or category.

Each Workout or exercise is well explained in detail, so that the user can check his posture and can imitate it properly. Users can enter weight or set based on current date and can add multiple entries for each date.

This system can be used by any user who wants to self-train but particularly helpful for post covid patients.

Keywords: COVID 19, Patients Data, Infection, Random Forest Algorithm , Post COVID Syndrome, Adobe Boost Algorithm.

I.   INTRODUCTION

Exercise is physical activity that is planned, structured, and repetitive for the purpose of one's body perfection. Strength or resistance training exercises make your muscles stronger. Taking out some time from your busy schedule to attend a gym daily for a workout seems difficult for working professionals & college students due to workload & studies. As a result of which many people prefer doing exercises or gym workouts at their home itself.

A gym workout or exercise done without following the right instructions or guidance of a trainer can damage your muscles and might cause issues. Also, hiring a personal trainer does not suit everyone's lifestyle.

So, to tackle this issue we have developed a web based GYM Buddy application that will act as a virtual trainer. This application will guide the users on various body exercises with step-by-step instructions with images.

Patients have residual symptoms which may or may not be causally linked to COVID 19 .In the absence of universally accepted definition, POST COVID Syndrome by consensus is defined as "signs and symptoms that develop during or after an infection consistent with COVID 19."The COVID-19 pandemic is a massive global health crises and was rapidly spreading pandemic during 2020's.

When compared to the earlier pandemics, the world has witnessed the current COVID-19 pandemic is on the top of the list in terms of worldwide coverage. This is the first time the whole world is affected simultaneously and struck strongly in every short span of time. Initially the death rate due to COVID was around 2%, which has now increased to around 4% - 6%.

The statistics do not look so severe, but the total number of cases and the rate at which these cases and the rate at which these cases are increasing day by day make the situation alarming. The main objective of COVID 19 exercise is to maintain the body and mind. It is important for controlling diabetes, lungs and high blood pressure. Due to COVID-19 pandemic maintaining bone strength and muscle tone through exercise is important. Exercise also boost immunity, reduces the risk of mental health issues like depression. Users can walk for

AUGMENTED RANSOMWARE DEFENSE STRATEGY: ADVANCED INTEGRATION OF RANGAN ALGORITHM AND HASH CONCEALMENT TECHNIQUES

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ABSTRACT

Ransomware attacks pose a significant threat to organizations, causing severe financial and operational damage. Traditional reactive defenses often fall short in mitigating the rapid evolution of ransomware tactics. This paper presents a proactive defensive strategy leveraging the enhanced Rangan algorithm and advanced hash concealment techniques to fortify cybersecurity defenses against ransomware. The enhanced Rangan algorithm utilizes machine learning to dynamically detect anomalies in file access and network activity, identifying suspicious behaviors indicative of ransomware attacks. Concurrently, advanced hash concealment methods, including quantum-resistant hash functions and blockchain technology, ensure data integrity and prevent unauthorized modifications. By integrating these approaches into a cohesive framework, the proposed strategy offers real-time monitoring, rapid response to detected threats, and robust data protection. Simulation results demonstrate a substantial improvement in ransomware detection rates, reduced false positives, and faster response times, while maintaining system performance. This proactive defense framework represents a significant advancement in cybersecurity, providing organizations with a resilient and adaptive approach to countering the pervasive threat of ransomware.

Keywords: Ransomware, CNN And RNN, Machine Learning, Blockchain Technology, Real Time Monitoring, Advanced Cryptography.

I. INTRODUCTION

Ransomware has emerged as one of the most pervasive and damaging forms of cyberattack, targeting organizations of all sizes. This introduction sets the stage by discussing the evolution of ransomware, the inadequacy of traditional reactive defenses, and the need for proactive strategies. We introduce the Rangan algorithm and hash concealment techniques as innovative approaches to ransomware defense, highlighting their potential to provide enhanced detection and data protection capabilities.

A. Background

This section delves into the technical foundations of ransomware and existing defense mechanisms. We explore the history and evolution of ransomware, from early iterations to sophisticated modern variants. Additionally, we provide an in-depth analysis of current defensive strategies, including antivirus software, firewalls, and backup solutions, and their limitations. The Rangan algorithm and hash concealment techniques are introduced in detail, explaining their principles and applications in cybersecurity.

II. METHODOLOGY

Here, we describe the methodology used to integrate the enhanced Rangan algorithm and advanced hash concealment techniques into a proactive defensive framework. Detailed steps include the implementation of the Rangan algorithm for anomaly detection in file access and network activity, and the deployment of quantum-resistant hash functions and blockchain technology for data integrity verification. We also discuss the use of machine learning models to enhance detection accuracy and adaptability.

