Project Report

On

STOCK MARKET TREND PREDICTOR

Lovely Professional University

Course Code: INT404

Submitted to: Dr. Rahul

Submitted by:

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1. Abstract:

In Stock Market Prediction, the aim is to predict the future value of the financial stocks of a company. The recent trend in stock market prediction technologies is the use of machine learning which makes predictions based on the values of current stock market indices by training on their previous values.

The prediction of a stock market direction may serve as an early recommendation system for short-term investors and as an early financial distress warning system for long-term shareholders. Forecasting accuracy is the most important factor in selecting any forecasting methods. Research efforts in improving the accuracy of forecasting models are increasing since the last decade. The appropriate stock selections those are suitable for investment is a very difficult task. The key factor for each investor is to earn maximum profits on their investments.

In this project, we have taken data from Yahoo Finance, used pandas to get stock information and predicted future stock prices through monte Carlo method. Monte Carlo methods, or Monte Carlo experiments, are a broad class of computational algorithms that rely on repeated random sampling to obtain numerical results.

2. Introduction:

Stock Market Analysis and Prediction is the project on technical analysis, visualization, and prediction using data provided by Yahoo Finance. By looking at data from the stock market, particularly some giant technology stocks and others. Used pandas to get stock information, visualized different aspects of it, and finally looked at a few ways of analyzing the risk of a stock, based on its previous performance history. Predicted future stock prices through a Monte Carlo method!

3. Purpose:

The purpose of this project is to comparatively analyze the effectiveness of prediction algorithms on stock market data and get general insight on this data through visualization to predict future stock behavior and value at risk for each stock. The project encompasses the concept of Data Mining and Statistics. This project makes heavy use of NumPy, Pandas, and Data Visualization Libraries.

4. Literature review:

Recently, a lot of interesting work has been done in the area of applying Machine Learning Algorithms for analyzing price patterns and predicting stock price. Most stock traders nowadays depend on Intelligent Trading Systems which help them in predicting prices based on various situations and conditions.

Stock market prediction is a project on visualizing previous data, based on the previous data – prediction of future stock prices. This project has been made with the help of pandas, NumPy and various data visualization libraries. In this, data has been taken of companies from yahoo and prediction of future stock prices has been done with the help of their previous years data.

5. Proposed methodology:

The method used for predicting stock prices is monte Carlo method. Monte Carlo methods are a subset of computational algorithms that use the process of repeated random sampling to make numerical estimations of unknown parameters. They allow for the modeling of complex situations where many random variables are involved, and assessing the impact of risk.

Monte Carlo simulation performs risks analysis by building models of possible results by substituting a range of values – a probability distribution for any factor that has inherent uncertainty. It then calculates results over and over, each time using a different set of random values from the probability functions.

Monte carlo method gives graphical result. And with this method, it is easy to create graphs of different outcomes and their chances of occurrence. This method is applied on the data retrieved from Yahoo Finance. The results will be used to analyze the stock prices and their prediction in depth in future research efforts.

The input to our system will be previous years data from Yahoo Finance. Appropriate data would be applied to find the stock price trends. Hence the prediction model will notify the up or down of the stock price movement for the next trading day and investors can act upon it so as to maximize their chances of gaining a profit. The entire system would be implemented in python using open source libraries.

