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10	G.Vinoda Reddy	An Intelligent Harris Hawks Optimization (IHHO) based Pivotal Decision Tree (PDT) Machine Learning Model for Diabetes Prediction	10.4/415–423	2147-679921	International Journal of Intelligent Systems and Applications in Engineering & Scopus	Dec-22
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Aspect-Level Sentiment Classification using context Sequence Prediction Model

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Abstract:

Aspect-level sentiment classification is a method to determine the opposite the sentiment of all aspects within an identical sentence. It is more challenging than the classification of sentiment for text, in that it is more precise. The current methods that define the job as predicting the intensity of the sentiments over a specific (line of sentence) pairs, often miss the connection with the features' polarity in sentiment and their fundamental. In this paper, we present an approach to sequence prediction that incorporates the sentiment and polarity Fusion module that forecasts in a sequential fashion the sentiments of the negative and positive from a sentence with every aspect. In addition, we employ the sequence prediction attention technique to track what is being paying attention to, which prevents constant attention to context words that have high sentiment polarity when it comes to forecasting the polarity of various aspects. Test results from five benchmarking collections demonstrate that our model is superior to several base models by a significant margin. We also show that it is a superior model. Relationship between the sentimental aspect's polarity is useful to resolve the aspect-level classification.

Keywords: Aspect, Sentiment classification, Sequence, reviews, social networking.
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I. INTRODUCTION:

Contrary to document-level sentiment classification [1], aspect-level sensual classification can be described as a finer-grained classification task. It is designed to determine the sentiment the polarity (e.g. neutral, negative, positive) of a specific element within the context of a sentence. For instance, if you read a paragraph "great food but the service was dreadful"the aspect's sentiment polarity in "food" and "service" are both positive and negative. A classification of sentiment for an aspect can solve the issue of document-level sentiment analysis, when more than one aspect is included in the same sentence. In the previous example, two aspects are present and the overall sentiment of the entire sentence is mixed both positive and negative polarity. If we do not consider details about the aspects it's difficult to identify the polarity for a particular goal. This error is common in the general task of determining the sentiment. In one recent work, Jiang et al. manually examined the accuracy of a Twitter sentiment classifier. They also found the 40% the sentiment classification errors result from not taking into consideration the potential targets.

Analyzing and capturing the emotions that are implied by large-scale comment text is now a major subject for the field of natural processing of language (NLP). These techniques have received significant attention when compared to the traditional approach of acquiring a comprehensive sense of sentiment [1 2, 3]. A rising number of top engineers and

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Design of a Novel Network Framework for Traffic Identification by Using Deep Packet Inspection and Machine Learning

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ABSTRACT

This paper presents an investigation, involving experiments, which shows that current network intrusion, detection, and prevention systems (NIDPSs) have several shortcomings in detecting or preventing rising unwanted traffic and have several threats in high-speed environments. Precise organization traffic recognizable proof is a significant reason for network traffic checking and information investigation, and is the way to work on the nature of client administration. In this paper, through the examination of two organization traffic ID strategies in light of machine learning and profound parcel review, an organization traffic distinguishing proof strategy in view of machine learning and profound bundle examination is proposed. This strategy utilizes profound parcel assessment innovation to distinguish most organization traffic, diminishes the responsibility that should be recognized by machine learning. This paper presents an investigation, involving experiments, which shows that current network intrusion, detection, and prevention systems (NIDPSs) have several shortcomings in detecting or preventing rising unwanted traffic and have several threats in high-speed environments. It shows that the NIDPS performance can be weak in the face of high-speed and high-load malicious traffic in terms of packet drops, outstanding packets without analysis, and failing to detect/prevent unwanted traffic. A novel quality of service (QoS) architecture has been designed to increase the intrusion detection and prevention performance. Our exploration has proposed and assessed an answer involving an original QoS setup in a multi-facet change to sort out parcels/traffic and equal procedures to build the bundle handling speed. The new engineering was tried under various traffic velocities, types, and errands. The trial results show that the design works on the organization and security execution which is can conceal to 8 Gb/s with 0 bundles dropped. This paper likewise shows that this number (8Gb/s) can be improved, yet it relies upon the framework limit which is constantly restricted.

Keywords: Intrusion detection, traffic identification, MDIP, network security, open source, quality of service, security.

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An Intelligent Intrusion Detection and Classification System using CSGO-LSVM Model for Wireless Sensor Networks (WSNs)

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Abstract: Providing security to the Wireless Sensor Networks (WSN) is more challenging process in recent days, due to the self-organization nature and randomness of sensor nodes. For this purpose, the Intrusion Detection System (IDS) is mainly developed that supports to increase the security of network against the harmful intrusions. The conventional IDS security frameworks are highly concentrating on improving the reliability and safety of networks by using different approaches. Still, it limits with key problems of increased time consumption, more delay, and reduced efficiency, inefficient handling of large dimensional datasets, and high misclassification outputs. In order to solve these problems, the proposed work develops an intelligent IDS framework for enhancing the security of WSN by using the Cuckoo Search Greedy Optimization (CSGO) and Likelihood Support Vector Machine (LSVM) models. In this model, the most extensively used network datasets such as NSL-KDD and UNSW-NB15 are considered for validating this model. Initially, the dataset preprocessing is performed for normalizing the attributes based on the processes of irrelevant information removal, missing value prediction, and filtering. After preprocessing, the optimal number of features are selected and given to the input of CSGO algorithm, which computes the optimal fitness function for selecting the best features. Finally, the LSVM based machine learning classification technique is utilized for predicting the classified label as whether normal or abnormal. During results evaluation, the performance of the proposed security model is validated and compared by using different performance measures.

