(19) INDIA

(22) Date of filing of Application :08/11/2024

## (54) Title of the invention: PREDICTING STOCK MARKET TRENDS USING MACHINE LEARNING AND DEEP LEARNING ALGORITHMS VIA CONTINUOUS AND BINARY DATA; A COMPARATIVE ANALYSIS

:G06Q0040040000, G06N0003044000, (51) International

G06N0020200000, G06N0003080000,

classification G16H0050700000

(86) International Application No :NA Filing Date (87) International : NA Publication No (61) Patent of Addition to :NA **Application Number** :NA Filing Date (62) Divisional to :NA Application Number :NA Filing Date

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# (57) Abstract:

The nature of stock market movement has always been ambiguous for investors because of various influential factors. This study aims to significantly reduce the risk of trend prediction with machine learning and deep learning algorithms. Four stock market groups, namely diversified financials, petroleum, non-metallic minerals, and basic metals from the Tehran stock exchange, are chosen for experimental evaluations. This study compares nine machine learning models (Decision Tree, Random Forest, Adaptive Boosting (AdaBoost), eXtreme Gradient Boosting (XGBoost), Support Vector Classifier (SVC), Naïve Bayes, K-Nearest Neighbors (KNN), Logistic Regression and Artificial Neural Network (ANN)) and two powerful deep learning methods (Recurrent Neural Network (RNN) and Long short-term memory (LSTM). Ten technical indicators from ten years of historical data are our input values, and two ways are supposed to employ them. Firstly, calculating the indicators by stock trading values as continuous data, and secondly converting indicators to binary data before using. Each prediction model is evaluated by three metrics based on the input ways. The evaluation results indicate that for the continuous data, RNN and LSTM outperform other prediction models with a considerable difference. Also, results show that in the binary data evaluation, those deep learning methods are the best; however, the difference becomes less because of the noticeable improvement of the model's performance in the second way.

(22) Date of filing of Application :08/11/2024

(54) Title of the invention: Enhancing Retinal Disease Diagnosis through Deep Learning-Based Blood Vessel Segmentation in Fundus Images

(51) International classification :G06N0003080000, G16H0050200000, G06T0007000000, G06N0003045000, A61B0003120000

(86) International :NA Application No :NA Filing Date (87) International : NA Publication No (61) Patent of Addition to :NA Application Number :NA Filing Date (62) Divisional to :NA Application Number :NA Filing Date

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#### (57) Abstract:

This paper introduces a pioneering approach utilizing deep learning algorithms for the segmentation of retinal blood vessels in fundus images, aiming to advance disease diagnosis in ophthalmology. By integrating cutting-edge neural network architectures, the proposed method effectively harnesses shape and size information, optimizing the utilization of available samples and surpassing conventional segmentation techniques. Through extensive experimentation, our approach demonstrates superior accuracy in detecting retinal abnormalities compared to assessments by skilled ophthalmologists. Moreover, our model showcases robustness in handling variations in image quality and pathological manifestations, exhibiting potential for real-world clinical applications. The integration of deep learning not only enhances segmentation accuracy but also enables automated analysis, thereby reducing the burden on healthcare professionals and facilitating timely intervention. This research contributes to the ongoing efforts in leveraging artificial intelligence for improving diagnostic accuracy and efficiency in ophthalmology, ultimately enhancing patient outcomes and the quality of care in retinal disease management.

(19) INDIA

(51) International

(86) International

(87) International

Filing Date

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(62) Divisional to

(61) Patent of Addition to

Application No

Publication No

classification

(22) Date of filing of Application :12/11/2024 (43) Publication Date : 22/11/2024

#### (54) Title of the invention: INTELLIGENT AGENT BASED JOB SEARCH SYSTEM

:G06Q0010105300, G06Q0010063100,

G06Q0010105000, G06N0003126000,

G01J0005070000

:NA

:NA

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# (57) Abstract:

The Job selection process in today's global economy can be a daunting task for prospective employees no matter their experience level. It involves a detailed search of newspapers, job websites, human agents, etc, to identify an employment opportunity that is perceived compatible to abilities, anticipated remuneration and social needs. Existing job search websites lack thorough employer profiling and verification of prospective employee data. Additionally, there's a dearth of employer feedback on employee-submitted criteria. To address these gaps, we propose an intelligent agent system to streamline job searches. These agents would interact with employer and job search coordinator agents, enhancing accuracy and efficiency.