A. Proactive Defensive Framework

This section outlines the architecture of the proposed proactive defensive framework. We present a comprehensive design that combines the Rangan algorithm and hash concealment techniques, illustrating the interaction between various components such as data sources, detection and analysis modules, response

PREDICTIVE MODELING OF DENGUE FEVER EPIDEMICS: USING A MACHINE LEARNING ALGORITHMS

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ABSTRACT

This report details the approach used in the DengAI competition, hosted by the Driven Data Foundation, to address the challenge of prognosticating the spread of dengue fever — a mosquito- borne viral complaint current in tropical and tropical regions. The competition involves using literal data, which includes environmental variables similar as temperature, rush, and moisture, to read dengue cases. The dataset handed for the test phase spans multiple times for two metropolises San Juan and Iquitos. The test data is successional and non-overlapping with the training data, taking accurate prognostications for unborn dengue cases grounded on literal patterns. Missing values in the dataset have been addressed by filling them with NaNs. This report outlines the styles and ways employed to develop a prophetic model that integrates climatic factors with literal dengue prevalence data to estimate unborn complaint spread effectively.

Keywords: Machine Learning, Dengue fever, Mosquito-borne disease, Driven Data, Linear Regression, Random Forest.

I. INTRODUCTION

Dengue fever is a mosquito- borne viral complaint current in tropical and tropical regions worldwide. The complaint manifests with symptoms ranging from mild flu- suchlike conditions — similar as fever, rash, and muscle and joint pain — to severe cases that can lead to significant health issues including severe bleeding, low blood pressure, and potentially death. The transmission dynamics of dengue fever are nearly linked to climatic variables, including temperature and rush, which impact mosquito populations and their capability to spread the contagion.

Historically, dengue fever has been most common in South- east Asia and the Pacific islets. still, in recent times, there has been a notable increase in cases across Latin America, with nearly half a billion cases reported annually. This rise in prevalence underscores the growing impact of the complaint, potentially aggravated by climate change. The relationship between climate and dengue fever is complex, but scientists decreasingly believe that shifts in climate patterns may lead to changes in the geographic distribution and frequence of dengue outbreaks, posing significant public health challenges.

To address this issue, the DengAI competition, hosted by the Driven Data Foundation, aims to prognosticate the spread of dengue fever using literal environmental data. This data includes variables collected by U.S. Federal Government agencies similar as the Centers for Disease Control and Prevention (CDC) and the National Oceanic and Atmospheric Administration(NOAA). The competition focuses on prognosticating daily dengue case figures for San Juan, Puerto Rico, and Iquitos, Peru, by assaying the correlation between climatic factors and literal dengue prevalence data.

This report details the styles and ways employed to make a prophetic model for dengue fever cases. The model utilizes literal environmental data to read unborn case figures, addressing the challenge of non-overlapping successional test data and managing missing values within the dataset. By integrating these climatic variables with literal case data, the end is to develop accurate prognostications that can prop in understanding and mollifying the spread of dengue fever in the specified regions.

NETWORK TRAFFIC ANALYSIS AND ANOMALY DETECTION IN A SIMULATED ENVIRONMENT USING EXPLAINABLE AI

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ABSTRACT

This paper presents a novel approach for network traffic analysis and anomaly detection using interpretable models in a simulated environment. We leverage Mininet to create a virtual network, generate traffic, and capture data using Wireshark. Our approach employs decision tree models for traffic analysis and rule-based systems for anomaly detection, ensuring transparency and interpretability. The results demonstrate the effectiveness of interpretable models in providing actionable insights for network management and security. Our findings suggest that interpretable AI techniques can significantly enhance the trust and reliability of network analysis tools.

Keywords: Network Traffic Analysis, Anomaly Detection, Interpretable Models, Mininet Simulation, Decision Tree, Explainable AI (XAI).

I. INTRODUCTION

Network traffic analysis and anomaly detection are critical for maintaining the security and performance of networked systems. Traditional black-box models, while effective, lack transparency, making it difficult for network administrators to tru Network traffic analysis and anomaly detection are critical for maintaining the security and performance of networked systems. Traditional black-box models, while effective, lack transparency, making it difficult for network administrators to trust and act on their predictions. This paper aims to address this issue by developing and evaluating interpretable models for network traffic analysis and anomaly detection in a simulated environment.st and act on their predictions. This paper aims to address this issue by developing and evaluating interpretable models for network traffic analysis and anomaly detection in a simulated environment.

II. RELATED WORK

The field of XAI (Explainable Artificial Intelligence) has seen significant advancements in recent years, particularly in its application to network security and traffic analysis. Numerous studies have contributed to developing interpretable models and visual analytics for understanding complex AI decisions in networking contexts.

