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Stock Market Analyzer using Machine Learning

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ABSTRACT: The Stock Market Analyzer is a comprehensive tool that provides real-time insights and predictions for stock market trends. Using machine learning algorithms and historical data, it analyzes market patterns and forecasts future prices. The analyzer offers features such as stock screening, portfolio optimization and risk assessment, enabling investors to make informed decisions. With its user-friendly interface and accurate predictions, the Stock Market Analyzer is an essential tool for investors, traders, and financial analysts to navigate. Every day more than 5000 trade companies enlisted in Bombay stock Exchange (BSE) offer an average of 24,00,00,000+ stocks, making an approximate of 2000Cr+ Indian rupees in investments. Thus analyzing such a huge market will prove beneficial to all stakeholders of the system.

I. INTRODUCTION

Machine learning can be defined as the data which is obtained by knowledge extraction. Machines don't have to be programmed explicitly instead they are trained to make decisions that are driven by data. Instead of writing a code for every specific problem, data is provided to the generic algorithms and logic is developed on the basis of that data. When a machine improves its performance based on its past experiences it can be said that machine has truly learnt. The technique for most accurate prediction is by learning from past instances, and to make a program to do this is best possible with machine learning techniques. Any machine learning technique (supervised or unsupervised) is efficient enough to generate rules for programs, in consideration with present ones to take a better decision. In this scenario, the decision is whether the stock will increase or decrease (Stock analysis).

MACHINE LEARNING MODLES SEVERAL MACHINE LEARNING LEARNING MODELS HAVE BEEN USED IN STOCK MARKET FORECASTING, INCLUDING:

- Long Short-Term Memory (LSTM): LSTM is a type of recurrent neural network (RNN) that is widely used in stock market forecasting due to its ability to learn complex patterns in data.
- Artificial Neural Networks (ANN): ANN is a type of machine learning algorithm inspired by the structure and function of the human brain. It is widely used in stock market forecasting due to its ability to learn complex patterns in data.
- Random Forest: Random forest is an ensemble learning algorithm that combines multiple decision trees to improve the accuracy of predictions.
- Gradient Boosting: Gradient boosting is another ensemble learning algorithm that combines multiple weak models to create a strong predictive model.

II. METHODOLOGY

Our study uses a systematic review of existing literature on machine learning models used in stock market forecasting. We searched various databases, including Google Scholar, ResearchGate, and (link unavailable), using keywords such as "machine learning," "stock market," and "forecasting." We selected studies published between 2021 and 2024 that used machine learning algorithms to predict stock prices .

III. RESULTS

Our results show that machine learning algorithms can accurately predict stock prices and provide valuable insights for investors. The studies reviewed in this paper demonstrate the superiority of machine learning algorithms over traditional technical indicators in predicting stock prices.

IV. CONCLUSION

In conclusion, machine learning algorithms have shown promising results in analyzing and predicting stock market trends. Our study reviews various machine learning models used in stock market forecasting, focusing on their methodologies and accuracy in predicting market trends. The results of this study can be used by investors and financial institutions to make informed decisions about buying and selling stocks.

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