International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

"Stonks – Predict Your Stock"

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ABSTRACT: -

Stock prediction, often known as stock price forecasting, is a prominent and essential issue in business and academic research. Because of the immediate financial rewards, stock price prediction has always attracted people interested in investing in the stock market and stock exchanges. In finance, it's also a hot area for research. Stock market forecasting is a difficult task that is influenced by a variety of elements such as corporate financial status, national legislation, and so on. Stock prices are affected by a variety of factors these days, including company-related news, political, and social economic conditions. This program is designed to eliminate or, in some circumstances, mitigate the difficulties that these systems now encounter. Furthermore, this system is tailored to the company's specific requirements for smooth and efficient operations. To eliminate data entry errors, the program is kept as simple as feasible. As a result, it demonstrates that it is user-friendly.

Key-Words: - Stock price forecasting, Stock price prediction, share market and stock exchanges.

Introduction

Because there are numerous sides to the stock prediction problem, it is extremely intriguing to work on. People, sentiment, corporate performance, news, and regulators all influence the pricing value.

Machine learning-based stock price prediction assists you in determining the future worth of a company's stock and other financial assets traded on an exchange. The whole point of stock price forecasting is to make a lot of money.

Stock market forecasting is a difficult undertaking since it necessitates in-depth knowledge of news events, historical data analysis, and the impact of news events on stock price movements. The problem is made even more difficult by the extreme volatility of stock price patterns. However, a comprehensive analysis of the general background of stock prediction is lacking in the literature. This report gives a complete survey to fill this research gap. There are descriptions of all essential concepts and phases of generic stock prediction approach, as well as problems. For news sensitive stock prediction, a complete literature review is offered that covers data pretreatment techniques, feature extraction techniques, prediction strategies, and future directions.

The "Stonks – Predict Your Stock" was created to address the issues that arise in the practice of stock prediction. In the current machine learning arena, stock price prediction is an important task. To tackle this challenge, several ways have been presented. The majority of them are focused on a stock's time series analysis, while some are based on news feelings to predict a stock's value.

Problem Formulation

We have taken this project because of the following reasons:

1. Existing systems employ a variety of techniques, ranging from regression to classification. The existing approach fails when there are rare outcomes or predictors because the algorithm is based on bootstrap sampling, which has a number of limitations.

2. Previous results show that when the standard classifier is applied, the stock price is uncertain.

Literature Review

In the topic of stock price prediction, a lot of effort has been done; yet, getting the desired outcomes is not straightforward.

Following are some of the significant conclusions drawn from the literature review:

Stock market forecasting is a difficult undertaking since it necessitates in-depth knowledge of news events, historical data analysis, and the impact of news events on stock price movements. The problem is made even more difficult by the extreme volatility of stock price patterns. However, a comprehensive analysis of the general background of stock prediction is lacking in the literature. This report gives a complete survey to fill this research gap. There are descriptions of all essential concepts and phases of generic stock prediction approach, as well as problems. For news sensitive stock prediction, a complete literature review is offered that covers data pretreatment techniques, feature extraction techniques, prediction strategies, and future directions.

The importance of employing structured text features rather than unstructured and shallow text features is investigated in this study.

It also goes into the usage of approaches for extracting opinions. It also highlights the application of domain knowledge in both textual feature extraction methodologies. It also emphasizes the need of using deep neural network-based prediction approaches to uncover the hidden relationship between textual and numerical data. This study is significant and unique in that it develops a comprehensive framework for stock market forecasting and identifies the strengths and flaws of existing methods. It covers a wide range of open issues and research directions that the research community may find useful.

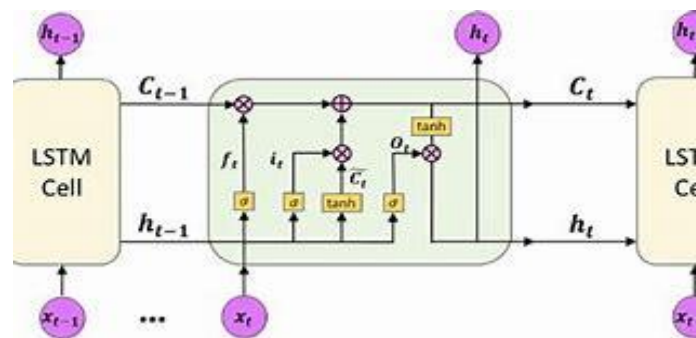Stock market patterns are exceedingly volatile, which makes forecasting difficult.

Methodology

1. LSTM(Long Short Term Memory)
   The LSTM is a type of RNN (recurrent neural network).
   In a buried layer, it possesses a memory cell that has the ability to recall information for a long period.
   There are three gates in every LSTM model, as follows::

1.The input gate determines which value from the input should be utilized to change the memory. This is accomplished by multiplying the values of the sigmoid function and the tanh function, which gives weightage to the values that are passed by determining their level of importance from -1,1. Finally, multiplying the values of the sigmoid function and the tanh function gives the final value of the input gate.

2. Forget Gate: The forget gate is in charge of erasing data from the state of the cell. The sigmoid function is used to eliminate information that is no longer needed for LSTM. The sigmoid function returns a value of 0 or 1, with 0 indicating that the information was forgotten and 1 indicating that it was remembered.

