

Application of Artificial Intelligence Data Mining Algorithm in Enterprise Management Risk Assessment

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ABSTRACT

For governmental and non-governmental enterprises to tackle risk management with conviction, enterprise management risk assessment (EMRA) is required. This work proposes a research methodology based on an AI-based data mining algorithm (MSVM+EFCNN) for evaluating enterprise-related risks. Initially, all the possible risk assessment indexes of the enterprise are established using a large variety of identification parameters. Then, the data mining algorithms are trained by considering the previous data for building an EMRA model. At last, the current conditions are analyzed using a cluster of risk indicators, and the risk index is identified via the EMRA model. The support vector machine is used for classification purposes, and the fuzzy-based convolutional neural network is enhanced with a genetic algorithm for creating the enterprise risk assessment. The results obtained after keen analysis and experimentation indicate that the data mining algorithms used in this work can evaluate the enterprise-related risks effectively.

KEYWORDS

Convolutional Neural Networks, EMRA, Genetic Algorithm, Support Vector Machine

INTRODUCTION

In recent years, more attention has been paid to the role played by artificial intelligence applications in numerous industries. Based on data from the Gravity Recovery and Climate Experiment (GRACE), this study uses LSTM networks to track and predict TWSC and GWSC during the period from 2003 to 2025 for five basins in Saudi Arabia (Haq, Azam, et al., 2021). By analyzing large amounts of remotely sensed Moderate Resolution Imaging Spectroradiometer (MODIS) data, meteorological records, and simulated global climate data, this study provides a comprehensive overview of changes in vegetation, snow cover, and temperature patterns in Uttarakhand State, India. To further investigate the potential for predicting these environmental variables, we performed regression using machine learning (ML) methods, such as support vector machines (SVMs) and long short-term memory (LSTM) networks. In the present study, we used high-resolution PS nanosatellite data to evaluate agricultural activity in the Al-Qassim region of Saudi Arabia (KSA) across time. To assess the impact of time on the vegetation pattern, we generated an NDVI time series. Sparse foliage and brilliant exposed soil

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due to poor soil moisture limit NDVI in the current study area. Therefore, to evaluate the relative computing cost of NDVI and the area of vegetation, we employed an ML-based random forest (RF) classification model (Haq, Baral, et al., 2021). The study's goals include filling in these blanks and providing useful information for classifying and forecasting air pollution.

To classify air pollution, we created five ML models, one of which was new and was given the term synthetic minority oversampling technique with deep neural network (SMOTEDNN). Hyperparameter tuning and effective data pre-processing were used across all five models. We created three statistical autoregression-based models for air pollution forecasting. The accuracy of all the models developed in this study improved overall. The unique SMOTEDNN model significantly outperformed the other models used in this study and earlier research in terms of accuracy (99.90%). The regionally distributed likelihood of permafrost occurrence might be reliably estimated using the results of logistic regression models. However, the results from these models varied depending on which topoclimatic and topographic variables were employed as predictors during the model's computation (Haq & Baral, 2019). This was especially true for the location points chosen for rock glaciers' initiation lines. This study focuses on creating a novel automated weed-identifying method for a real-world dataset consisting of 4,400 UAV images and 153,360 discrete weed features using convolutional neural network (CNN) classification. The best parameters for the proposed CNN LVQ model were determined with the help of snapshots. After extensive hyperparameter tuning, the generated CNN LVQ model achieved an overall accuracy of 99.44 percent in weed detection, a substantial improvement over previously reported studies.

We built and fine-tuned the climate deep long short-term memory (CDLSTM) model to make accurate temperature and precipitation predictions for all Himalayan states. To make predictions and evaluate the established CDLSTM model's efficacy, we implemented the Facebook Prophet (FB-Prophet) model. Both models were assessed using a wide range of performance indicators, and the results showed that they were very accurate and had low error rates. We developed the models using GridsearchCV for precise hyperparameter tuning. Overfitting and underfitting were prevented in both DNN models by using early stopping. They were among the best-performing models in terms of accuracy and efficiency after extensive testing on the produced suite of tools. The study's novelty lies in the generated models' ability to fill these gaps using a real-world dataset while maintaining a low false alarm rate. The ANN model estimates align well with ground-penetrating radar measurements of ice thickness for five transverse cross-sections of Chhota Shigri Glacier.

LITERATURE REVIEW

Global economic expansion has increased business participation in the financial market, encouraging long-term economic growth. Many enterprises' capital chains have collapsed due to a lack of risk awareness, financial market volatility, commercial fraud, and poor management (Luo et al., 2023). Small businesses are at risk of bankruptcy due to a lack of risk tolerance and a focus on virtual financial markets rather than the real economy (Haq, 2022a). A lack of understanding of data and a comprehensive evaluation of the borrower limits the accuracy of business risk control models. As a result of extensive academic research, big data tools are becoming increasingly popular in the financial industry. Traditionally, risk control models have only a single dimension and a limited ability to assess risk (Yi, 2023). Data mining can assist in conducting a more thorough analysis of financial data (Zhao & Sun, 2021). Increased data storage and calculation occur as distributed databases and platform architectures mature, increasing the number of data analysis dimensions (Chen et al., 2022). With the advent of the Hadoop cloud computing platform, large-scale data processing has become possible (Haq, 2022b). Compared to the traditional risk management model, big data provides more information and accuracy than the latter. Big data can assist businesses in reducing credit risk and improving the credit system, among other things (Haq, 2022c). With the help of data mining, it is possible to maintain a long-term closed-loop management mode while improving the scoring model

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