INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Impact Factor: 8.165

INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Visualizing and Forecasting Stock Using Dash

Prof. M.J.Shaikh[1], Shubham Shah[2], Gaurav Kelode[3], Pooja Tayade[4], Vaishnavi Rathi[5], Ashish Lipte[6]

Department of Computer Science and Engineering, Mauli Group of Institution's College of Engineering and

Technology, Shegaon, India

ABSTRACT: Visualizing and forecasting stock data can provide valuable insights into the future performance of individual stocks and the stock market as a whole. This can help investors make informed decisions about their portfolios and assess the risk associated with different investments. Dash is a web-based framework that provides the tools and capabilities necessary to visualize and forecast stock data. By using Dash, you can create interactive and dynamic visualizations that allow you to explore the data in a flexible and intuitive way.In a stock data analysis and forecasting application built using Dash, you can access and pre-process historical stock data, train a machine learning model to make predictions about future stock prices, and create plots and charts that display the predictions and compare them to actual stock prices.

KEYWORDS: Stock market prediction Data visualization, Dash framework, Machine learning, Time-series analysis, Stock forecasting, Interactive visualizations, financial data analysis, Stock price prediction, Investment decision making.

I. INTRODUCTION

The stock market is a complex and dynamic system, and understanding its behaviour is crucial for making informed investment decisions. One of the ways to analyse and understand stock data is by visualizing it. Visualizing stock data can provide insights into patterns, trends, and relationships that can help investors make informed decisions. Forecasting stock prices is another important aspect of stock market analysis. By using historical stock data and machine learning techniques, it is possible to make predictions about future stock prices. This can help investors assess the potential risk associated with different investments and make informed decisions about their portfolios.

Dash is a web-based framework that provides the tools and capabilities necessary for visualizing and forecasting stock data. With Dash, you can create interactive and dynamic visualizations that allow you to explore and analyse stock data in a flexible and intuitive way. In this paper, we will use Dash to build an application for visualizing and forecasting stock prices. The application will allow users to access and pre-process stock data, train a machine learning model to make predictions about future stock prices, and create interactive visualizations that display the predictions and compare them to actual stock prices. By using Dash to build a stock forecasting application, you can provide investors with a powerful tool for understanding the future performance of stocks and making informed investment decisions.

II. LITERATURE SURVEY

There has been a significant amount of research in the area of visualizing and forecasting stock prices using various tools and techniques. Some of the notable studies in this area include:

"Stock price prediction using machine learning techniques" by Chen et al. (2017) - This study focuses on using variousmachine learning techniques, such as artificial neural networks and support vector machines, to predict stock prices. The study concludes that machine learning techniques can provide accurate predictions of stock prices, but the results are highly dependent on the quality of the data and the choice of algorithm.

"Visualization of stock market data: a comparative study" by Sinha et al. (2011) - This study compares various visualization techniques for stock market data, including time-series plots, candlestick plots, and heat maps. The study concludes that different visualization techniques provide different insights into the stock market data, and the choice of technique depends on the specific analysis goals.

"Stock market visualization and analysis using Python" by D'Souza (2017) - This study provides an overview of how to use Python and various data visualization libraries, such as Matplotlib and Seaborn, to analyse and visualize stock market data. The study focuses on the use of various plots, such as histograms, scatter plots, and bar plots, to display the data and gain insights into the stock market behaviour.

"A comparative study of stock market prediction using machine learning algorithms" by Gupta et al. (2020) - This study compares the performance of various machine learning algorithms, including random forests, gradient boosting,

and support vector machines, for stock market prediction. The study concludes that the choice of algorithm depends on the specific stock market data and the analysis goals.

Overall, these studies show the importance of visualizing and forecasting stock prices, and the potential of using machine learning techniques and data visualization tools to gain insights into stock market behaviour.

III. METHODOLOGY

The methodology for visualizing and forecasting stock prices using Dash typically involves the following steps:

Data Collection: The first step is to collect stock market data, which can be obtained from various sources such as stock exchanges, financial news websites, or data providers. The data should include information such as stock prices, volume of shares traded, and other relevant financial indicators.

Data Preprocessing: Once the data is collected, it is important to preprocess the data to ensure that it is clean, organized, and suitable for analysis. This may involve removing missing or duplicate data, transforming the data into a usable format, and normalizing the data so that it is on the same scale.

Data Visualization: The next step is to visualize the stock market data to gain insights into the trends and patterns in the stock prices. This can be done using various plotting and charting tools in Dash, such as line charts, bar charts, scatter plots, and heat maps.

Model Development: To make predictions about future stock prices, machine learning models can be trained on the preprocessed data. This may involve selecting a suitable machine learning algorithm, training the model on the data, and fine-tuning the parameters to optimize the model's performance.

Model Deployment: Once the model is trained, it can be deployed in a Dash application, where it can be used to make predictions about future stock prices. This can be done using interactive and dynamic interfaces that allow users to explore the data and make predictions.

Evaluation and Refinement: The final step is to evaluate the performance of the model and refine it if necessary. This may involve testing the model on new data, adjusting the parameters, or developing new models that perform better.

By following these steps, it is possible to build a robust and user-friendly application for visualizing and forecasting stock prices using Dash.

IV. CONCLUSIONS

In conclusion, visualizing and forecasting stock prices are important tasks for stock market analysis and investment decision making. By using Dash, a web-based framework for data visualization, it is possible to create interactive and dynamic visualizations that provide valuable insights into the stock market behaviour. Dash provides a range of tools and capabilities for accessing, pre-processing, and visualizing stock data, and training machine learning models to make predictions about future stock prices. With Dash, it is possible to build powerful and user-friendly applications that allow investors to explore stock market data and make informed decisions about their portfolios.

REFERENCES

[1] Chen, Y., Liu, Y., & Yang, J. (2017). Stock price prediction using machine learning techniques. Applied Soft Computing, 51, 506-516.

[2] Sinha, A., Agrawal, M., & Agrawal, D. (2011). Visualization of stock market data: a comparative study. International Journal of Computer Applications, 28(10), 36-42.

[3] D'Souza, J. (2017). Stock market visualization and analysis using Python. Journal of Open-Source Software, 2(16), 391.

[4] Gupta, R., & Kaur, S. (2020). A comparative study of stock market prediction using machine learning algorithms. Journal of Ambient Intelligence and Humanized Computing, 11(3), 3315-3330.

[5] Plotly (2021). Dash User Guide and Documentation. Retrieved from https://dash.plotly.com/

[6] Dash Community (2021). Dash Community. Retrieved from https://community.plotly.com/c/dash

[7] Python (2021). Python.org. Retrieved from https://www.python.org/

[8] Pandas (2021). Pandas.pydata.org. Retrieved from https://pandas.pydata.org/

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING