

Stock market companion: real-time data, hybrid analysis, and enhanced user interaction

Major Project Report



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DECLARATION BY THE CANDIDATE

We the undersigned solemnly declare that the Minor project report entitled “**Stock Market companion: real-time data, hybrid analysis, and enhanced user interaction**” is based our own work carried out during the course of our study under the supervision of **Mr. Ramakant Ganjeshwar**.

We assert that the statements made and conclusions drawn are an outcome of the project work. We further declare that to the best of our knowledge and belief that the report does not contain any part of any work which has been submitted for the award of any other degree/diploma/certificate in this University/Deemed university of India or any other country.

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CERTIFICATE BY SUPERVISOR

This is to certify that the Minor project report entitled “**Stock Market companion: real-time data, hybrid analysis, and enhanced user interaction**” is a record of project work carried out under my guidance and supervision for the fulfillment of the award of degree of Bachelor of Technology (Hons.) in the faculty of Computer Science & Engineering of Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.) India.

To the best of my knowledge and belief the report

- I Embodies the work of the candidate himself
- II Has duly been completed
- III Fulfills the partial requirement of the ordinance relating to the B.Tech(Hons.) degree of the University
- IV Is up to the desired standard both in respect of contents and language for being referred to the examiners.

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The project report entitled “**Stock Market companion: real-time data, hybrid analysis, and enhanced user interaction**” has been examined by the undersigned as a part of the examination of Bachelor of Technology (Hons.) in the faculty of Computer Science & Engineering of Chhattisgarh Swami Vivekanand Technical University, Bhilai.

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We would like to acknowledge that this project was completed entirely by us and not by someone else.

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LIST OF ABBREVIATIONS

1	GOOG	Google - Alphabet Inc.
2	AMZN	Amazon.com
3	APPL	Apple Inc
4	META	Meta Platforms
5	MSFT	Microsoft Corporation
6	NFLX	Netflix Inc
7	NVDA	Nvidia Corporation
8	TCS	Tata Consultancy Services



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ABSTRACT

The prediction of stock prices has always been a major focus in financial sciences, driven by the need to anticipate variable movements in an unpredictable market. Traditional stock prediction models often rely solely on numerical data, overlooking critical external factors like news and social media trends. This project introduces an advanced stock price prediction model that leverages both numerical and textual data analysis for enhanced accuracy. The model forecasts stock prices for eight major tech companies by integrating historical stock data and sentiment analysis of financial news and social media. Machine learning algorithms in Scikit-learn process the numerical data, while natural language processing (NLP) techniques are used to assign sentiment scores to textual information.

For effective time-series data management and interactive monitoring, InfluxDB and Grafana are employed. Additionally, a comprehensive Power BI dashboard has been developed to visually represent key insights, historical trends, sentiment impacts, and real-time predictions in an intuitive and business-oriented format. This ensures that users can easily interpret complex data patterns and make informed decisions based on hybrid analysis.

The project code is available on GitHub, promoting open-source accessibility and collaboration, and is complemented by detailed documentation for ease of use. A Streamlit app has been developed and deployed, offering an intuitive user interface that makes the prediction model accessible even to users new to the stock market. This app includes various modules, such as text-based prediction models and real-time analysis dashboards. Furthermore, a Flask API backend has been created to handle model predictions and to allow seamless future integration with additional platforms.

By combining advanced machine learning techniques, real-time data management, and powerful visualization tools, this project provides a scalable and user-friendly foundation for innovation in stock market forecasting.



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