Keywords: *Wireless Sensor Network (WSN), Cuckoo Search – Greedy Optimization (CSGO), Network Security, Preprocessing, Intrusion Detection System (IDS), Support Vector Machine (SVM) Classification*

1. Introduction

In the recent days, the Wireless Sensor Networks (WSNs) [1, 2] have gained more attraction due to their benefits of self-organizing nature, low power consumption, and reduced cost consumption. Generally, the WSN is a kind of heterogeneous wireless network architecture that comprises various sensors and actuators for operating the network. The key characteristics of WSN are as follows: scalability, reliability, high robustness and security. Moreover, the WSN [3] framework comprises the centralized controlling unit used for data storing and processing. In which, the required data can be extracted from the network by using the disseminated controlling information. However, this network is more susceptible to the harmful network intrusions or attacks, so it is more essential to increase the security of WSN against these harmful intrusions. For this purpose, the Intrusion Detection System (IDS) [4] is developed in the conventional works, which helps to identify the intrusions for ensuring the security of network. The sample WSN architecture is shown in Fig 1, which comprises different number of users and connecting devices.

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A Novel Prediction Model to Analyze Evolutionary Trends and Patterns in Forecasting of Crime Data Using Data Mining and Big Data Analytics

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Abstract: Analysis of crime data aims to the extraction of patterns of crimes and trends of crimes from previously stored data of crimes. Analysis of crime data plays an important role to prevent crimes that occur in the country and simultaneously that increase the security of people. The paper aims to seek out a frequent occurrence of crime patterns with knowledge discovery and its prediction. We have used machine learning techniques on criminal records for knowledge discovery and to assist in increasing the predictive accuracy of the crime. This work is going to be helpful to the local police stations in crime suppression. In this paper we notice BDA to crook records wherein exploratory records exam is coordinated for representation and styles assumption. We focused on a series of investigative explorations are conducted to explore and explain the crime data. In this paper we propose a novel visual representation which is capable of handling large datasets and enables users to explore, compare, and analyze evolutionary trends and patterns of crime incidents and also depicts the combination and comparison of different machine learning, deep learning and time series modeling algorithms to predict trends with the optimal parameters, time periods and models. Following statistical analysis and visualization, some interesting facts and patterns are discovered from criminal data The predictive results show that the Prophet model and Keras stateful LSTM perform better than neural network models, where the optimal size of the training data is found to be three years. These promising outcomes will benefit for police departments and law enforcement organizations to better understand crime issues and provide insights that will enable them to track activities, predict the likelihood of incidents, effectively deploy resources and optimize the decision making process. Big data analytics (BDA) is a systematic approach for analyzing and identifying different patterns, relations, and trends within a large volume of data. In this paper, we apply BDA to criminal data where exploratory data analysis is conducted for visualization and trends prediction.

Keywords: Data Visualization, neural network, time series forecasting, big data analytics, crime data forecast, LSTM model, prophet model, machine learning

I.INTRODUCTION

Step by step the crime percentage is expanding such a lot of that it has become hard to foresee the wrongdoing on the grounds that the wrongdoing is neither deliberate nor irregular. Since there is an additional hey tech strategies and furthermore because of current innovations this assist the lawbreakers with accomplishing their wrongdoings. As indicated by Crime Records Bureau violations like robbery, illegal conflagration and so on have been diminished while wrongdoings like homicide, sex misuse, assault and so on have been expanded. Perhaps we can't

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Machine Learning Techniques to Improve Productive Planting in Agriculture Using Multi Valued Datasets and Classification Methods

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ABSTRACT

Changes in ecological factors, for example, water quality, soil quality, and contamination factors lead to illnesses in food creating plants. Distinguishing plant illness is a truly challenging errand in horticulture. Plant illnesses are likewise for the most part brought about by many impacts in farming which incorporates crossover hereditary qualities, and the plant lifetime during the disease, ecological changes like climatic changes, soil, temperature, downpour, wind, climate and so forth. The diseases might be single or blended, as indicated by the contaminations the plants illnesses spread. Early identification of plant sicknesses utilizing later advances helps the plants development. Consequently, ML strategies are utilized for right on time forecast of the illnesses. This paper is utilized to work on the exactness of distinguishing plant sicknesses utilizing the expectation of the dirt substance in the field land. In the modern era, many purposes behind agricultural plant illness because of horrible atmospheric conditions. Many reasons that impact illness in rural plants incorporate assortment/mixture hereditary qualities, the lifetime of plants at the hour of disease, climate (soil, environment), climate (temperature, wind, downpour, hail, and so on), single versus blended contaminations, and hereditary qualities of the microorganism populaces. This paper is used to improve the accuracy of detecting plant diseases using the prediction of the soil content in the field land. Because of these elements, finding of plant infections at the beginning phases can be a troublesome errand. Machine Learning (ML) classification techniques such as Naïve Bayes (NB) and Neural Network (NN) techniques were compared to develop a novel technique to improve the level of accuracy.

Keywords : Classification, Machine Learning, Neural Networks, Logistic Regression, Naïve Bayes, Neural Networks, Supervised Machine Learning.

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A Novel Fram work for Analysis of Road Traffic Information for Decision Support by Using Data Mining Techniques

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ABSTRACT

As we know we want traffic data analysis, data mining measures are recommended to help manage and traffic information decision making. Such as this limit, the road type is added intelligence analysis and decision support are another gave. This model has a data collection system and the data warehouse at its heart, and works well mathematical intelligence techniques and the invention of decision support system. As the main part of this report, the main parts of the model, the main process and an implementation plan is developed. An intelligent urban traffic decision analysis system is a system designed to solve open road problems, improve road safety and quality, and improve road quality work. The application of big data mining technology can improve various capabilities types of analysis and processing of traffic information, spread rapidly and provide a decision reference for the application of intelligent transport systems, which will be carried out to ensure smooth and safe roads. This topic will introduce the concept of large data mining technology and intelligent transport systems, and review the architecture of smart city road systems based on big data technology and design implementation of the mining process.

Keywords : Data mining, Association Rules, Intelligent Traffic, Traffic Information, Integration.

I. INTRODUCTION

The development process of urban road intelligent decision-making is the concept of intelligence, scheduling, communication and social services. Traffic control methods are also is increasing. The company that these services provide for public transport is increasing. In the development of electronic information technology, especially after the rapid development of Cloud computing and the

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MapReduce Framework to Improve the Efficiency of Large Scale Item Sets in IoT Using Parallel Mining of Representative Patterns in Big Data

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ABSTRACT

With the coming of the time of huge information, individuals can gather rich and various information from a wide assortment of assortment gadgets, like those of the Internet of Things. Information concealed in enormous information is extremely helpful and important. Frequent pattern mining, as a basic method of data mining, is applied to every aspect of society. However, the application of traditional frequent pattern mining methods to big data involves bottlenecks due to the large number of result sets. Such bottlenecks make it challenging to deliver commonsense worth underway and life. We proposed a new approach which involved representative patterns using mining technique. This framework can make the runtime difficult to evaluate in large data environments. Our approach gives best solution for the above gaps with the help of online representative pattern-set parallel-mining algorithm. We used MapReduce framework which performs horizontal segmentation over data bases. Finally, several performance optimization strategies are proposed. As shown by numerous experiments on the actual dataset, the algorithm proposed in this paper improves the time efficiency by one order of magnitude. Several optimization strategies reduce the execution time to varying degrees.

Keywords : Big data, IoT data analysis, MapReduce, online parallel mining, representative pattern.

I. INTRODUCTION

With the development of various portable devices, the Internet of Things, cloud computing, cloud storage and other technologies, all tracking data of objects can be uploaded to the cloud, and users can collect rich and diverse data from a wide variety of collection devices and mine hidden yet useful and valuable knowledge from big data. The pattern-mining process is shown in Fig. 1. Data sources have become increasingly diverse, and applications cover all aspects of life. In the medical field, sensor devices can be used to implement remote health monitoring.

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An Intrusion Detection Using Machine Learning Algorithm Multi-Layer Perceptron (MlP): A Classification Enhancement in Wireless Sensor Network (WSN)

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Abstract— During several decades, there has been a meteoric rise in the development and use of cutting-edge technology. The Wireless Sensor Network (WSN) is a groundbreaking innovation that relies on a vast network of individual sensor nodes. The sensor nodes in the network are responsible for collecting data and uploading it to the cloud. When networks with little resources are deployed harshly and without regulation, security risks occur. Since the rate at which new information is being generated is increasing at an exponential rate, WSN communication has become the most challenging and complex aspect of the field. Therefore, WSNs are insecure because of this. With so much riding on WSN applications, accuracy in replies is paramount. Technology that can swiftly and continually analyse internet data streams is essential for spotting breaches and assaults. Without categorization, it is hard to simultaneously reduce processing time while maintaining a high level of detection accuracy. This paper proposed using a Multi-Layer Perceptron (MLP) to enhance the classification accuracy of a system. The proposed method utilises a feed-forward ANN model to generate a mapping for the training and testing datasets using backpropagation. Experiments are performed to determine how well the proposed MLP works. Then, the results are compared to those obtained by using the Hoeffding adaptive tree method and the Restricted Boltzmann Machine-based Clustered-Introduction Detection System. The proposed MLP achieves 98% accuracy, which is higher than the 96.33% achieved by the RBMC-IDS and the 97% accuracy achieved by the Hoeffding adaptive tree.

Keywords- WSN, Multi-Layer Perceptron (MLP), RBMC-IDS, Machine Learning, Classification.

I. Introduction

The Internet is a massive source of various inventions which connect human life and technology effectively. IoT is a technological advancement becoming unavoidable and the most significant technology in our daily lives. It enables the communication between a wide range of intelligent electronic gadgets and sensors. Another fast-evolving technology in IoT systems is wireless sensor networks (WSN). WSN's significant features are low-power, inexpensive nodes and smart devices with constrained computational capabilities. WSNs are widely used in most real-time applications (figure 1), including healthcare, home automation, smart city, urban monitoring, environment monitoring, critical military surveillance, flora and fauna, security and surveillance, etc. [1,2]. Ruili Wang et

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A Novel Architecture for Network Intrusion Detection and Prevention

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Abstract: This paper affords an investigation, regarding experiments, which suggests that modern-day network intrusion, detection, and prevention systems (NIDPSs) have numerous shortcomings in detecting or stopping growing undesirable traffic and feature numerous threats in high-pace environments. It suggests that the NIDPS overall performance may be vulnerable withinside the face of high-pace and high-load malicious traffic in phrases of packet drops, high-quality packets without analysis, and failing to detect/save you undesirable traffic. A novel exceptional of service (QoS) structure has been designed to growth the intrusion detection and prevention overall performance. Our studies have proposed and evaluated an answer the usage of a unique QoS configuration in a multi-layer transfer to arrange packets/ traffic and parallel strategies to growth the packet processing pace. The new structure turned into examined below extraordinary traffic speeds, types, and tasks. The experimental consequences display that the structure improves the community and protection overall performance that is can cowl up to eight Gb/s with zero packets dropped. This paper additionally suggests that this number (8Gb/s) may be improved, however it relies upon at the gadget ability that is constantly limited.

Keywords: Security, intrusion, prevention, Dynamic Anomaly, Network Attacks, Computer security, computer networks,

I.INTRODUCTION

With computer systems increasingly under attack data security is more serious in user views security protects computer and everything associated with it including networks, terminals, printers, cabling, disks and most important it protects the available information in this environment [1]. In fact most computer security experts agree that, given user-desired features such as Network connectivity never achieve the goal of a completely secure system. An intrusion is a formal term scribing the act of compromising a system [2]. Today, various devices are available to meet users' necessities, for example, high machine processor speed, and fast networks. Alongside our increasing reliance on IT, there has unfortunately been an ascent in security incidents. Threats and attacks may range from stealing personal information from a laptop or network server to stealing the most highly confidential information stored on a Security Intelligence Service (SIS). Furthermore, hackers can sneak around on users' online purchases by eavesdropping on their credit card details, or, much more alarmingly, safety-critical systems can be undermined. Multi-faceted attacks and threats have made the implementation of security systems more challenging. Hackers have advanced along with the sophistication of the IT industry. For example, hackers exploit the advancements in PC processors and network velocities to increase the volume and speed of malicious traffic that might constitute a Denial of Service (DoS) or Distributed Denial of Ser-vice
(DDoS) attack [3]. Network security is therefore critical and has formed into an industry aimed at improving applications and hardware platforms to recognize and stop network threats. The detection and prevention mechanisms of the NIDPS are grounded in observing the comparison of ingress packets (trafc) to any known attack through patterns (signature NIDPS mechanism) or identifying unknown malicious patterns from ingress traffic (anomaly NIDPS mechanism).

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An Intelligent Harris Hawks Optimization (IHHO) based Pivotal Decision Tree (PDT) Machine Learning Model for Diabetes Prediction

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Abstract: In ancient times, an accurate diabetes prediction and type of classification are the most important and demanding tasks in the medical field for providing proper diagnosis to the patients. For this purpose, various machine learning based detection systems are developed in the conventional works to predict the diabetes from the given dataset. Still, it has some limitations with the factors of difficult to understand, high time requirement for training and testing, over fitting, and error outputs. Therefore, the proposed research work objects to implement a group of data mining techniques for developing an automated and efficient diabetes detection system. In this framework, an Inherent Coefficient Normalization (ICN) technique is implemented at first for preprocessing the PIMA Indian dataset obtained from the repository, which highly improves the quality of data for processing. Then, an Intelligent Harris Hawks Optimization (IHHO) technique is utilized to optimally select the features for training the classifier. Finally, the Pivotal Decision Tree (PDT) based classification technique is deployed to predict the data as whether diabetes or non-diabetes with reduced computational complexity and time consumption. During analysis, the performance and results of the proposed IHHO-PDT technique is validated and compared using various measures.

Keywords: *Diabetes Prediction, Machine Learning, Inherent Coefficient Normalization (ICN), Intelligent Harris Hawks Optimization (IHHO), Pivotal Decision Tree (PDT), and PIMA Indian Dataset.*

1. Introduction

Diabetes Mellitus (DM) [1, 2] is one of the most common and severe disease across many people over the countries. According to the world health report, it is analyzed that nearly 629 million of people can affect by this dangerous disease at 2045. Among other countries, it is rapidly increased in India and Sharan countries, and is very complex to predict that how much the disease is chronic and serious [3, 4]. Moreover, many of the medical organizations and healthcare industries object to control this disease for saving the people lives.

Specifically, it can affect the other body organs, so it is highly important to detect the disease at earlier stages for proper diagnosis and treatment.

Hence, the different types of prediction methodologies [5, 6] are developed in the conventional works for identifying diabetes based on the patients' information such as age, glucose level, blood sugar, pressure, BMI, and etc. The machine learning techniques are the most suitable options for developing an automated detection systems. Also, the classification techniques [7-10] are increasingly used in all kinds of applications for solving the complex problems. Then, it provides the predicted label for identifying that whether patient is affected by the disease or not.

The Support Vector Machine (SVM), Decision Tree (DT), Linear Regression (LR), Random Forest (RF), Neural Network (NN), Naïve Bayes (NB) and ensemble models [11-13] are the most commonly used machine learning approaches in the detection applications. Based on the existing review [14-16], it is analyzed that an optimization based classification techniques could provide an efficient performance in prediction and classification operations [17, 18]. The nature inspired and bio-inspired are the common optimization techniques used for providing solutions to solve the complex optimization problems. However, the existing

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Original Research Article

Seizure epilepsy genesis and epileptogenic nodes in epileptic patients: A procedure

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ABSTRACT

In this study we attempted to design, develop and substantiate a modern contemporary biomarker for epileptic (epilepsy) subjects (patients) neuronal-instability. Initial study is done on 91 subjects through the application of neuronal-unpredictability and/or variability of the marked e-SoZ as a metric to envisage and foresee the epileptic operational (surgical) outcome. the neural-instability predict (42/45) subjects unsuccess with surgery, by a total accuracy of 75% (predictive) when matched with subjective-clinicians accuracy at 49%(results-effective). We differentiate instable zonal areas (zones) which were not diagnosed in unsuccessful cases (i.e., unsuccessful outcomes). While compared with EEG features, the neural-variability outpaced in prognosis strength and, also construal, which support that neuronal delicacy as a bio-marker for the electro encephalography e-SoZ.

1. Introduction

One of the central nervous systems (neurological) disease and/or disorder is the epileptic seizures, or it usually is referred to as epilepsy (which can be referred to as seizure-epilepsy) in which the subjects brain activities become abnormal and anomalous, thereby triggering, and set off seizures (convulsions also called as fibrillation potentials) or periods of unusual behavior, sensations and sometimes loss of awareness. Anyone can develop epilepsy. Epilepsy affects both males and females of all races, ethnic backgrounds, and ages. In the beginning some authors they referred the seizures as positive sharp waves (sawtooth waveforms) have the same origin as convulsions of fibrillation potentials and have the same significance. [1–8]

The drug resistant epileptic seizures (DRE) is characterized and well-defined as continued and thus repeated epileptic-seizures in even though spite of two tests of properly taken anti-epileptic drugs. [3] The epileptic subjects (patients) have an enhanced risk-of sudden and unexpectedly demise plus repeatedly hospitalized, hampered with epileptic-seizures connected incapacities and debilities, also their cost of care is a important donor to the $16 billion American dollars consumed per annum in the United States of America (USA) doctoring epileptic-patients. [4] Approximately 50% (of DRE-subjects) have focal (pointing) D R E, somewhere and at someplace of particular yet specific brain-region(s), referred to as the epileptogenic-zone (EZ), which is essential plus adequate for starting e-seizures and whose elimination (or disconnection and discontinuation) results in wide-ranging elimination of seizure-epilepsies. [5,6] The e-zone involves the medically (clinically) associated e-seizure onset zone (e-SoZ) also early on proliferation zone(EPZ). Some areas and/or regions of human-brain cortical and

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Original Research Article

Nonlinear dynamical systems to study epileptic seizures and extract average amount of mutual information from encephalographs – Part I

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ABSTRACT

In this study, we apply the non-linear dynamical systems theory for the assessment built on recurrence-quantification analysis technique for characterizing—differentiating non-linear electro encephalograph (EEG) signals dynamics. The technique offers convenient quantifiable data plus information over normal, tumultuous, or probability and statistical stochastic properties of inherent systems dynamics theory. The R.Q.A-established processes as the quantifiable mathematical features of non-linear electroencephalograph signals dynamics. Average amount of mutual information (AAMI) applied to compute highly applicable feature-manifestation sub-sets out of R.Q.A-built centered-features. The chosen features were then fed into the computer using artificial intelligence based neural net-works for clustering the data of encephalograph-signals to identify ictic(i.e.,ictal), inter ictal, followed by state of controls. The study is implemented by validating R.Q.A with a data base for various issues of categorization. Results showed that the combination of five selected features created on AAMI attained the precision of100% and proves dominance of R.Q.A. Nonlinear dynamical control systems theory and analysis techniques centered on R.Q.A can be used as an appropriate methodology for distinguishing the non-linear systems dynamics of encephalograph signals data also epileptic seizures tracing.

1. Introduction

Epileptic-seizures(commonly called as "epilepsy") are a prolonged neurological disorders which can cause frequent seizures characterized by sudden-unexpected, extremely disordered, hyper synchronous, plus a confined electrical release of clustered-neurons in human/or animal brain which can momentarily variate the functions of h-brain, (i.e. ephemeral/transient diminishing harms and of consciousness and feeling, and the state of changed perception, and/or unconscious (changing the consciousness), and principal (focal) spontaneous actions and activities or fibrillational-convulsions (sawtooth potentials).[1]

Abrupt and unexpected chronic-seizures may have considerable impact on epileptic-seizures patient life. Apparently consistent and dependable instantaneous/immediate and simultaneously (online real-time) detecting e-seizures may possibly and drastically enhance the restorative (and also therapeutic) capabilities and possibilities such as adaptive closed loop systems device-therapies (for instance adaptive closed loop deep brain stimulation DBS systems and devices). In adaptive closed loops treatments, stimulus intensities (electrical current voltage), medicine distillation and fermentation,

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Big Data Framework for Effective Performance Based Deep Reinforcement Learning in Cloud Environments

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Abstract: Big data frameworks which include Spark and Hadoop are broadly followed to run analytics jobs in each study and industry. Cloud gives low priced compute sources that are less complicated to manage. Hence, many businesses are transferring in the direction of a cloud deployment in their huge facts computing clusters. However, activity scheduling is a complicated trouble withinside the presence of diverse Service Level Agreement (SLA) goals which include economic fee reduction, and activity overall performance improvement. Most of the prevailing studies does now no longer cope with a couple of goals collectively and fail to seize the inherent cluster and workload traits. In this article, we formulate the activity scheduling trouble of a cloud-deployed Spark cluster and endorse a unique Reinforcement Learning (RL) version to deal with the SLA goals. We expand the RL cluster surroundings and enforcement Deep Reinforce Learning (DRL) primarily based totally schedulers in TF-Agent's framework. The proposed DRL-primarily based totally scheduling retailers' paintings at a fine-grained stage to area the executors of jobs at the same time as leveraging the pricing version of cloud VM instances. In addition, the DRL-primarily based totally retailers also can analyze the inherent traits of various forms of jobs to discover a right placement to lessen each the whole cluster VM utilization fee and the common activity duration. The consequences display that the proposed DRL-primarily based totally algorithms can lessen the VM utilization fee as much as feasible.

Keywords: Cloud computing, cost-efficiency, performance improvement, deep reinforcement learning, big data.

I. INTRODUCTION

Big records processing frameworks which includes Hadoop [1], Spark [2], Storm1 have become extraordinarily famous because of their use in the records analytics area in lots of good sized regions which includes science, business, and research. These frameworks may be deployed in each on-premise bodily assets or at the cloud. However, cloud service providers (CSPs) provide flexible, scalable, and low cost computing assets on a pay-as-you-go-model. Furthermore, cloud assets are clean to manage and installation than bodily assets.

Thus, many organizations are shifting in the direction of the deployment of large records analytics clusters at the cloud to keep away from the problem of managing bodily assets. Service Level Agreement (SLA) is an agreed provider phrases among clients and provider providers, which incorporates diverse Quality of Service (QoS) necessities of the users. In the activity scheduling trouble of a large records computing cluster, the maximum critical goal is the overall performance development of the roles. However, whilst the cluster is deployed at the cloud, activity scheduling will become greater complex withinside the presence of different important SLA objectives which includes the economic fee reduction.