6. How to generate output?
   a) get the last years' data.
   b) Provide the data to the system.
   c) Run simulation.
   d) System will predict the output.
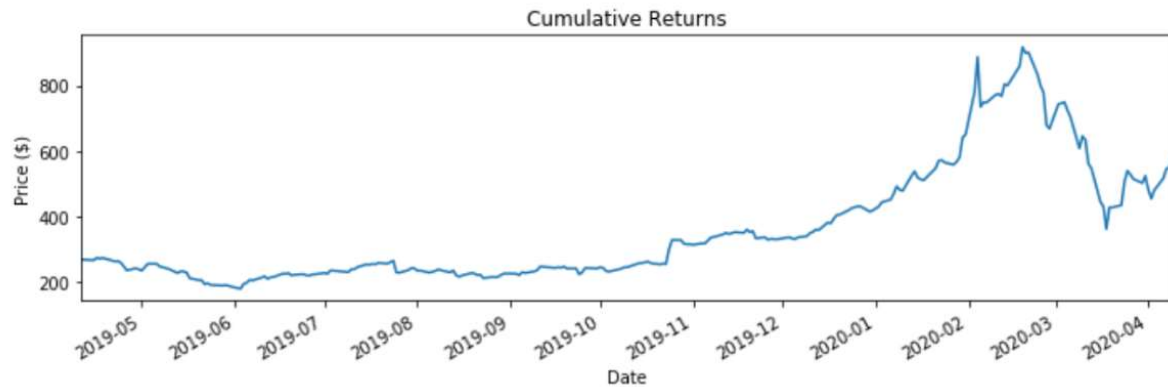
7. Result & discussion:

7.1.

