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Review Article

Stock Market Analysis: A Review and Classification of Estimate Performances

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I N F O

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A B S T R A C T

In the World of big data and deep learning, predicting the price and trends of the stock price is more crowd-pleasing than ever. We can collect one, two, more years of data from the Stock market and propose key feature engineering models and deep learning models for predicting the stock market price fluctuations. The suggested solution is far-reaching because it involves the concept of feature engineering techniques that are combined with the stock market dataset pre- processing and a custom-made deep learning-based stock market price forecasting system. It controlled an extensive evaluation of commonly utilized machine learning models that concluded the expected resolution was admirable for the extensive feature engineering we are created. This technique provides an up-to-date level of overall accuracy which is helpful in predicting and analyzing any stock trend in the share market. At the same time, the length of the forecast period, feature engineering, detailed design and evaluation of the data preprocessing mechanism, that task provide to the equity research group with a pair of financial and technical fields.

Keywords: PCA, LSTM, RSI, CMD

Introduction

The title of this project is Stock Analysis Terminal. This is because it is used to analyze stock prices. It is a handy tool for comparing previous data, written in the Python programming language and machine learning. Stock market research is a way in which both the investors and the traders want to make a buying and selling conclusion with the help of both investigating as well as analyzing their data history and current data. This gives investors a sense of security that shares can offer before investing. There is a convenient platform for seeing how individual stocks are on the market and how they are evolving. Detailed Equity Analysis Terminal detects all activity in each sector of the stock market. The Stock Market Analysis Terminal allows investors and traders to make trading decisions more quickly. The basic sense of this invention would be to trust the past behavior of stock prices and analyze the probability of it behaving in an equivalent way in the upcoming time. It captures and maps out patterns during a specific time period in the past and gives us tendencies and momentum that we can use to our advantage.[1]

Problem Statement

We have researched and based on that we approached predicting the short-term price trend from various ideas such as financial domain knowledge, feature engineering, forecasting algorithms. Next, we produce 3 research questions related to each idea.

- How does feature engineering improve the prediction accuracy of a model?
- How can financial insights help in the design of predictive models?

- What could be the best algorithm that will predict short-term price trends?

Methodology

By selecting majorly used technical indexes and putting them in the extension process to receive the extension set as feedback. Then select the highly effective i-function within the extension set. It will then feed the piece of data containing [i] selected features into the PCA algorithm, reducing the dimension to [j] features. When we get the best combination of [I] and [j], we will process that piece of data into the final feature set and then feed it into the LSTM to get a brief idea of the price-trend forecast. The new feature of the opposed solution is not limited and is not only for applying the technical method to the fresh data but also to implement the enhancements used by stock market investors. See the next subsection for more information on enhancements. This work considered the experience of implementation and optimization of deep learning-based solutions in the development and adaptation of deep learning solutions and feature engineering.

Feasibility Study

Our project is to implement an application that is used by everyone and uses it for learning and analysis purposes. So that we can easily find out which next step is best for the stock market and easily prevent ourselves from losing investing amount in the stock market if without any analysis we invest in the market and not think about what a result they show in the future. So, this application is used to analyze past data of the stock market which totally depends on users how long data they want to analyze and check according to performance which stock is best for investing money in the long term and short term. In large trading institutions like hedge funds, banks, pension funds, etc. The prediction of stock price's momentum matters a lot. It helps gauge the potential direction and once you have it you can have a better probability of betting the predicted direction. These institutions use several factors like earning seasons, previous cycles, change in earnings to price ratio, moving averages, various other indicators to predict the direction of stock in the upcoming time period. Using highly calculated tendencies they can minimize their risks when they want to bet bigger. Even in retail stock trading terminals, various indicators like moving averages, RSI, etc are used as parameters to determine if a stock is likely to continue its momentum or keep going sideways. One can use any instrument to predict prices but if momentum is absent, it becomes worthless to profit from it.[2,3]

Software and Hardware Requirements

- Install Python programming platform in system. Like; PyCharm, etc
- Libraries which are required are
  - Datetime
  - NumPy
  - Matplotlib
  - Math
  - YFinance
  - Keras models - Sequential
  - Keras layers - Dense, LSTM
  - Scikit-Learn
  - Pandas
  - Install all given libraries using CMD (Command Prompt)
  - Machine Leaning concepts are required

Figure 1

Source: Stock Market Dataset - We can gather any company's stock historical data from Yahoo Finance.