3. Output Gate: The output gate task entails extracting meaningful data from the current cell state and displaying it as output. This is accomplished by employing a sigmoid function-based filter that allows values to pass through 0,1. The vector is produced by applying the tanh function to the cell state, which returns values between -1 and 1. The final value is obtained by multiplying the filter values, namely the sigmoid and tanh functions.
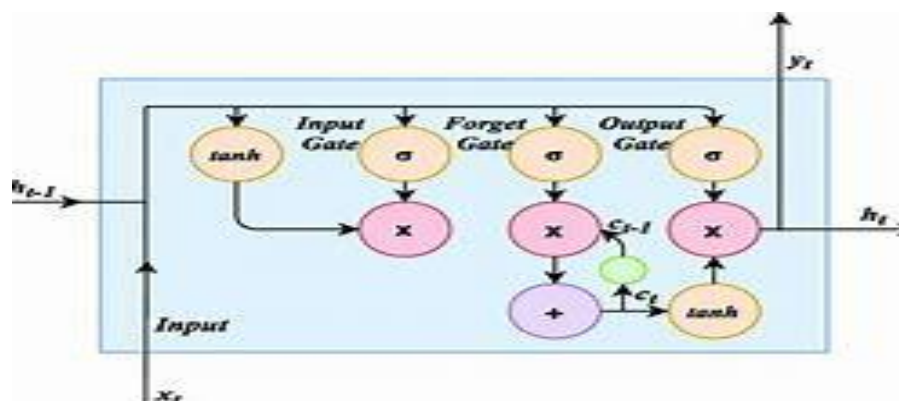
. 2. Data Used for Model

The model uses two type of data :

1.   Train data and
2.   Test data.

●   Train data:In the model train data we used last 10 years data of different companies.We use batch size of 1 and only 1 epoch to train the model.
●   Test data:For the testing we used the previous day close to predict open and the predicted open is used to predict the close value.

3.   User Interface

For the deployment and creating GUI we used streamlit .The GUI consists of a side menu tab containing a drop down bar consisting of a list of company names and a button to start the prediction process.After the process completes the predicted value and graph are shown on the main screen.
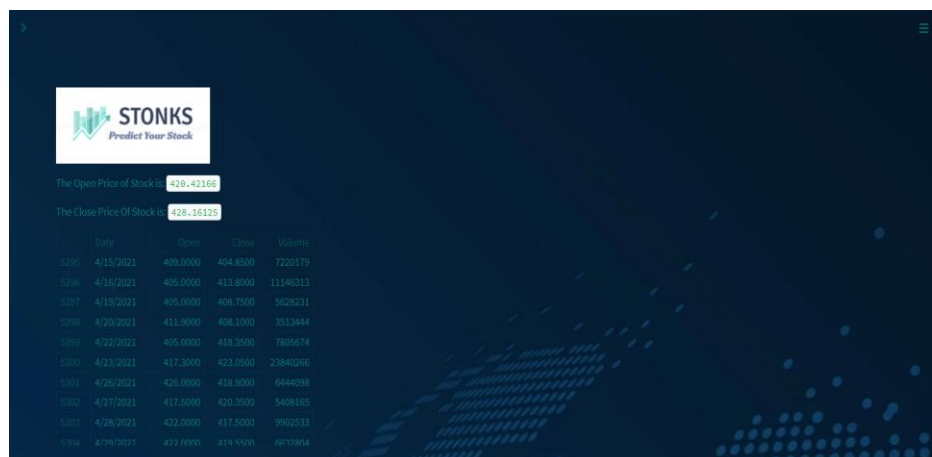

Result Discussions

The aims of the project are as follows:

• To predict future stock price

• To generate patterns from previous years large dataset for the prediction of stock price.

The project will be useful for investors to invest in the stock market based on various factors. The project target is to create an application that can analyse the previous year's data of the companies and implement these values to the model created to determine the value the particular stock will have in the near future with suitable accuracy.
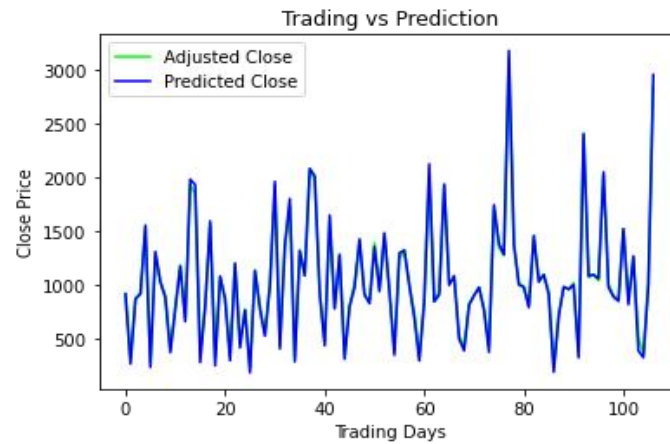
The main feature of the project is to generate an approximate forecast of stock price and create a general idea of future values based on previous data by generating a pattern.

Conclusion

We suggested a more accurate model that employs RNN and LSTM to forecast the trend in stock prices. In the buried layer of the network, LSTM introduces the memory cell, a computational unit that substitutes typical artificial neurons. The accuracy of prediction is improved in this work by increasing the Epochs and batch size. We employ test data to forecast in the suggested method, which yields findings that are more accurate with the test data. The proposed method is capable of tracing and forecasting the stock market, and the forecasts will be more accurate and precise. We are getting accurate findings in our above model, which will be more valuable to stock analysts, business analysts, and stock market investors.

Acknowledgment

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