### A. Explainable AI in Cybersecurity:

One of the notable applications of XAI in networking is in the domain of cybersecurity. Researchers have focused on creating models that can detect and explain anomalies or potential threats in network traffic. For example, Lundberg et al. (2017) introduced SHAP (SHapley Additive exPlanations) values, which provide a unified measure of feature importance, enhancing the interpretability of complex models in cybersecurity applications.

B. Visual Analytics for Network Traffic:

Visual analytics has been another critical area of research. Tools like Flow Scope and VIS4ML offer interactive visualization techniques to help network administrators understand and manage large volumes of traffic data. These tools employ various visual encodings to represent different aspects of network traffic, such as flow patterns, volume, and potential anomalies, making it easier to identify and address issues in real-time.

C. Interpretable Models for Anomaly Detection:

Anomaly detection in network traffic has been a significant focus, with researchers developing interpretable models that not only detect anomalies but also provide insights into the underlying reasons. Techniques such as decision trees, rule-based systems, and attention mechanisms in neural networks have been employed to
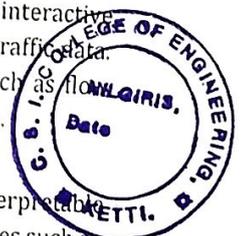
SECURING PATIENT HEALTH RECORD IN BLOCKCHAIN WITH ABE ACCESS CONTROL

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ABSTRACT

Electronic Health Record which is also known as EHR which is considered as the replacement of the paper records of the patients in a digital format in the health organizations. EHR plays a major role in treating the patients in all the departments of the medicine. These records consist of the medical history of patients. EHR acts as a medium of communication among healthcare practitioners. A decade ago, EHRs were touted as a key for increasing quality care. Today, providers are using data from patient records to improve quality outcomes through their care management programs. One of the key features of an EHR is that health information can be created and managed by authorized providers in a digital format capable of being shared with other providers across more than one health care organization. EHRs are built to share information with other health care providers and organizations such as laboratories, specialists, medical imaging facilities, pharmacies, emergency facilities, and school and workplace clinics.

Keywords: EHR, Patient Records, Digital Format, Health Organizations, Quality Care.

I. INTRODUCTION

Block chain is a distributed system recording and storing transaction records. It is a decentralized unit. It allows each participant in a network to interact without pre existing trust between parties. The main concept is transactions between two users will not be known by others. For transaction Bitcoin is used which is a digital currency. The transaction is saved in a digital ledger which was verified by miner and hash value is obtained which helps in achieving the transaction successfully. This presentation is about study and working of Block chain and our implementation in Electronic health record. Block chain technologies present an opportunity to improve the operations of EHR by sharing the patients document among the organizations. The benefits of the blockchain technology are decentralized maintenance, data saving in the block-then-chain structure secure transporting and accessing of data as well as anti-tamper and undeniable data security.

OBJECTIVES:

- The main objective of the project is to allow patients to assign access rules for their medical data.
- With block chain technology patients can connect to other hospitals and collect their medical data automatically.
- The use of block chain concept in EHR will make the patients stress free and also reduces the complications of medical data transactions.
- The main advantage of block chain is it can change the EHR market on its head by creating secure, flexible and enforceable business associate agreements.
- Now a days many patients are getting confused about the medications to be taken for a particular disease.
- By using blockchain the patients are able to get suggestions from other health care organizations for their quality care.
- Essentially, with the block chain ledger, you'll get to know the status of the patient medical history from beginning till the end of the checkup.
- We want to help the patients understand exactly what are the possibilities in the block chain and how they can play a part in it.
- Block chain has so far been most useful in medical applications in terms of understanding the work flow of tracking the medical process.
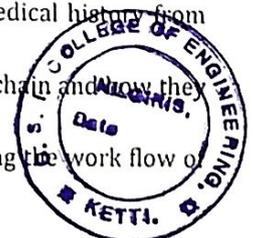
REAL TIME BRAIN MONITORING SYSTEM USING AI

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Abstract: Brain monitoring systems have gained significant attention due to their potential in medical diagnostics, neuroscience research, and brain-computer interfaces. This paper presents a real-time brain monitoring system utilizing artificial intelligence (AI) to enhance the accuracy and efficiency of brain activity analysis. The system employs advanced machine learning algorithms to process electroencephalogram (EEG) signals, providing immediate insights into neural activity. Our results demonstrate that the AI-driven approach significantly improves the detection and classification of brain states compared to traditional methods. This study offers valuable contributions to the development of more responsive and precise brain monitoring technologies.

