

Prediction of the Financial Stock Market: A Comprehensive Analysis of Artificial Intelligence

MD Shadman Soumik

MS Student, Department of Information Technology (MSIT)

Washington University of Science and Technology (WUST), 2900 Eisenhower Ave, Alexandria, VA 22314
msoumik.student@wust.edu

Abstract: Since the inception of stock trading, scholars and investors have searched for reliable methods to forecast the course of stock values the next day. Since there are several variables that might influence the stock values of the next day, forecasting stock prices is a challenging undertaking. Stock Market Forecasting (SMF) is a forward-looking process anticipating future stock values, allowing to make sound financial decisions. In order to create predictions, academics and investors have started using machine learning approaches in conjunction with technical indicator analysis. However, the precision of the predictions is lacking. One of the progress in applying ML, particularly LSTM networks, to stock market forecasting lies in automating this process. Human bias implies that the same predictions can be misleading and contribute to the fact that they need to use ML and AI technology. The data used was fetched from *finance.yahoo.com*, and for confidence in the data, it took steps such as lemmatisation, null value management and deletion of duplicates. A total of four different ML prediction methods were utilised: LSTM is also being used ANN, CNN, K-Nearest Neighbour and many other algorithms. The model's performance was evaluated using measures including F1-score(Fs), recall(Rc), accuracy(Acc), and precision(Pr). Outcomes showed that the models were not all equally successful; however, the LSTM model had the best accuracy at 93%. Future attempts might consider other categorisation strategies and improving preprocessing methods to improve model performance and forecast Acc

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