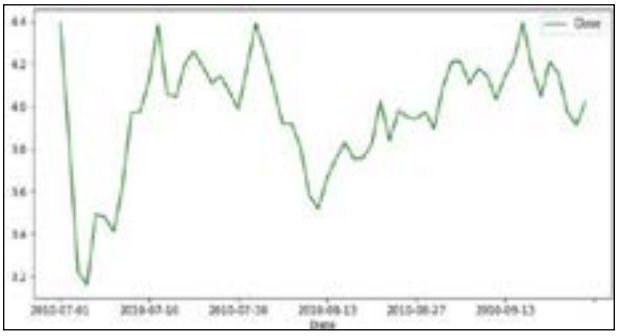

Figure 2

Loading Dataset and Visualization - We can download any stock data like; we download tsla. csv file from yahoo.finance.com.

	Date	Open	High	Low	Close	Adj Close	Volume
0	2010-07-01	5.000	5.184	4.054	4.392	4.392	41094000
1	2010-07-02	4.600	4.620	3.742	3.840	3.840	25699000
2	2010-07-06	4.000	4.000	3.166	3.222	3.222	34334500
3	2010-07-07	3.280	3.326	2.996	3.160	3.160	34608500
4	2010-07-08	3.228	3.504	3.114	3.492	3.492	38557000

Figure 3.This dataset includes the number of rows and columns to visualize the given dataset[6]

Implementing LSTM model and compiling it

- **LSTM -** Recurrent neural network that is capable of learning long term dependencies in data
- **Dense Layer -** Regular deeply connected neural network layer.[7]

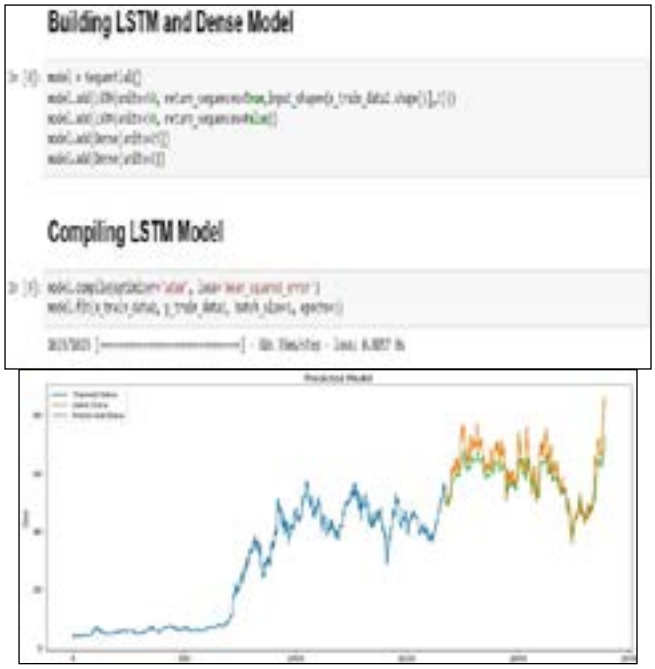

Figure 3.Final Output

Future Possibilities

This project is basically designed to train from the 70% data out of dataset dated between any two given dates, like; for example, it is July-2010 to December-2019.

In future, a dynamic web app can be created which can on the spot analyze previous stock prices and give us a glimpse of future trends.[4,5]

Conclusion

The aim of this project was to build an analysis of any company's share price using a stock analysis terminal. And increase the knowledge about how they give their performance in future and give lots of useful information like; it is in uptrend or in a downtrend, buy or sell, future targets of shares in the stock market.

All these things will help every user to invest their money in the right place so they make a profit and earn money using the stock market. Buying and Selling are completely dependent upon the situation and trend of any of the shares on the stock market. Investors get help to analyze the data of any share price.

This helps us predict the direction of price for upcoming time periods based on their seasonal tendencies, current valuation, past performance. Using this we can take calculated steps and hence minimize our risks. This tool can also be used for commodity and index price prediction which may help score a simple analysis of a country's performance in corporate profitability, Likelihood of a commodity price to keep rising or falling.

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