Keywords: Real-time monitoring, EEG, Artificial Intelligence, Brain activity, Healthcare

I. INTRODUCTION

Importance of Real-Time Brain Activity Monitoring

Real-time brain activity monitoring is a transformative technology that captures and analyzes brain signals as they occur. This continuous monitoring provides immediate insights into brain functions and abnormalities, offering significant advantages over traditional post-event analysis methods.

1. **Immediate Diagnosis and Intervention:**

o **Medical Emergencies:** Real-time monitoring allows for the immediate detection of abnormal brain activity, such as seizures, enabling prompt medical intervention. For instance, in epilepsy management, real-time EEG monitoring can predict seizures before they happen, allowing for timely administration of medication or other interventions.

2. **Improved Patient Outcomes:**

o **Neurorehabilitation:** Patients recovering from strokes or brain injuries can benefit from real-time feedback that informs therapists about the effectiveness of rehabilitation exercises, enabling adjustments in therapy in real time.

3. **Enhanced Research Capabilities:**

o **Cognitive and Behavioral Studies:** Researchers can observe the brain's response to various stimuli and tasks in real-time, providing more accurate data for studies on cognition, behavior, and neural plasticity.

Applications in Medical and Research Fields

1. **Medical Applications:**

o **Epilepsy Monitoring:** Continuous EEG monitoring can detect and predict epileptic seizures, allowing for immediate intervention.

o **Sleep Disorders:** Real-time analysis of EEG data can diagnose and manage sleep disorders by identifying sleep stages and detecting abnormalities.

o **Neurofeedback Therapy:** Patients with ADHD, anxiety, and other conditions can use real-time EEG feedback to learn how to control their brain activity, improving symptoms over time.

2. **Research Applications:**

o **Brain-Computer Interfaces (BCIs):** Real-time monitoring is crucial for BCIs, which allow users to control computers or prosthetic devices using their brain signals. For example, individuals with paralysis can use BCIs to operate wheelchairs or communicate.

IMAGE IMMUNIZER: A MULTI-TASK LEARNING SCHEME FOR RESILIENT IMAGE TAMPERING AND LOSSLESS AUTO-RECOVERY

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ABSTRACT

In today's computerized scene, the broad sharing of pictures over online social systems has increased concerns with respect to picture altering and its suggestions for security and security. Routine fraud location strategies frequently confront challenges in precisely reproducing unique substance after control, which decreases the dependability of advanced pictures. This paper presents a modern Picture Immunization Framework that tackles the control of Invertible Neural Systems (INNs) to handle these issues. The framework is comprised of a few basic components: the Cyber Vaccinator, planned to proactively shield pictures from potential dangers; the Antibody Validator, dependable for confirming media genuineness; the Forward Pass, which is utilized for identifying altering, and the In reverse Pass, which centers on the self-recovery of the picture. The In reverse Pass utilizes Run-Length Encoding to change concealed annoyances into data, empowering the lossless reclamation of the unique picture. Our assessment of the framework illustrates its adequacy in both alter discovery and recuperation, displaying significant advancements over existing strategies. This approach not as it were supports the unwavering quality of computerized pictures but too makes a noteworthy commitment to the field of picture security and authenticity.

Keywords: Image Immunization, Invertible Neural Networks, Tamper Detection, Image Self-Recovery, Run-Length Encoding, Digital Image Security.

I. INTRODUCTION

In the period of broad computerized picture sharing on social systems, guaranteeing picture genuineness and keenness is fundamental. In spite of headways in picture control instruments, conventional imitation discovery strategies battle with precisely reestablishing unique substance after altering. This paper presents a novel Picture Immunization Framework utilizing Invertible Neural Systems (INNs) to address these challenges. Our framework comprises key components counting the Cyber Vaccinator for proactive picture assurance, the Antibody Validator for confirming media realness, and a dual-process approach with the Forward Pass for alter discovery and the In reverse Pass for picture self-recovery. By joining Run-Length Encoding in the recuperation handle, our framework empowers lossless rebuilding of altered pictures, advertising a strong arrangement to picture keenness issues.

II. RELATED WORK

The challenge of picture altering and fraud has been a critical center in the field of computerized picture forensics. Conventional strategies for picture confirmation regularly depend on detached methods that identify irregularities in picture substance or metadata, but they confront impediments in viably reproducing unique pictures post-manipulation.

A. Approaches to Picture Fraud Detection:

Initial techniques for identifying picture fraud depended on picture handling procedures, counting examination of JPEG compression artifacts and the recognizable proof of irregularities at the pixel level. Strategies such as Mistake Level Examination (ELA) and Copy Discovery look at varieties in picture highlights or compression artifacts to pinpoint potential modifications. In spite of their utility, these approaches regularly confront troubles when managing with broad controls or progressed altering techniques.