In this work, we awareness at the SLA-primarily based totally activity scheduling trouble for a cloud-deployed Apache Spark cluster. We have selected Apache Spark as it's miles one of the maximum prominent frameworks for large records processing. Spark shops intermediate consequences in reminiscence to hurry up processing. Moreover, it's miles greater scalable than different systems and appropriate for running a whole lot of complicated analytics jobs. Spark applications may be carried out in lots of high-stage programming languages, and it additionally helps unique records resets which includes HDFS [3], Hbase [4], Cassandra [5], Amazon S3.2 The records abstraction of Spark is referred to as Resilient Distributed Dataset (RDD) [6], which via way of means of layout is fault-tolerant. When a Spark cluster is deployed, it is able to be used to run one or greater jobs.

Original Article

WIRELESS COMMUNICATION BASED HEART RATE DETECTION USING WEARABLE DEVICE

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Abstract

Estimation of heart rate is a challenging task from PPG (photoplethysmographic) signal, as motion artifacts gets included during physical activities. The focus of this research work is to automatically estimate the heart rate of the person based on digital signal processing, where this approach is able to classify, process and analyze vital physiological signals for the application of health monitoring in long term. This work presents a novel approach, exploiting Adaptive Wiener filter for attenuating and removal of motion artifacts with a phase vocoder for refining the estimate of Heart Rate (HR). Two PPG signals and three accelerometer signals are obtained from the wearable device in the form of wrist band, are first preprocessed before applying to the adaptive wiener filter. Physionet database that is available publically with 12 PPG recordings is considered for analyzing the performance of the novel estimation of HR system. Ultimately, heart rate estimation is done based on subsequent detection algorithm. MATLAB implementation of the proposed method is able to achieve an average absolute error of 1.08 BPM (Beats per Minute). Correlation coefficient between estimated heart rate and true heart rate is obtained as 0.997. Fine tuning of spectral peak is achieved in this work which is accurately tracked for estimation of heart rate.

Keywords: Motion Artifacts, Phase Vocoder, Estimation, Adaptive Wiener Filter.

Introduction

In the current decade, world is transformed due to usage of wearable devices as these wearable systems are of light weight and can operate in real life applications. Such wearable systems can monitor heart rate and respiratory rate hence applicable in medical applications [1]. These systems utilize various sensors such as oximeter, electrodes, accelerometer able to sense bio-signals [2-4]. Among which photoplethysmography (PPG) is a non-invasive technology for tracking heart rate when the user is in motion. Tracking of heart rate based on PPG is a major challenge due to presence of motion artifacts (MA), as the signal is degraded masking the peak of the heart rate in the spectra. Real time analysis of PPG signals requires removal of motion artifacts in order to provide good performance. The optical technique which can detect changes in blood volume in the tissues is the concept of PPG which involves a pulsating AC signal with a DC component that varies slowly. The synchronous blood volume changes related to cardiac movements is reflected by the AC component that occurs due to heart beat, while the respiration effects is reflected by the DC component [5]. Conventionally Estimation of heart rate is done by

systems

MDPI

Article

Artificial Intelligence for Media Ecological Integration and Knowledge Management

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Abstract: Information Technology's development increases day by day, making life easier in terms of work and progress. In these developments, knowledge management is becoming mandatory in all the developing sectors. However, the conventional model for growth analysis in organizations is tedious as data are maintained in ledgers, making the process time consuming. Media Ecology, a new trending technology, overcomes this drawback by being integrated with artificial intelligence. Various sectors implement this integrated technology. The marketing strategy of Huawei Technologies Co. Ltd. is analyzed in this research to examine the advantages of Media Ecology Technology in integration with artificial intelligence and a Knowledge Management Model. This combined model supports sensor technology by considering each medium, the data processing zone, and user location as nodes. A Q-R hybrid simulation methodology is implemented to analyze the data collected through Media Ecology. The proposed method is compared with the inventory model, and the results show that the proposed system provides increased profit to the organization. Paying complete attention to Artificial intelligence without the help of lightweight deep learning models is impossible. Thus, lightweight deep models have been introduced in most situations, such as healthcare management, maintenance systems, and controlling a few IoT devices. With the support of high-power consumption as computational energy, it adapts to lightweight devices such as mobile phones. One common expectation from the deep learning concept is to develop an optimal structure in case time management.

Keywords: media ecology; Q-R hybrid simulation methodology; knowledge management model; artificial intelligence

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1. Introduction

Due to the growth of mobile internet connectivity, knowledge has never been easier to access. In recent years, video has become increasingly popular, with a wide range of people around the world. In a short film, the information is delivered more comprehensively, making it easier for the viewer to understand. Technologies, such as cloud computing, mobile internet, artificial intelligence, and deep learning, are making algorithms more common in news production [1]. For example, similar algorithms that are popular in deep learning modules, such as auto-encoders, are a kind of trained neural network concept that also replicates particular information between input and output layers. In addition to machine writing and intelligent recommendations, big media companies are using artificial

Human Action Recognition Using Difference of Gaussian and Difference of Wavelet

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Gopampallikar Vinoda Reddy ; Kongara Deepika ; Lakshmanan Malliga ; Duraivelu Hemanand ; Chinnadurai Senthilkumar ; Subburayalu Gopalakrishnan

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Abstract:
Human Action Recognition (HAR) attempts to recognize the human action from images and videos. The major challenge in HAR is the design of an action descriptor that makes the HAR system robust for different environments. A novel action descriptor is proposed in this study, based on two independent spatial and spectral filters. The proposed descriptor uses a Difference of Gaussian (DoG) filter to extract scale-invariant features and a Difference of Wavelet (DoW) filter to extract spectral information. To create a composite feature vector for a particular test action picture, the Discriminant of Guassian (DoG) and Difference of Wavelet (DoW) features are combined. Linear Discriminant Analysis (LDA), a widely used dimensionality reduction technique, is also used to eliminate duplicate data. Finally, a closest neighbor method is used to classify the dataset. Weizmann and UCF 11 datasets were used to run extensive simulations of the suggested strategy, and the accuracy assessed after the simulations were run on Weizmann datasets for five-fold cross validation is shown to perform well. The average accuracy of DoG + DoW is observed as 83.6635% while the average accuracy of Discrinanat of Guassian (DoG) and Difference of Wavelet (DoW) is observed as 80.2312% and 77.4215%, respectively. The average accuracy measured after the simulation of proposed methods over UCF 11 action dataset for five-fold cross validation DoG + DoW is observed as 62.5231% while the average accuracy of Difference of Guassian (DoG) and Difference of Wavelet (DoW) is observed as 60.3214% and 58.1247%, respectively. From the above accuracy observations, the accuracy of Weizmann is high compared to the accuracy of UCF 11, hence verifying the effectiveness in the improvisation of recognition accuracy.

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SECTION 1
Introduction

In recent years, the human action recognition and analysis is one of the most attractive research topics in computer vision. The Human Action Recognition (HAR) has a widespread application in several fields like visual surveillance, data retrieval, video indexing, Human Computer Interactions (HCI), human robot interactions[1], [2], etc. For example, in the system developed for automatic surveillance, the analysis of an action is much significant which helps in the identification of various intimidating engendering from an individual's group or from a single person. Moreover, in the HCI, a system has capability to study the actions thereby it can understand the objectives and intentions of the user such that an appropriate support can be issued to protect or guide the user. Hence the recognition of actions is an important and essential step in analyzing the activities of human beings.

A vast research work has been carried out over HAR and the researchers had put a great effort to build an innovative system that is capable of recognizing even complex activities in uneven environments. The uneven environments include cluttered environments, noisy environments, etc. In such kind of environments, the action is disturbed by external side effects like noise and inferences thus the quality of action video gets reduced. Such kind of action videos contribute less towards the recognition and results in poor recognition performance. Moreover, there exist some more problems in HAR like the camera movements in action videos.

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Frameworks for Industrial Internet of Things by Using Open Source Machine Learning Techniques

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Abstract: The Internet of Things (IoT) has acquired notoriety also, is progressively utilized in huge scope arrangements for modern applications. Such deployments depend on the adaptability and versatility of frameworks and gadgets. Heterogeneous frameworks should be interoperable also, cooperate flawlessly. To oversee such arrangement of frameworks, it is significant to work with a structure that not just backings the adaptable idea of IoT frameworks yet in addition gives satisfactory help for modern prerequisites, like constant also, runtime highlights, building draws near, equipment requirements, normalization, modern help, interoperability, and security. The choice of a fitting system results troublesome because of the rising number of accessible structures and stages, which offer different help for the previously mentioned necessities. Thusly, this article researches the highlights of seven conspicuous structures to improve on the determination of a reasonable structure for a modern application. The point of this article is to introduce the new turns of events and best in class of modern IoT structures and give a specialized correlation of their elements and attributes. The study investigates the open source machine learning frameworks, aligned with the industrial domain (processing data generated from Industrial Internet of Things), in terms of usage, programming languages, implementations, and future prospectus.

Key word: Frameworks, Industrial Internet of Things (IIoT), system of systems (SoS), Cloud services.

I. INTRODUCTION

Machine learning applications are quickly transforming the industrial landscape. Many businesses have reduced the production and operation costs using tools powered by machine learning models and algorithms. The deep learning which is a subset of machine learning has found ways in manufacturing, industrial maintenance, drug discovery, pattern imaging analytics, and software testing [1]. The deep learning a type of deep neural network consisting of layered structure as input layer, hidden layer, and output layer. Industrial Internet of Things (IIoT) is defined as a set of machines, robotics, cognitive technologies, and computers for intelligent industrial operations with the help of data analytics [2]. The Industrial Internet of Things is a part of Industry 4.0 revolution, which is concerned with automation, innovation, big data, and cyber physical systems in industries. The Industrial Internet of Things are showing positive impact in supply chain, transportation, healthcare, manufacturing, oil and gas, energy/utilities, chemical, and aviation industry. The Industrial Internet of Things has helped in controlling and monitoring manufacturing and production from remote locations [3]. The Industrial Internet of Things market will reach $123.89 Billion by 2021 [6]. Industrial Internet of Things captures large chunk of data, later used for predictive maintenance, time management, and cost control after machine learning models implementation. The machine learning models forms the core of logistics and supply chain solutions in terms of optimizing the product packet size, delivery vehicle selection, delivery route selection, delivery time computation. For instance DHL uses Amazon's Kiva robotics (improve speed, accuracy) for the network management.

The Industrial Internet of Things and machine learning models are inseparable entities for optimal solutions as far as the industrial context is concerned. However, the machine learning models need development, training, and testing in a software/ programming framework before being put in actual use. These software/ programming frameworks (IBM Watson) are often termed as software development environment/ model development environment, have licensed fee. The licensed fee prevents small industries in experimenting the machine learning models for their own need. Therefore, the study illustrates the open source machine learning frameworks (TensorFlow, Torch, etc.) for designing machine learning model using data generated through Industrial Internet of Things. Even small size industries can experiment with machine learning models for business forecasting and resource management.