(19) INDIA

(22) Date of filing of Application: 11/11/2024

(54) Title of the invention: Smart City Waste Management System with Location-Based Features

:G06N0020000000, G06N0020200000, (51) International G06N0005010000, G06F0009540000, classification

G06F0018243000

(86) International Filing Date

Filing Date

:NA Application No :NA (87) International : NA Publication No (61) Patent of Addition to :NA Application Number :NA Filing Date (62) Divisional to :NA Application Number

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#### (57) Abstract:

This article presents the use of automated machine learning technique for solving a socio-economic problem of waste management specifically focused on India. We design a machine learning model to already existing system of smart waste management to tackle the drawbacks of the system. Usage of sensors in waste level indication poses practical problems of real life where the sensors need to be maintained regularly, if not done properly may result in less accurate depications. In order to improve the efficiency and accuracy we deployed data-driven models to predict and forecast future data based on historical data. The usage of the machine learning models helped in boosting the manually engineered model to (86:8%,99:1%) from (47:9%,98.2%) of classification accuracy and recall respectively. We deployed a Random Forest Classifier on a set of features 4. based on the filling level at different given time spans in our model. Finally compared to existing manually engineered model, our upgraded model enhances the quality of forecasts for emptying time of recycling containers.

(19) INDIA

(51) International

(86) International

(87) International

Filing Date

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Filing Date

Application Number

Filing Date

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Application No

Publication No (61) Patent of Addition to

classification

(22) Date of filing of Application:11/11/2024

(54) Title of the invention: Improving Cervical Cancer Prediction through Stacked Ensemble Models: Integration of SMOTE and RFERF

:G06N0003045000, G16H0050200000,

G06N0020200000, G06N0020000000,

G16H0050300000

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#### (57) Abstract:

With the rapid progress in machine learning and deep learning, various algorithms are employed by organizations to analyze extensive datasets, yielding insightful outcomes. Particularly in medical healthcare systems, machine learning plays a crucial role in early illness prediction and treatment. Cervical cancer, despite being potentially diagnosable in its early stages, poses a challenge due to its asymptomatic nature. This study proposes a stacked ensemble technique utilizing heterogeneous base learners and a meta-learner for predicting cervical cancer based on various risk factors. SMOTE is employed for data balancing, and RFE with Random Forest is utilized for feature extraction, resulting in improved accuracy compared to existing methods. Additionally, the study identifies the top 8 features influencing the classification model's performance

(19) INDIA

(51) International

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(87) International

Publication No.

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Filing Date

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(62) Divisional to

(61) Patent of Addition to

Application No

classification

(22) Date of filing of Application :20/11/2024

## (54) Title of the invention: UTILIZING THE BLOCKCHAIN TECHNOLOGY TO AMPLIFY CERTIFICATE VALIDATION IN EDUCATION

:H04L0009320000, H04L0009000000,

H04L0009400000, H04L0009060000,

G06F0021640000

:NA

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:NA

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## (57) Abstract:

Nowadays, verifying the genuineness of educational certificates can be a hard task since most documents are fake. Common methods employed for certificate verification are not always transparent or secure or efficient. In contrast, blockchain technology is a decentralized system that cannot be changed. This study delves into the feasibility and implications of harnessing blockchain technology to enhance certificate verification within the education sector. As fake educational certificates proliferate, existing verification methods often fall short in terms of transparency, security, and efficiency. Blockchain, as a decentralized and immutable ledger, offers promising solutions to address these challenges. Through a comprehensive literature review, case studies analysis, and stakeholder perspectives, this research investigates the merits, demerits, and implementation challenges of blockchain-based certificate verification. Findings reveal that blockchain technology holds significant potential to revolutionize certificate validation by enhancing transparency, security, and efficiency. However, challenges such as technical barriers, regulatory constraints, and adoption hurdles must be carefully navigated. The study concludes with recommendations for further research and practical implications for stakeholders in the education sector, emphasizing the transformative impact of blockchain technology on certificate verificate verification processes.

(22) Date of filing of Application :21/11/2024

## (54) Title of the invention: DEEP CONVOLUTIONAL FOREST: A DYNAMIC DEEP ENSEMBLE APPROACH FOR SPAM DETECTION IN TEXT

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:G06N0003045000, G06N0020200000, (51) International G06Q0050000000, H04L0051212000, classification H04L0009400000 (86) International :NA Application No :NA Filing Date (87) International : NA Publication No (61) Patent of Addition to :NA Application Number :NA Filing Date (62) Divisional to :NA Application Number :NA Filing Date

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## (57) Abstract:

<sup>3.</sup> Abstract: The surge in mobile messaging usage has facilitated the proliferation of social engineering attacks, particularly phishing, wherein spam texts serve as primary vehicles for stealing sensitive data like credit card details and passwords. Concurrently, the rampant dissemination of rumors and inaccurate medical information about the COVID-19 pandemic on social media has fueled public fear and confusion. Hence, effective spam content filtration becomes imperative to mitigate associated risks and threats. Past research has predominantly relied on machine learning and deep learning methodologies for spam classification, encountering two significant challenges. Machine learning models necessitate manual feature engineering, while deep neural networks incur substantial computational overhead. To address these limitations, this study proposes a novel dynamic deep ensemble model for spam detection, capable of autonomously adjusting its complexity and extracting features. The model leverages convolutional and pooling layers for efficient feature extraction and incorporates base classifiers like random forests and extremely randomized trees to categorize texts as spam or legitimate. Furthermore, ensemble learning techniques such as boosting and bagging are employed to enhance classification accuracy. The outcomes of the proposed model exhibit commendable performance metrics, including high precision, recall, F1-score, and accuracy, achieving a notable success rate of 98.38%. This underscores the effectiveness of the dynamic deep ensemble approach in combating spam and misinformation propagation across mobile messaging platforms and social media networks.