BRAIN TUMOR IMAGE RETRIEVEL USING CONVOLUTIONAL NEURAL NETWORK

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ABSTRACT

In this paper, we are locating the tag and images for brain tumor image retrieval. This technique is used to match the tag directly and the images are passed using parameter and by using queries classes are retrieved. It makes the use of brain tumor image processing techniques, to extract the powerful features and to description for the tag images. These features are used for the comparison of images by capturing the image query and its classes. We used a collection of 22 class images in the database and those classes trained using tags and image classification by the deep learning algorithm. Deep learning is used to increase the rate of retrieval in image retrieving process.

Keywords: Tag Matching, DCM Brain Tumor Image Processing Techniques, Deep Learning Algorithm.

I. INTRODUCTION

The use of standards like Digital Imaging and Communications in Medicine (DICOM) allows convenient and reliable interchange of information in the medical context. . DICOM SR has become a standard format for exchanging CAD results in clinical environments, e.g., for mammography, which can be stored to PACS. But DICOM SR does not ensure full compatibility with components storing and representing a DICOM SR. The reason is the high flexibility of SR documents.

Deep learning

It is Artificial Intelligence that imitates the working of human brain in processing data &creating patterns in the process of decision making.

- It is used in many industries for automatic driving for medical devices.
- Eg. Image processing, lower layers identify the edges, high input and letters or faces.
- It uses multiple layers to extract high level features from the raw input data and implemented through neural networks.

This technique is used to learn the features of the image hierarchy based on artificial neural network.

LEARNING ALGORITHM

Weight sharing takes place

1. Initialize the weight and shares the weight.
2. The input is given and the output is calculated.
3. Again the weight should be updated
4. Repeat the step 3 & 4.

Deep Learning is a sub domain of machine learning it deals with unsupervised learning of machines .They are capable of understanding the unformed data by working as cells of human. Human brain is the complex structure by nature ,with large number of neurons combined in multiple layers with each other and they connected through multiple connections.

The deep learning algorithms are known as deep neural networks or artificial neural networks or ANN. An artificial neural network consists of arrays in which the initial layer takes from the raw data. This input is spitted in multiple cases of layers .These layers are coupled with some random weights and then passed to the next hidden layer of algorithms and the process continues till the final input given.

STUDY ON HEART DISEASE PREDICTION USING DEEP LEARNING ALGORITHM

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ABSTRACT

In recent years healthcare has become increasingly important as the world's population grows. Among the many diseases that threaten lives, heart disease stands out as one of the deadliest, affecting millions globally. Detecting heart disease early is crucial to saving lives. With the vast amount of medical data available, complex learning based models have been developed for automated early detection of heart problems. However ,traditional machine learning methods struggle to adapt to new data, leading to less accurate predictions. To address this, we propose a new approach using a one dimensional convolutional neural network. This model, trained on balanced dataset shows significant improvements over traditional methods. By evaluating various clinical parameters, our model aids in early diagnosis, demonstrating its effectiveness compared to other machine learning algorithms

Keywords: Deep Neural Networks, Machine Learning, Deep Learning, Convolutional Neural Network.

I. INTRODUCTION

Healthcare has become increasingly vital as the world's population continues to grow. Among the many life-threatening diseases, heart disease stands out as a significant global health concern, affecting millions of people worldwide. Detecting heart disease early is crucial to preventing its severe consequences. To aid in this effort, advanced learning-based models have been developed to automatically identify cardiac issues using the vast amounts of available medical data. However, traditional machine learning techniques struggle to adapt to new data, leading to less accurate predictions. To address this, we propose a novel approach utilizing a one-dimensional convolutional neural network (1D CNN). Trained on balanced datasets, this model achieves impressive training accuracy. By examining various clinical parameters, our model facilitates early diagnosis, outperforming conventional machine learning algorithms and offering promising improvements in heart disease detection.

A hospital is inundated with patient data, including medical records, diagnostic tests, and imaging scans. Traditional methods of analyzing this data for the early detection of heart disease often fall short due to their inability to adapt to new information effectively. In response, the hospital implemented a new approach using advanced deep-learning techniques. By employing a one-dimensional convolutional neural network (1D CNN), this model is trained on a diverse range of patient data, ensuring balanced representation across different demographics and health conditions. Now, when a patient visits the hospital with symptoms suggestive of heart disease, their data can be quickly analyzed by the 1D CNN model. By evaluating various clinical parameters, such as blood pressure, cholesterol levels, and electrocardiogram readings, the model can swiftly identify potential cardiac issues, enabling healthcare providers to intervene early and potentially save lives.

Heart disease continues to pose a significant threat to global health, despite the growing importance of healthcare initiatives. Its widespread prevalence underscores the critical need for timely detection to mitigate its devastating impact on individuals and communities. While learning-based models show promise in automating the early detection of heart disease, traditional machine-learning techniques often struggle to adapt effectively to new data, leading to reduced predictive accuracy. This limitation undermines the effectiveness of heart disease detection methods and can' result in missed opportunities for intervention and treatment. Addressing this challenge is paramount to improving outcomes and, ultimately, saving lives. Therefore, our aim is to develop a novel approach utilizing a one-dimensional convolutional neural network (1D CNN) to enhance
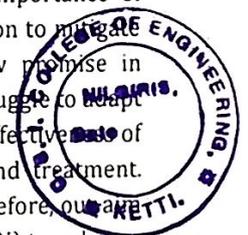
A SECURE STEGANOGRAPHY USING DIGITAL IMAGES TO EXTRACT THE ENCYPYTED DATA

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ABSTRACT

In today's digital world, keeping sensitive information safe is super important. Image steganography is a cool way to hide data inside digital images, making it a good choice for secure ways to communicate. This paper shares a new method of image steganography that boosts the security & integrity of the hidden information. The approach mixes advanced encryption techniques with an improved least significant bit (LSB) modification algorithm, which hides data in parts of an image that are really hard to notice. Using a dynamic key-based encryption system keeps this secret data safe from prying eyes. Plus, it has error-detection and correction features to make sure the data stays correct.

I.   INTRODUCTION

A digital communication grows, protecting our sensitive info is more vital than ever. Image steganography hides data within images, providing a neat solution for secure messages. Instead of just scrambling message content like traditional encryption, steganography sneaks info inside the image without making it obvious that there's anything to find. However, some old-school steganographic methods struggle when it comes to safety & keeping data valid. Simple techniques—like LSB—are easy to spot and can be uncovered using basic tools that look for hidden messages. To fix these issues, we need better ways to keep concealed data both safe and undetectable.

II.   RELATED WORK

Encryption: Changing readable data into code so only authorized people can access it.

Least Significant Bit (LSB): Hiding information in the least important bits of pixel colors.

Steganalysis: Looking for hidden info in digital content.

Cryptography: The art of secret communication through codes.

**Data Integrity:** Keeping data accurate and consistent when stored or sent.

Robustness: How well a steganographic method can avoid being found.
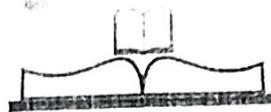
Error Detection and Correction: Fixing mistakes in storing or sending data.

Payload: The secret info hidden inside the image with steganography.

Cover Image: The image that carries the hidden data in steganography.

Watermarking: Similar to steganography, used for adding copyright or authentication info.
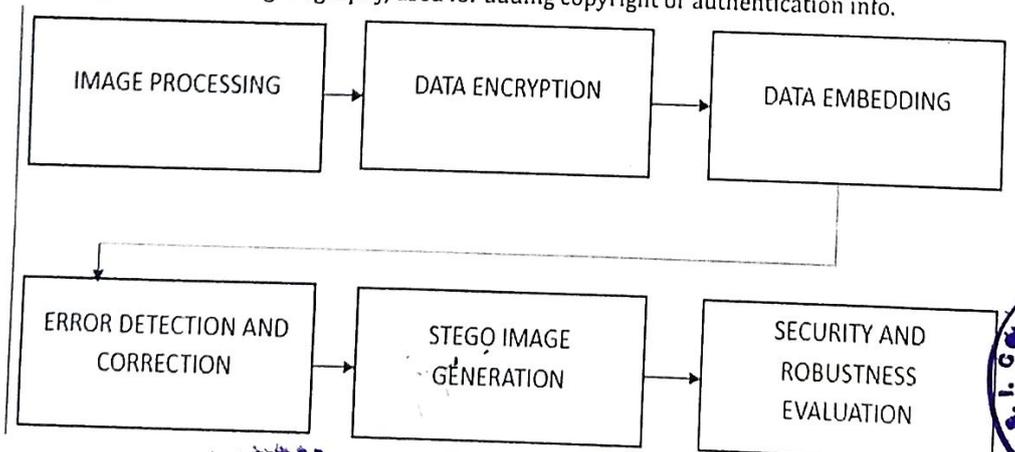
ACHIEVING EFFICIENT SECURE DEDUPLICATION WITH USER-DEFINED ACCESS CONTROL IN CLOUD