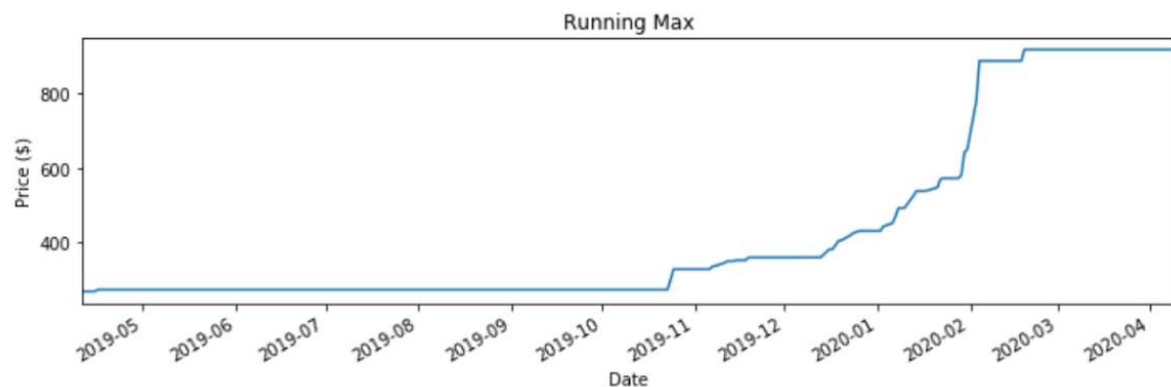Cumulative return is the total change in the price of an investment over a set time period.

```
Enter a stock name to analyze or Enter 1 to use sample provided : googl
Fetching Data... finished


var: -0.0608
cvar: -0.1128
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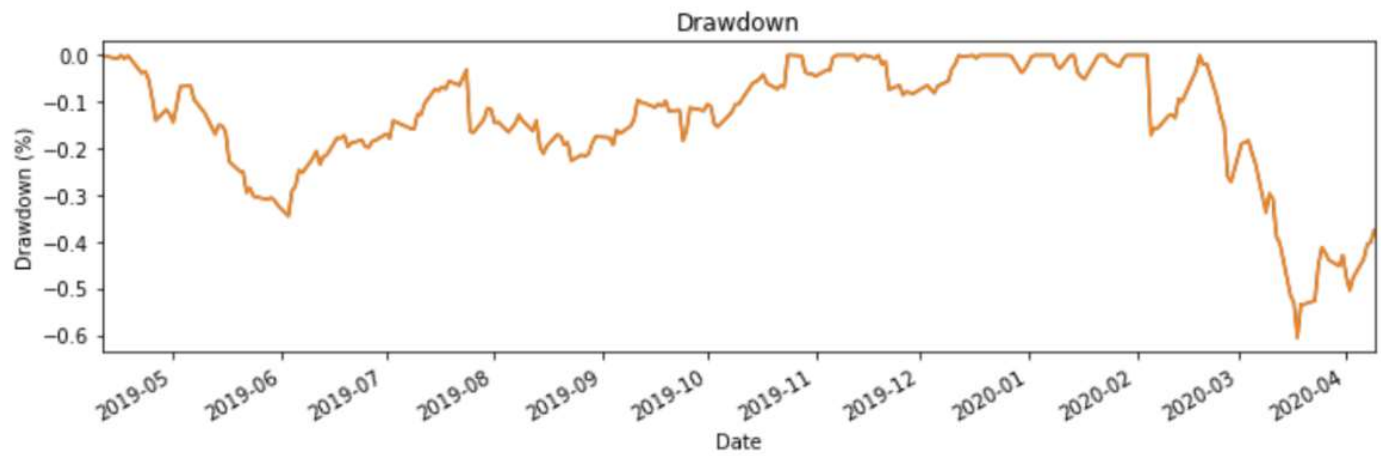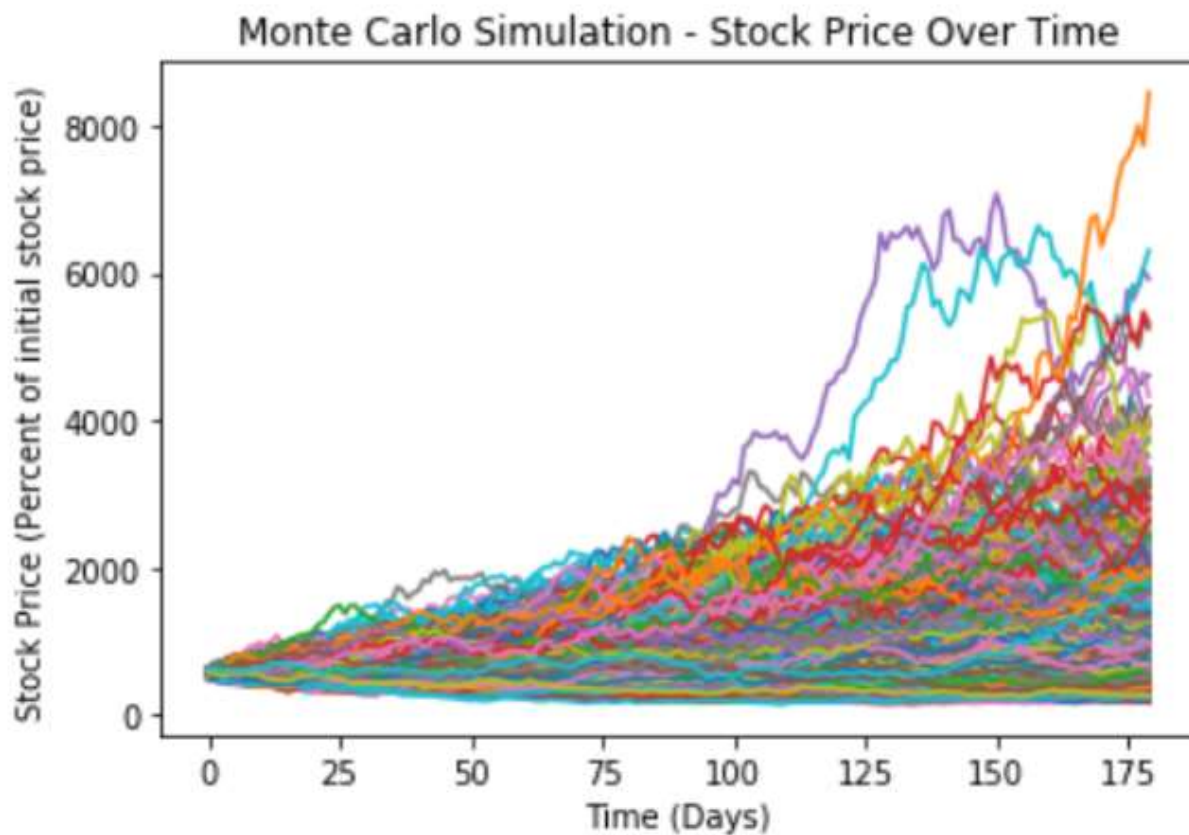

7.2

Running max graph.

7.3

A drawdown is peak-to-trough decline during a specified period for an investment.

Drawdown

7.4

Monte Carlo simulation is a technique used to understand the impact of risk and uncertainty in financial, project management, cost, and other forecasting models.

Monte Carlo Simulation - Stock Price Over Time

7.5

Histogram plotted after calculating average var (Value at Risk) generated by monte Carlo simulation by doing over 1000 simulations over a time period of 180 days
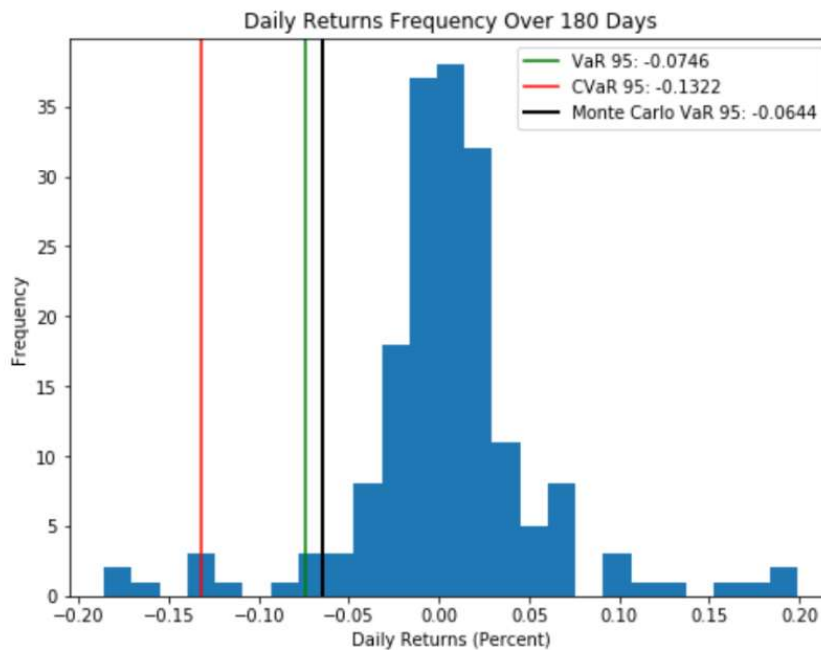
7.6 Video Explanation Link and GitHub Link.

7.6.1

Click on the link given below to access the video explanation

https://youtu.be/DAa5slDxBFE

7.6.2

Click on the link given below to access the project files

https://github.com/AI-Project2020/stock-market-trend-predictor-01-02-15

8. Conclusion:

One technique has been utilized in this project, that is, Monte Carlo technique on the Yahoo finance dataset. This technique has shown an improvement in the accuracy of predictions, thereby yielding positive results. Use of recently introduced machine learning techniques in the prediction of stocks have yielded promising results and thereby marked the use of them in profitable exchange schemes. It has led to the conclusion that it is possible to predict stock market with more accuracy and efficiency using machine learning techniques.
In the future, the stock market prediction system can be further improved by utilizing a much bigger dataset than the one being utilized currently. This would help to increase the accuracy of our prediction models.

References:

1.   M. Usman, S. H. Adil, K. Raza and S. S. A. Ali, "Stock market prediction using machine learning techniques,"

2.   Foundations of Machine Learning, Mehran Mohr, Afshin Rostami Zadeh, Ameer Talwalkar

3. "Hands-On Machine Learning for Algorithmic Trading" by Stefan Jansen.