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## Editorial

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The purpose of this special issue is to present high-quality recent research on different problems related to information technology and their applications, including: intelligent systems, computer vision, wireless network technologies, data mining, knowledge representation, discovery and management, cryptography and security, intelligent education and mathematics models. The five papers in this special issue cover a range of aspects of practical and theoretical research development on cloud computing, stock market manipulation, network intrusion detection and translation systems.

The first paper entitled: ‘A cluster workload forecasting strategy using a higher order statistics based ARMA model for IaaS cloud services’ proposed an approach that uses the HOS to make a Gaussianity checking test of the cloud workload and then decides the suitable identification method of the ARMA model to be used to forecast the workload. Furthermore, the proposed method updates the parameters of the ARMA model constantly whenever new workload data are available. The proposed approach was evaluated using two real workload traces extracted from cluster workloads.

In the second paper entitled: ‘Cloud spot price prediction approach using adaptive neural fuzzy inference system with chaos theory’ authors perform chaotic time series analysis over the spot price trace. So they proposed first chaos-based adaptive neural fuzzy inference system (ANFIS) model based on phase-space vectors obtained during the phase of chaotic analysis. And then, they studied the effect of chaos existence on the prediction accuracy of the spot price by comparing the proposed chaos-ANFIS model with the baseline ANFIS model (non-chaotic approach). Evaluation results show that the proposed chaos-ANFIS model yields better predictions of spot price compared to the baseline ANFIS model in terms of root mean square error (RMSE) and mean absolute percentage error (MAPE).

The third paper ‘Stock market manipulation detection using feature modelling with hybrid recurrent neural networks’ proposes a hybrid stacked artificial neural network and recurrent neural network (RNN) to model the static and dynamic features of stock data. Based on the manipulated stocks, affidavits provided by the Securities and Exchange Board of India (SEBI), a daily trading dataset is created by scraping the Bombay Stock Exchange (BSE) website. The proposed system is capable of identifying three types of manipulation scenarios. The hybrid system is compared to various supervised algorithms, and various ensemble models and the system outperforms all with an accuracy of 96.06%.

Authors in the fourth paper ‘Deep learning-based distributed denial-of-service detection’ propose three different deep learning strategies as network anomaly-based intrusion detection system (N-IDS) for a DDoS multi-classification task. The main idea is to build a deep convolutional neural network (CNN), a stacked long short-term memory (S-LSTM) neural network which is a distinct artificial RNN, the third model is a hybridisation between CNN and LSTM. The proposed approach is evaluated on three up to date flow-based datasets: CICIDS2017, CICDDoS2019 and BoT-IoT benchmarks. The outcomes demonstrate that hybrid CNN-LSTM outperforms the existing state-of-the-art schemes in almost all the validation metrics.

In the last paper ‘A word alignment study to improve the reliability of the statistical and neural translation system’ authors propose first to examine the impact of incorporating some morphosyntactic features, like stem, lemma, root, and part of speech tag, on the statistical alignment models and on the associated translation systems for the (Arabic, English) language pair, and to identify which of these features is most suitable. And in the second part of this work, they propose a method of adjusting the attention mechanism by the statistical alignments, and they analyse the effect of this adjustment on neural machine translation systems.