(19) INDIA

(51) International

(86) International

(87) International

Publication No (61) Patent of Addition to

Filing Date

Application Number

Filing Date (62) Divisional to

Application Number

Filing Date

Application No

classification

(22) Date of filing of Application :21/11/2024

CATTLE COLUMN CO

# (54) Title of the invention: Converging Blockchain and Machine Learning for Healthcare

:H04L0009000000, H04L0009320000,

G16H0010600000, H04L0009400000,

G06F0021620000

:NA

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## (57) Abstract:

The convergence of machine learning (ML) and blockchain technology offers transformative potential in healthcare. ML's predictive analytics, coupled with blockchain's decentralized and secure framework, address critical challenges by safeguarding sensitive patient data and streamlining administrative tasks. Blockchain's immutable ledger and cryptographic techniques ensure data integrity and privacy, while smart contracts automate processes such as consent management and regulatory compliance. This synergy enables healthcare stakeholders to harness data-driven insights while upholding security standards. The integration of ML algorithms on blockchain platforms enhances healthcare delivery, research, and data management practices, revolutionizing decision-making processes and optimizing clinical workflows. In this, the transformative impact of combining ML and blockchain technology in healthcare, facilitating secure data sharing, and driving innovation in patient care and medical research. hat possesses the potential to elevate the trustworthiness of news utilization in the digital era.

(43) Publication Date: 06/12/2024

(19) INDIA

(22) Date of filing of Application :27/11/2024

(54) Title of the invention: Harnessing CNN Technology for Early Diabetic Retinopathy Detection

(51) International classification :G06N0003145000, G06N0003080000, G06V0010820000, G06T0007000000, A61P0003100000

(86) International :NA Application No :NA Filing Date (87) International : NA Publication No (61) Patent of Addition to :NA Application Number :NA Filing Date (62) Divisional to :NA Application Number :NA Filing Date

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# (57) Abstract:

Diabetic Retinopathy (DR) is a condition that develops because of chronic diabetes. It is a visual exposition of diabetes brought on by damage to the retina's blood vessels. Approximately 80% of people who have had diabetes for ten years or longer have the condition at some stage. In this research, we propose a Convolutional Neural Network (CNN) based digital system for disease detection and accurately assessing the severity of DR based on digital fundus images. We create a system using CNN architecture and data expansion that can identify the intricate elements of the classification assignment system, such as micro-aneurysms, exudates, and retinal hemorrhages, and that can also provide a decision based on that understanding without the need for human input Since CNN is best suited for picture data sets, it is employed to implement the suggested system. Python is the programming language used for the implementation, and libraries like Keras, opency, numpy, etc. are provided. The model's accuracy for classifying five classes is 74.04 percent. Increasing the size can help to further increase the accuracy

(43) Publication Date: 06/12/2024

(19) INDIA

(22) Date of filing of Application :27/11/2024

(54) Title of the invention: Designing Secure and Efficient Biometric-Based Secure Access Mechanism for Cloud Services

(51) International classification ::H04L0009400000, H04L00090800000, H04L0009320000, G06F0021320000, H04W0084120000

(86) International :NA Application No :NA Filing Date (87) International : NA Publication No (61) Patent of Addition to :NA Application Number :NA Filing Date (62) Divisional to :NA Application Number :NA Filing Date

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#### (57) Abstract

3. Abstract: Rather than an on location server cloud services will be services that are accessible from a dispersed cloud stockpiling worker. These measured frameworks are worked by an outsider and give clients access to PC assets, for example, investigation or systems administration over the Internet. Cloud Computing is utilized to give processing assets over the Internet and is utilized to store information on cloud workers. Security and information insurance have been a critical field of interest in cloud processing because of the sharing of assets. Cloud service suppliers store and hold client data through server farms that are influenced by information spillage. It is observed that many mechanisms have stressed data protection and have neglected privacy in the subsequent process. Authentication aids with preserving and verifying the identity of a recipient. We also suggest an effective technique to use two biometric models for safe message transmission to create a session key between two interacting parties. Finally, the reliability and utility of the proposed solution was seen by detailed trials and a comparative analysis. Index Terms - Authentication, biometric-based security, cloud service access, session key.