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ABSTRACT

Cloud storage as one of the most important services of cloud computing significantly facilitates cloud users to outsource their data to the cloud for storage and share them with authorized users. In cloud storage, secure deduplication has been widely investigated as it can eliminate redundancy over the encrypted data to reduce storage space and communication overhead. Regarding security and privacy, many existing secure deduplication schemes generally focus on achieving the following properties: data confidentiality, tag consistency, access control and resistance to brute-force attacks. However, as far as we know, none of them can achieve these four requirements at the same time. To overcome this shortcoming, in this paper, we propose an efficient secure deduplication scheme that supports user-defined access control. Specifically, by allowing only the cloud service provider to authorize data access on behalf of data owners, our scheme can maximally eliminate duplicates without violating the security and privacy of cloud users. Detailed security analysis shows that our authorized secure deduplication scheme achieves data confidentiality and tag consistency while resisting brute-force attacks. Furthermore, extensive simulations demonstrate that our scheme outperforms the existing competing schemes, in terms of computational, communication and storage overheads as well as the effectiveness of deduplication.

I.   INTRODUCTION

With the great benefits of cloud computing, an increasing amount of data has been outsourced by data owners to the cloud and shared with authorized users. For example, the Cisco global cloud index shows that the data stored in cloud will nearly reach1.3 zettabytes by 2021. As a result, the management of the ever-increasing data becomes a critical challenge for cloud storage services. In fact, the study shows that about 75% of digital data are identical, and redundancy in backup and archival storage system is significantly more than 90%. In this situation, data deduplication technique has been widely developed in cloud storage because it can significantly reduce storage costs by storing only a single copy of redundant data. Indeed, data deduplication can reduce storage costs by more than 50% in standard file systems and by more than 90% for backup applications, and these savings are transformed into huge financial savings to cloud service providers and users. However, considering security and privacy concerns of outsourced data, users are likely to encrypt data with their keys before out- sourcing. As a result, data deduplication would be impeded as identical data will be encrypted into different ciphertexts. To make data deduplication feasible on encrypted data, convergent encryption and its implementations or variants have been developed in. However, convergent encryption suffers from brute-force attacks for predictable messages. To overcome this issue, some server-aided encryption schemes have been presented. they suffer from the duplicate faking attack that prevents legitimate users from obtaining correct data. Although some schemes try to resist this attack, the tag consistency is verified after downloading the ciphertext by users, which cannot exactly conclude whether the incorrect data is caused by duplicate faking attacks in data upload or is corrupted during data storage. The main reason for this attack is that the ciphertext and the corresponding tag are generated independently, which makes it impossible for the cloud service provider to check the tag consistency. Thus, a solution that computes the tag directly by hashing the ciphertext is presented, which obviously supports the tag consistency check by com- paring the hash of ciphertext to the received tag. Based on this idea, tag consistency and message authentication have been considered, where the cloud service provider conducts tag consistency and users conduct the message authentication after data download.

ANALYSIS AND PREVENTING TECHNIQUE THROUGH CYBER PHYSICAL SYSTEM FOR ENVIRONMENTAL MONITORING AND INTERNET OF THINGS

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ABSTRACT

This work delves into the challenges facing the Internet of Things (IoT) with a focus on security and privacy. It identifies several key issues, such as inadequate device updates, weak security protocols, user awareness gaps, and active device monitoring. The paper proposes a new IoT layered model enriched with privacy and security components. It highlights the need for robust security measures across different layers of IoT applications and introduces a cloud/edge-supported IoT system, which is implemented and evaluated. The paper begins with an overview of IoT, covering its history, components, connections, and applications. It emphasizes the importance of addressing security challenges through rules, terms of service, and security requirements. The study categorizes and discusses various attack types and targets, aiming to provide comprehensive security measures for each IoT layer. A proposed security management model assists in selecting suitable security mechanisms and protocols to enhance IoT network performance, reducing power consumption and latency. This work contributes to bolstering the security of IoT systems in an increasingly connected world.

Keywords: IoT Security, Privacy, Security Measures, Cloud/Edge Computing, Security Management.

I.   INTRODUCTION

IoT has rapidly evolved in recent years, poised to revolutionize various aspects of life. It promises to enhance quality of life by enabling seamless communication between people and countless devices. IoT applications span across industries like industry, communications, agriculture, and more. This technology has already led to significant economic gains, with the IoT market reaching $290 billion in 2017 and expected to grow by 30% annually. IoT's influence extends to areas like healthcare, education, transportation, and the environment. It introduces smart solutions like homes, transportation systems, factories, farms, and hospitals, enriching daily life. IoT also benefits people with disabilities and the elderly by offering cost-effective solutions for increased independence. IoT's core components include things (devices), communications, applications, and data analysis. It supports both physical and virtual things, connecting them through machine-to-machine (M2M), machine-to-human (M2H), and human-to-human (H2H) connections. However, IoT presents challenges, including device heterogeneity, dynamic changes, enormous data scales, and interconnectivity, leading to complex security issues. While IoT offers intelligent control, data accuracy, and cost-efficiency, it suffers from complexity, security vulnerabilities, and a lack of regulations. Security remains a significant concern due to the diverse devices and potential threats. Addressing these challenges is crucial for realizing IoT's full potential.

