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A systematic review of stock market prediction using machine learning and statistical techniques

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ABSTRACT

The stock market prediction patterns are seen as an important activity and it is more effective. Hence, stock prices will lead to lucrative profits from sound taking decisions. Because of the stagnant and noisy data, stock market-related forecasts are a major challenge for investors. Therefore, forecasting the stock market is a major challenge for investors to use their money to make more profit. Stock market predictions use mathematical strategies and learning tools. This paper provides a complete overview of 30 research papers recommending methods that include calculation methods, ML algorithms, performance parameters, and outstanding journals. The studies are selected based on research questions. Hence, these selected studies are helping to find the ML techniques along with their dataset for stock market prediction. Most widely ANN and NN techniques are used to achieve precise predictions of the stock market. While much amount of work is done, the latest stock market-related prediction methodology has many limitations. It can be assumed in this study that stock market forecasting is an integrated process and distinctive parameters for forecast the stock market should be considered more accurate.

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1. Introduction

One of the most fascinating inventions in the current time is the finance markets. These finance markets have a great significant [1] impact on many areas such as business, employment technology. Investors have used two main strategies to make decisions on the stock market to invest the money and earn more returns with low risks. The development in [2] stock market prediction has gained high significance among expert analysts and investors. Analyzing stock market movements [3] and price actions are extremely difficult due to the noisy environment in the market. The complication of stock prices changes many factors that include announcements of quarterly earnings and market news. The stock market [4] indices are calculated based on their market capitalization. Accurate forecasting of the stock market [5] is therefore a very difficult task by changing the market world. The researchers and market analysts [6,7] have been keen on developing and testing of stock market behavior. Therefore, different types of statistical

techniques that include autoregressive integrated moving average and clustering are applied for stock market prediction. Since this model gives historical evidence and theories for normality postulates. Extensive research [8,9] was conducted in the area of stock market forecasting applications in the using SVM, NN, and Genetic adversarial network (GAN) ML techniques. By guessing the stock market price index [10] the data analyzer has used a neural network (ANN) and Support vector regression (SVR) ML algorithms. Every ML algorithm has a way to learn patterns. Some of the authors [11] have proposed a hybrid method and it is a combination of a basic set and a neural network (ANN) used to calculate relative strength index (RSI). RSI acts as a measuring oscillator and compares past price strength with the current price. The results show that the proposed hybrid technique could cope with high variations of stock market values with great accuracy as compared to other ML approaches. Generally, some of the researchers [12] apply a combination of long short term memory (LSTM) with a genetic algorithm (GA) on the Korea stock price index for stock market forecasting using available financing data. Many networks

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