Visualizing and Forecasting Stocks Using Dash

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Abstract: *In stock market it is very hard to predict the stock prices as there are no clear cut rules of prediction, but it provides one of the highest returns in the market. Even though they are volatile in nature, one can visualize share prices and other statistical factors which helps the keen investors carefully decide on which company they want to spend their earnings on. Developing this simple project idea using dash library (of python), we can make dynamic plots of financial data of a specific company using tabular data provided by yfinance python library. On top of it, we can use machine learning algorithm to predict the upcoming stock prices. The project is a good start for beginners in python/data science and a good refresher for professionals who have dabbled in Python/ML before.*

Keywords: Stock Market, Machine Learning, Dash Python, yfinance, Predictions

I. INTRODUCTION

Investment companies and individual investors have been utilizing money models to possess a higher understanding of the market and build a profitable investment. Plenty of data regarding stock data fluctuations is at hand for analysis and processing. Investors take calculated guesses by analyzing data. They browse the news, study the corporate history, trade trends and numerous variables that go into creating a prediction. The prevailing theories are that stock costs are quite random and unpredictable. This raises the question that why prime companies like Morgan Stanley and Citigroup rent quantitative analysts to create predictive models. This paper seeks to utilize Deep Learning models, LSTM Neural Networks, to predict stock costs. As for data with time-frames RNNs are available handy however recent researches have shown that LSTM networks are the foremost sought-after and helpful variants of RNNs. A business could become prone to market fluctuations on the far side your management - together with market sentiment, economic conditions or developments in your sector.

II. PROPOSED SYSTEM

We have created a single page web application using dash and machine learning models. The main goal of this project is to precisely predict the future closing price of stock over a period of time in future. In this project we have used dash html components and dash core components to create website's structure and for enhancing the site's UI we have used CSS for styling. Plots of data are generated by using the plotly library of python and the data is fetched using yfinance. Machine learning models are implemented for predicting the stock price for the dates requested by the user. The project is deployed on Heroku to host it live.
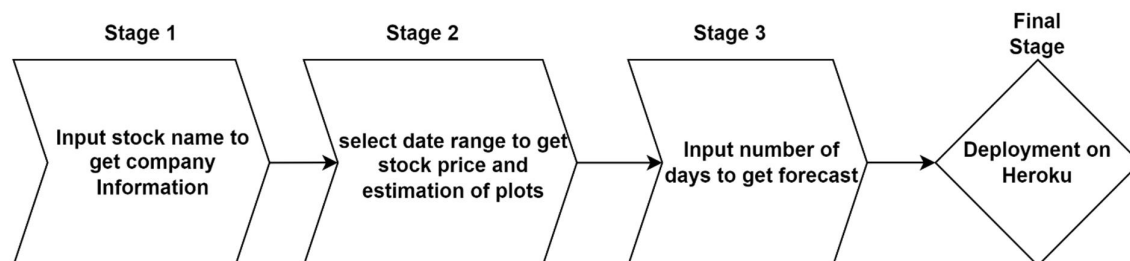
III. METHODOLOGY

We saw that the new user was afraid to invest in the share market because he did not have the knowledge and did not have any tool with the help of which he could do this work. So then we created a tool with the help of machine learning and
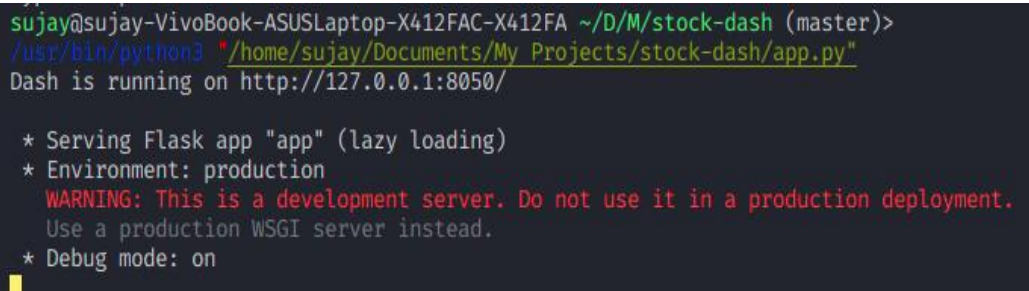
deep learning, which can tell in a very precise way where the market will move by analyzing things. We did this work by taking data from yfinance. We imported this data through library and analyzed with the help of machine learning model and we did it with a machine learning model because it does this thing very precisely. In this we have used the model of Deep Learning LSTM, we have trained the data in its own way, we have learned to use it because it is very advanced and performs this task very accurately and the result is more accurate. We used this method because in this we can train the data, due to which it can do its work very accurately and get close to the real result with great accuracy. There is a drawback in this that it will work the way we trained it. We have to face a lot of difficulty in trained the data because the model cannot make any changes in itself like the data is transcribed, it works the same way.

IV. RESULT

4.1 Create Basic Website Layout

A. Expected Outcome

By now you should have the basic web page setup as shown below in the second image which can be seen by starting the server locally as shown below in the first image.
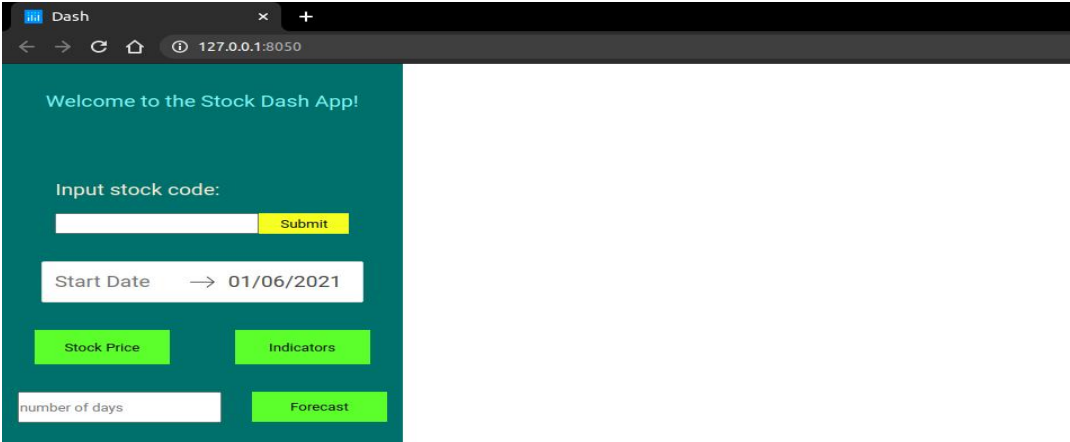
B. Style Your Application

At this stage, your webpage should have a much better look than before. You may use the below web page as your starter template-
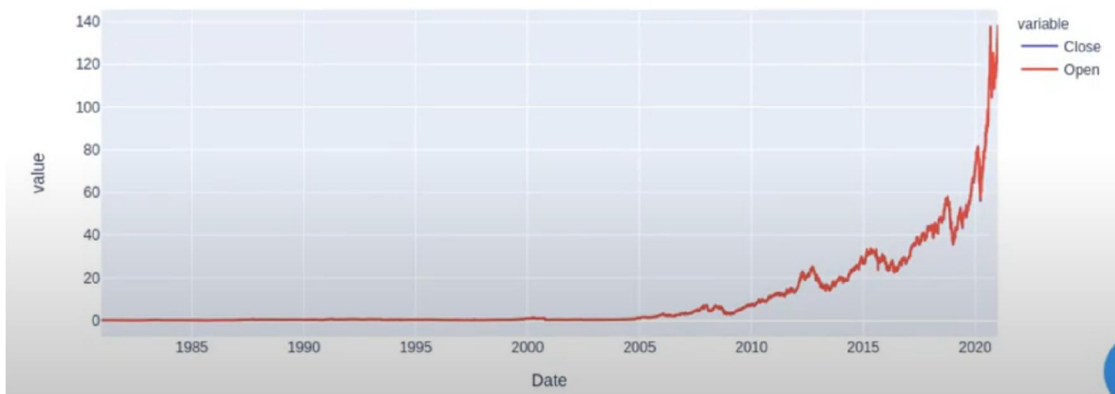
C. Generating a Company's Information and Graphs