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Integration of IoT and Cloud Computing to Manage the Patient E- Prescription

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Abstract: Data management is crucial to the functioning of healthcare systems and affects how well software programmes operate. The most recent equipment offers facilities that current healthcare systems do not use to allow their stakeholders to communicate with the system. The existing systems do not allow for as much freedom for chemists to collaborate as they should. Apart from this, we propose a system based on android and a web application by which a doctor has the ability to prescribe patients through an android application using stylus pen and other users such as patients, receptionists, pharmacists and admins interact with the system via their web accessibility. The suggested solution is based on combining cloud computing and Internet of Things technologies with the system. The Cloud IoT technology often finds application in remote healthcare monitoring and dispenses feasible solutions to patients with severe heath conditions and disabilities. Employing remote monitoring through Cloud and IoT aids in proactive and prior detection of diseases and as such, suitable healthcare solutions could be provided to ensure patient convenience and comfort.

Keywords: Internet of things, Healthcare, E-prescription, Cloud of Things, Arduino.

I.INTRODUCTION

The use of electronic prescriptions is a crucial measure to advance the healthcare sector. The use of electronic prescriptions enables systems for providing healthcare should be more aware of and anticipatory of the patient. As many patients as possible follow the same process to learn their test results or their health status, as is well known. Only if the prescriptions are made online accessible to the registered healthcare systems and are recorded in full, including all prescriptions, medication intake, patient states over time, billing information, and other details, are cross-border prescriptions possible.

By consolidating all of these patient inputs, the time it takes for a patient to be cured will be shortened. Another advantage of these kinds of systems is that the pharmaceutical sector. This will enable the chemists to verify the prescriptions, enabling a correct check and balance of the patient's system-acquired medication dosage. Additionally, pharmacies have the option to reserve their data in a computer-based system rather than a file-based one, making the system more adaptable. It greatly simplifies the management process and lowers the cost of maintaining inventory data.

In some circumstances, preserving healthcare system data in this manner lowers the likelihood of data loss. Finding the specific When electronic health records are implemented, managing patient or employee data becomes much simpler. Maintaining the integrity, security, and confidentiality of patient data is one issue in this domain. Different systems have been developed to address and resolve this problem. The advanced healthcare system will require some expertise on the part of both the staff and the patients to operate. This area of ubiquitous healthcare could support a variety of sophisticated applications. The applications could be based on the pharmacy inventory system, the receptionist token system, the doctor's dashboard patient forecasts, or training applications for recent graduates to be trained in the healthcare industry.

Overall, the system will have humungous benefits through the proper management and usage of healthcare data, electronically. The systems based on healthcare provide great flexibility to the administrative operators as well. The electronic prescriptions could be encrypted end-to-end to secure the prescription as well as to ensure the integrity of the user data too. The interaction of doctors with the applications is quite easy when it comes to the prescriptions. The latest equipment used in the healthcare systems for treating the patient could be integrated with the system's central data repository. From those repositories of data, applications could predict or suggest some diagnostics, medicines, patient's health-state to the doctor, via exposed API interfaces to the data. This way the secrecy and privacy could also be tackled in the form of electronic agreements made between the healthcare institutions and federal/government institutions. This mechanism allows the healthcare systems to evolve in dynamic directions which needs to be controlled by proper

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Optimization of Irrigation and Herbicides Using Artificial Intelligence in Agriculture

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Abstract: Technological aspects play a key role in the economy of country. The usage of technologies in various fields makes automation strong. The integration of new technologies for agriculture era gives a great yield. Demand for food with respect to the population is a great deal. Huge population required tremendous food requirement which cannot be possible with the conventional agriculture methods. In this paper we introduced a new method for agriculture with Artificial Intelligence became a new trend set. Our approach saved crop yield from various geological factors. The primary objective of our work was how various AI applications used in the domain of agriculture sector and increases the fertility of the soil. The vase survey we conducted for this paper was helped us for current set ups for the agriculture through weeding, robots and drones. We focused mainly on automated weeding techniques and sensing issues of water of soil. 94% of the pesticides produced are to protect he crop and to increase the production of crop. But this leads many hazardous issues of environments and humans. By using KNN (K-nearest neighborhood) and LRC (Logical Regression Classification) algorithms we got the predicted value of 88.5%.

Keywords: Herbicides, pesticides, AI, irrigation, agriculture, soil management, disease management, crop management.

1.Introduction

As per the EPA (Environmental Protection Agency) nominal usage of pesticides was good for crop production and health yields but when used them in un permissible limit causes dangerous harm to the human generations which had already we experienced. Since pesticide is a biologically active agent impacts on global health issues and resulted 3,20,000 lacs of deaths in a year over the globe, but few researcher had already altered this number becomes 5 million soon if we do not take proper measures against it. Our objective is how to give solutions for these issues by using advanced AI techniques.

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Recently, artificial intelligence (AI) has being employed in agriculture. The industry must overcome a variety of challenges to increase output, such as inadequate soil treatment, disease and insect infestation, high data needs, poor yield, and a knowledge gap between farmers and technology. The main ideas behind artificial intelligence in agriculture are its adaptability, excellence, precision, and economy. This article talks about how artificial intelligence (AI) is being used to manage diseases, weeds, crops, soil, and crops.. The benefits and limits of the programme, as well as the strategy for using expert systems to enhance productivity, are prominently underlined[1].

The majority of technologically sophisticated nations banned or outlawed the use of organochlorine insecticides after the 1960s, despite the fact that they were effective against a number of illnesses including malaria and typhus. The most well-known pesticides that supported the expansion of agricultural productivity and pest control in the 1960s and 1970s, respectively, were synthetic insecticides, organophosphate (OP) insecticides, carbamates [2] in the 1970s, and pyrethroids in the 1980s. In India, pesticides are extremely expensive. Every year, it spends roughly $600 million. Despite the fact that pesticide use in India remains low, the country controls 1.6% of the worldwide pesticide market.Pesticide residue contamination of food is caused by indiscriminate and careless pesticide application. Regardless, the World Health Organisation (WHO) has banned the use of some organochlorine syntheses. Many poor countries, particularly India, make widespread use of these chemicals in small quantities. In India, these chemicals are utilised in trace

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