Yahoo Stock Prices with LSTM

By Arlene Rivera

Introduction

Proposal: To use historical data of the S&P 500 index to create a model that can accurately predict future high prices of the stock

We will use a deep learning technique known as Long Short-Term Memory (LSTM) to build the model. The LSTM model will be trained on closing prices of the stock, and its performance will be evaluated by comparing its predictions with the actual high prices of the stock.

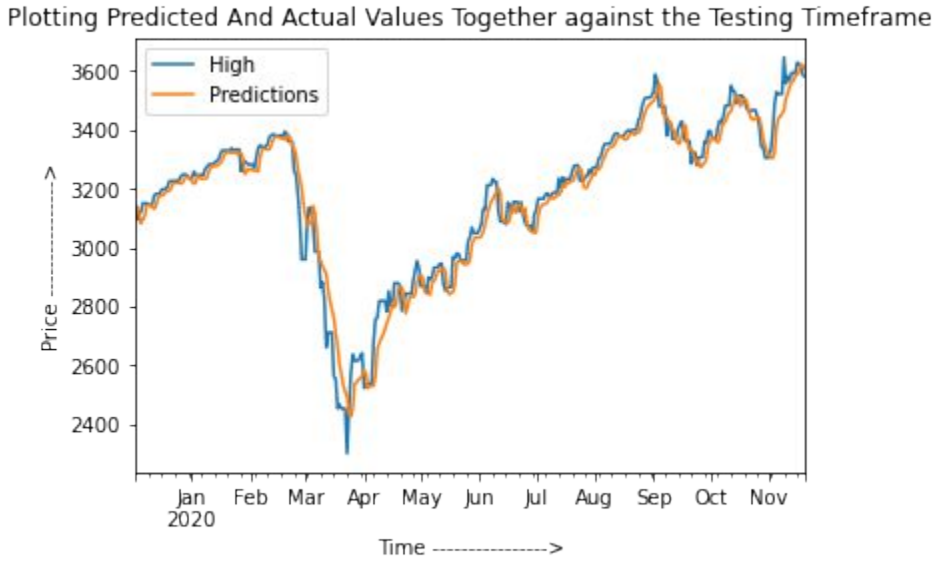
Goal: To better understand future stock prices and make more informed decisions about the stock market

Methodology

1. Split dataset into training (80%) and testing sets (20%)
2. Preprocess data by normalizing prices to a range of 0-1
3. Use LSTM algorithm to build model, with input shape equal to number of lag days, and output shape equal to 1
4. Train model on the training data and evaluating its performance on the testing data
5. Compute the mean squared error between the predicted and actual high prices of the stock to evaluate the model's performance
6. Visualizing the model's predictions and comparing them with the actual high prices of the stock using line plots.

LSTM Model

Predicted vs Actual Prices



Expected Outcomes

Model expected to achieve a high level of accuracy in predictions, as it takes into account patterns in the historical data and makes predictions based on those patterns.

To make investment decision, the model can be used to/for:

- identify trends in the stock market and make predictions about future stock prices
- detect anomalies in the stock market, which can make predictions about future stock prices
- risk management, which can be used to help assess potential risks

Limitations

Performance is based on the historical data it was trained on, and its predictions may not be accurate if the stock market behaves differently in the future

Not able to take into account external factors such as economic conditions, political events, or natural disasters that can affect stock prices.

Not able to make predictions about other stocks, only trained on the S&P 500 index.

Only predicts the high prices of the stock, doesn't provide a comprehensive view of the stock market

The model should not be used as the sole basis for investment decisions, and other research and analysis should be conducted before making any investments.

Conclusion

Model can be used to identify trends in the stock market and make predictions about future stock prices

Potential to increase their returns on investment and make more profitable trades.

Model can also be useful for risk management, by providing predictions that can be used to help assess potential risks and make informed decisions about investments.