We are going to use the yfinance python library to get company information (name, logo and description) and stock price history. Dash's callback functions will be used to trigger updates based on change in inputs.
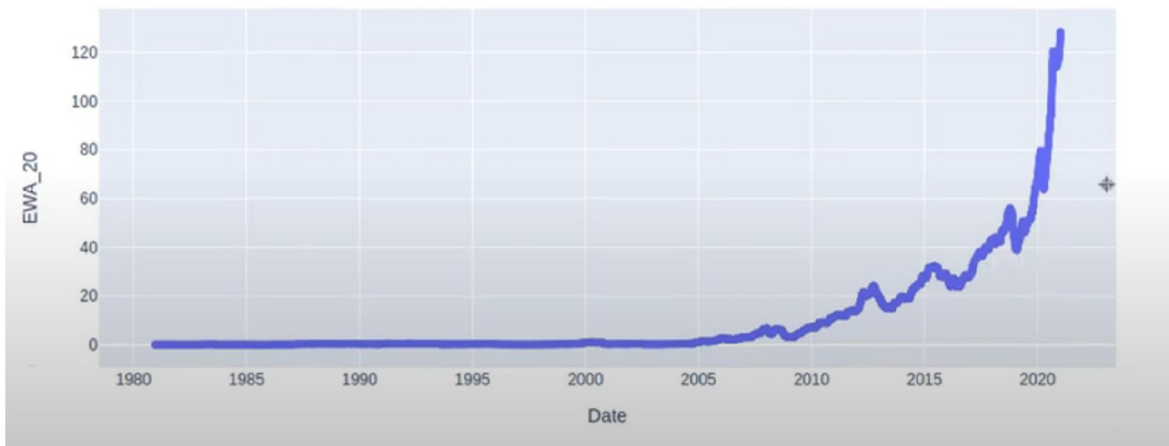

Closing and Openning Price vs Date

Exponential Moving Average vs Date

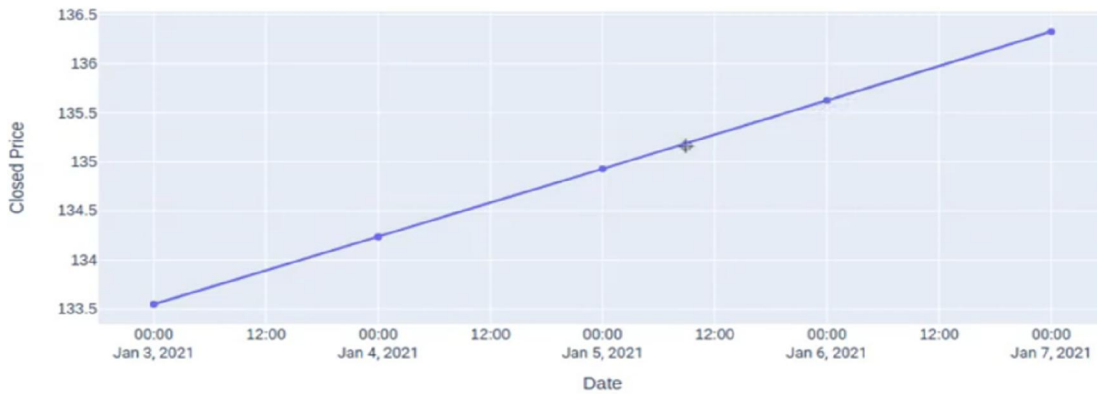### D. Creating the Machine Learning Model

After finishing all this, we should have a complete project where user input - stock, code can give us the company information and relevant plots. Also, user input number of days can give us a forecast plot.

Closing and Openning Price vs Date
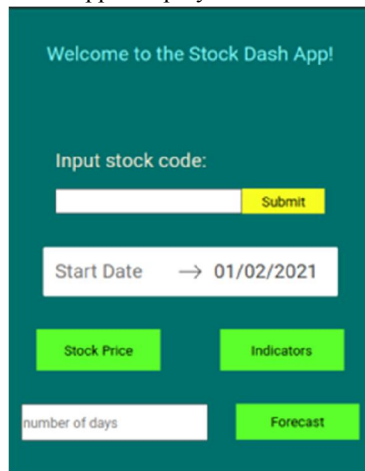

Predicted Close Price of next 5 days

Exponential Moving Average vs Date

Predicted Close Price of next 5 days

E. Deploying the project on Heroku

Finally, our web app is deployed and can be accessed by anyone in the world.

V. CONCLUSION AND FUTURE SCOPE

Stock market Trading is the most sought after and so its popularity is increasing and researchers ought to find new techniques for prediction. Stock forecasting and visualizing technique helps investors and individuals to handle stock market. For predicting the stock prices correctly the forecasting model should have great precision. In this project we used deep learning models and LSTMs and RNN units for predicting the stock prices accurately that assists the investors or individuals with correct knowledge about the situation of stock market.

The scope of visualizing and forecasting stock has a very huge in the field of stock market. According to recent report the number of investors investing in stock market is increasing every year, therefore a system of visualizing and forecasting stocks is required to guide the investors to invest carefully in the stocks. Visualizing stocks is a risky trend and can often lead to inaccurate value predictions mainly because of how many factors it depends upon. This project can be extended and modified in future by training the model on more features and including some important nonnumerical features as well with the help of a subject matter expert.

VI. ACKNOWLEDGMENT

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