

SHARE MARKET FAITH PREDICTION USING LSTM ALGORITHM

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Abstract

The stock market is one of the most volatile segments of the financial system, and it is critical to economic progress. Because of its volatility, stock market forecasting is one of the most difficult undertakings. In today's fast-paced world, the stock market is the most significant activity, and it plays a critical role in improving a company's financial position. Stock prices are a critical component of the forecast. The founders of the firms sell their stocks on a regular basis to generate new capital. The stock price is determined by the supply and demand for the corporation's stock. Due to changing stock market trends, long-term historical datasets will be required to forecast share market prices. The datasets are provided with attributes like as opening price, closing price, volume, and many others by the Y-finance library. Y-finance intends to address this issue by providing a secure, threaded, and pythonic means to download historical market data. We forecast stock prices using Keras' Long Short Term Memory (LSTM) model, Because they can store past knowledge, LSTMs are highly useful in sequence prediction issues. This is significant in our situation since a stock's historical price is critical in determining its future price. The project's goal is to forecast the stock market's opening and closing prices. Create a variety of graphs that illustrate the current and predicted stock prices. As a result, the project's goal is to provide consumers with forecasted stock prices.

Keywords: LSTM, Keras', Y-finance, Stock market

1. Introduction

Financial models have been used by investment businesses, hedge funds, and even individuals to better understand market behaviour and make profitable investments and trades. In the form of historical stock prices and firm performance statistics, there is a wealth of information available and appropriate for processing by machine learning techniques. We achieve our goal of predicting the

share market price with the help of TensorFlow, a machine learning library. This research aims to predict stock values using Deep Learning models and the Long-Short Term Memory (LSTM) Neural Network method. Recurrent neural networks (RNNs) are effective for data with time frames, however recent research has demonstrated that LSTM networks are the most popular and useful types of RNNs. We'll use Keras to create an LSTM that predicts stock prices based on historical closing, opening, and trading volume, and then visualize both the anticipated price values over time and the model's ideal parameters.

2. Review of Literature

In this project we have made use of many machine learning approaches to predict and foresee our stock prices at the same time predict the accuracy of our model. In recent times, Artificial neural networks (ANN) is widely used in predicting stock prices and various other models use ANN's.[1] in this paper prediction of stock market is done using neural network and ARIMA and comparative analysis is done to analyze the performance of these two networks. Stock Market Prediction using LSTM Recurrent Neural Network published in the year 2020. The methodology used for this are the use of RNN and LSTM algorithms, Recurrent Neural Networks, Long-Short Term Memory. The advantages of this paper is that it uses the best algorithms for Stock Prediction and the disadvantages is that it only predicts the opening prices. [1].

Stock Market Volatility – A Study of Indian Stock Market published in the year 2017. The methodology used for this are Use of RNN and LSTM algorithms, Recurrent Neural Networks, Long-Short Term Memory. The advantage of this paper is that it uses the best algorithms for Stock Prediction, and the disadvantage is that it only predicts the opening prices.[2].

Prediction Of Stock Market Exchange Using LSTM Algorithm published in the year 2020. The methodology used for this are Choosing the best model. The advantage of this paper is that Brief description of the LSTM model. and the disadvantage is that it shows the use of model for 5 stocks.[3]

Stock Market Prediction using LSTM Recurrent Neural Network published in the year 2020. The methodology used for this the use of RNN and LSTM algorithms, Recurrent Neural Networks, Long-Short Term Memory. The advantage of this paper is that uses the best algorithms for Stock Prediction. And the disadvantage is that only predicts the opening prices.[4]. Stock Market Volatility – A Study of Indian Stock Market published in the year 2017. The methodology used for this Data Collection, Causes of volatility in Indian Stock Market. The advantage of this paper is that it Describes the best methods or areas to collect data, Learn the causes of volatility. And the disadvantage is that It does not have any specific way to predict.[5]

3. Materials and Methods

Considering all the possible attributes of a Stock such as news of the stock, opening price of the stock, closing price of the stock, every day High of the stock, Everyday Low of the Stock we will build a model that predicts the future prices of a stock using LSTM model and analyze the stock using Sentiment analysis. First, we collect the data using yfinance library. Stock ticker is used to extract the historical stock data of the stock. We clean the data and we pre-process the data. Having the data, we split the data into training (75%) and testing (25%). The training data is sent to the model with over 100 epochs and the model is built. The testing data is used to compare the actual values and the predicted values using LSTM model. We use 3 metrics MSE (Mean Squared Error), RMSE (Root Mean Squared Error) and MAE (Mean Absolute Error). Now, the future values are predicted. We consider the previous 50 days data to predict future 10 days values, previous 70 days data to predict future 20 days value, previous 90 days data to predict future 30 days values. We consider the previous 10 days and future days(10 or 20 or 30) values to predict the faith of the stock. We compare the previous days value with the next day's value and if the next day's value is increased, we will count it as positive. When comparing if the next day's value is decreased, we will count it as negative else we count it as neutral. After having all the count values of positive and negative, we find which has larger value. If the positive variable has larger value, we say that 'Stock faith is positive', if the negative variable has larger value, we say that 'Stock faith is negative'. If the

value of neutral is high we still consider it as 'Stock Faith is negative'. This process is done for all the attributes (Opening Price, Closing Price, Everyday High and Everyday Low). Now, we extract the news data of the stock from Finviz website through Web scraping. We again need stock ticker to extract the news of the stock from the Finviz website. Latest 100 news is extracted from the website and we use Natural Language processing to analyze the news. SentimentIntensityAnalyzer() is used to analyze the

polarity of news of the stock. This outputs 3 variables which shows the positiveness, negativeness, and neutrality of the news. It also outputs comp value which will be positive if the value is greater than 1, negative if less than 1., neutral if the value is equal to 1. If the news analysis has more positive values we say 'Stock Faith is Positive' on news analysis. If the news analysis has more negative values we say 'Stock Faith is negative'. If the news analysis is neutral we say 'Stock Faith is neutral' on news analysis.

Considering all the Faith results from Opening Price, Closing Price, Everyday Low, Everyday High and news analysis we predict the faith of the stock at last.

4. Results and Discussion

At last, considering all the possible attributes we decide the faith of the stock. There are 5 attributes - Open price, Close price, Everyday High, Everyday Low and News of the stock. Considering these 5 attributes, if the faith of any 3 attributes is good, we say that 'Stock faith is positive' and display the attributes which are having negative faith. If any 3 attributes are negative we say that 'Stock faith is low' and display the attributes with positive faith. The above mentioned process is carried out by considering all the possible results and display the faith of the stock in the best possible manner. If all the attributes are positive, we say that 'Stock Faith is positive, a good option' else we say that 'Stock Faith is negative a bad option'.

5. Conclusions

The stock market is a highly volatile, non-deterministic system that is influenced by a large number of variables. Trend direction on a variety of scales and levels. This makes projecting the uptrend or downtrend difficult. Down trending is a difficult task. Stock market forecasting has always been a difficult task. Analysts have a lot of work to do. As a result, we try to forecast the stock using a large amount of textual data. Indices of the stock market. To forecast stock market prices, we employ the LSTM algorithm. Sentiment is a tool that we utilize. To analyze the supplied stock, conduct an analysis.

Now we take into account the stock's expected worth as well as the current market price. The sentiment analysis's consequent value for predicting the stock's faith. By observing market behavior, financial analysts and investors can utilize this prediction model to make trading decisions.

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This section can be kept at the end of the manuscript before reference section and should not be more than 50 words. This section can be used to acknowledge the help of those who do not qualify for authorship or to acknowledge funding, donated resources or significant contribution to the research.

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