II.   METHODOLOGY

IoT and Cyber Threats- Recent cyber-attacks have evolved from merely causing technical disruptions to now targeting individuals' psychological and financial well-being through unauthorized data acquisition. With the growth of IoT technology, the concern over privacy breaches and cyber threats has become more pronounced. This section explores the intricate relationship between IoT and the ever-expanding landscape of cyber threats.

Scalability of Cyber Threats

IoT Layered Architecture and Cyber Threats: IoT, being a vast and diverse ecosystem, lacks a single, standardized architecture. However, from a security perspective, it typically consists of five layers: Perception, Network, Processing, Application, and Business.

Perception Layer: Often referred to as the sensor layer, this foundational level is responsible for identifying objects and collecting data through various sensors such as RFID, 2-D barcodes, and object recognition sensors.
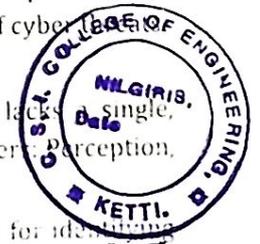
DIABETES PREDICTION USING CONVOLUTIONAL NEURAL NETWORK AND RANDOM FOREST

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ABSTRACT

Diabetes, a prevalent global ailment, poses a significant threat to human health, emphasizing the urgent need for early detection to impede its progression. This study presents a novel approach utilizing deep learning for early diabetes detection. Leveraging the PIMA dataset, which comprises numerical attributes common in medical data, we address the limitations of conventional convolutional neural network (CNN) models by transforming numerical features into images based on their importance. Subsequently, three classification strategies are employed: direct classification using ResNet18 and ResNet50 CNN models, fusion of deep features from ResNet models followed by support vector machine (SVM) classification, and direct classification of selected fusion features by SVM. Results underscore the efficacy of diabetes images in facilitating early diagnosis, signifying a promising avenue for enhancing healthcare outcomes.

Keywords: Decision Support Systems, Diabetes, Deep Learning, Convolutional Neural Network.

I.   INTRODUCTION

The Diabetes is a current habitual illness affecting millions of people encyclopedically and poses a significant trouble to public health. Diabetes is a complex condition with several different types. The most common ones:

Type 1 Diabetes: Autoimmune complaint: The body's vulnerable system attacks and destroys insulin-producing cells in the pancreas. Insulin dependent People with type 1 diabetes need insulin injections to survive. Onset generally diagnosed in children and youthful grown-ups, but can do at any age. Type 2 Diabetes: Insulin resistance: The body does not use insulin duly, and the pancreas cannot produce enough insulin to overcome the resistance. life factors frequently associated with rotundity, lack of physical exertion, and unhealthy diet. Onset Can develop at any age, but more common in grown-ups. Gravid Diabetes gestation-related Develops in some women during gestation. Temporary generally goes down after parturition. but increases the threat of developing type 2 diabetes latterly in life. Other Types While less common, other types of diabetes include   Maturity Onset Diabetes of the Young (MODY) A inheritable form of diabetes. Cystic Fibrosis-Affiliated Diabetes Occurs in people with cystic fibrosis. Drug- Induced Diabetes Caused by certain specifics. Diabetes, characterized by the body's incapability to regulate blood sugar situations effectively, can lead to severe complications if left undressed or undiagnosed. The significance of early discovery in managing diabetes cannot be exaggerated, as timely intervention can alleviate its progression and reduce the threat of complications similar as cardiovascular complaint, order failure, and whim-whams damage. In recent times, advancements in technology, particularly in the field of deep literacy, have handed new avenues for perfecting the early discovery and operation of diabetes. Deep literacy ways, which involve training artificial neural networks with large datasets to learn intricate patterns and connections, have shown pledge in assaying medical data and prognosticating complaint issues. This study focuses on using deep literacy methodologies for the early discovery of diabetes. By exercising the PIMA dataset, which contains a wealth of numerical attributes generally set up in medical data, we aim to address the limitations of traditional machine learning approaches, particularly in handling complex and high- dimensional datasets. The application of deep literacy models, similar as convolutional neural networks(CNNs), offers a new approach to diabetes vaticination by transubstantiating numerical features into image representations grounded on their significance. Through this metamorphosis, we can harness the robust capabilities of CNNs in assaying image data to prize meaningful patterns reflective of diabetes threat. likewise, this study explores colorful bracket strategies, including direct