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100-ft Ring Road, Bengaluru – 560 085, Karnataka, India

Capstone Project Report Phase-2
on

Simple Nivesh

Submitted by

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Feb. 2024 – June 2024
under the guidance of

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FACULTY OF ENGINEERING
DEPARTMENT OF COMPUTER APPLICATIONS
PROGRAM – MASTER OF COMPUTER APPLICATIONS

CERTIFICATE

This is to certify that the project entitled

Simple Nivesh – AI Driven Stock Analyzation Platform

is a bonafide work carried out by

PAWAR RUNAL RUPESH - PES1PG22CA141

in partial fulfillment for the completion of Capstone Project, Phase-2 work in the Program of Study MCA under rules and regulations of PES University, Bengaluru during the period Feb. 2024 – June 2024. The project report has been approved as it satisfies the academic requirements of 4th semester MCA.

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DECLARATION

I, **PAWAR RUNAL RUPESH,** bearing **PES1PG22CA141** hereby declare that the Capstone project Phase-2 entitled, ***Simple Nivesh – AI Driven Stock Analyzation Platform,*** is an original work done by me under the guidance of **Dr. Premalatha HM,** *Associate Professor*, PES University, and is being submitted in partial fulfillment of the requirements for completion of 4th Semester course in the Program of Study **MCA**. All corrections/suggestions indicated for internal assessment have been incorporated in the report.

The plagiarism check has been done for the report and is below the given threshold.

I further declare that the work reported in this project has not been submitted and will not be submitted, either in part or in full, for the award of any other course.

PLACE:

DATE:

PAWAR RUNAL RUPESH

ACKNOWLEDGMENT

Life enhances better opportunity with better blessings with adequate space and time. It was a great blessing for doing this Project titled “Simple Nivesh – AI Driven Stock Analyzation Platform”, where I have put into all my efforts and dedication towards it resulting in getting easy analysis, better experiences, and ideas behind. To give brighter and broader measures there has been a few concerns supportive to make this project to be real time data, without which my project would have been meaningless.

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I would also like to extend my thanks and gratitude to every faculty of Department of Computer Applications and to my family inmates and friends who were concerned for the project.

Thank you everyone.

PAWAR RUNAL RUPESH

ABSTRACT

The stock market can be a daunting and difficult place for beginners, and it is often difficult for inexperienced individuals to participate and build wealth over the long term This project aims to create a platform that is simple, an easy-to-use interface that will allow anyone to invest in the stock market, regardless of their level of knowledge or expertise Regardless. The platform will use a beginner-friendly interface at the front end, which hides the intricacies of the stock market, and AI-driven product price forecast on the back end to provide users with the information and tools they need to make informed investment decisions. The main objective of this project is to bridge the access gap for equity investors by combining flexible interaction with AI-powered predictive analysis. This approach aims to empower individuals, even those with little to no financial expertise, to participate confidently in the stock market. By doing so, the project promotes financial inclusivity and opens up new avenues for wealth-building opportunities. This project addresses the inherent challenges faced by beginners in navigating the intricate landscape of the stock market. Recognizing the intimidation factor and complexity associated with constantly fluctuating prices, the initiative seeks to unlock the wealth-building potential of stock market investments, even for those lacking experience. At its core, the project envisions a simplified investment journey through the development of a user-friendly platform, breaking down barriers for individuals irrespective of their knowledge levels.

INDEX

Chapter No.	CONTENTS		Page no.
1	**INTRODUCTION**		10
	1.1	Project Description	10
2	**LITERATURE SURVEY**		11
	2.1	Domain Survey	11
	2.2	Related Work	12
	2.3	Existing Systems	14
	2.4	Technology Survey	15
	2.5	Feasibility Study	16
3	**HARDWARE AND SOFTWARE REQUIREMENTS**		17
	3.1	Hardware Requirements	17
	3.2	Software Requirements	17
4	**SOFTWARE REQUIREMENTS SPECIFICATION**		18
	4.1	Users	18
	4.2	Functional Requirements	19
	4.3	Non-Functional Requirements	21
5	**SYSTEM DESIGN**		22
	5.1	Architecture Diagram	22
	5.2	Context Flow Diagram	23
6	**DETAILED DESIGN**		24
	6.1	Process Flow Diagram With Methodology	24
	6.2	Use Case Diagram	26
	6.3	Database Design	27
7	**IMPLEMENTATION**		29
	7.1	Pseudo Code / Algorithm	29
	7.2	Screen Shots	31
8	**SOFTWARE TESTING**		55
	8.1	Test Cases	55
9	**CONCLUSIONS**		56
10	**FUTURE ENHANCEMENT**		57
Appendix A	**BIBLIOGRAPHY**		58
Appendix B	**PLAGIARIASM REPORT**		59
Appendix C	**POSTER**		60

LIST OF FIGURES

Fig. No	Contents	Page No.
5.1	Architecture Diagram	22
5.2	Context Flow Diagram	23
6.1	Process Flow Diagram	24
6.2	Use Case Diagram	26
6.3	Database Design	27
7.1	Register Page	31
7.2	Login Page	32
7.3	Forgot Password	33
7.4	Search for Stock	34
7.5	Data Collection	35
7.6	Feature Engineering	36
7.7	Original vs Predicted Price	37
7.8	Fundamental Details	38
7.10	Current Scenario	40
7.11	Buying Percentage	41
7.12	Summary	42
7.13	News	43
7.14	Chart	44
7.15	Conversation	45
7.16	Statistics	46
7.17	Historic Data	47
7.18	Profile	48

LIST OF FIGURES

Fig. No	Contents	Page No.
7.19	Financials	49
7.20	Analysis	50
7.21	Options	51
7.22	Holders	52
7.23	Sustainability	53
7.24	Broker	54

LIST OF TABLES

Table. No	Contents	Page No.
8.1	Test Cases for Simple Nivesh Platform	55

CHAPTER 1. INTRODUCTION

1.1 PROJECT DESCRIPTION

1. PROBLEM SCENARIO

The current portfolio is complex and volatile, making it difficult for startups to invest successfully. Existing mutual funds are typically designed for experienced investors and can be overwhelming for beginners. Furthermore, many stock market forecasting models are complex, requiring a deep understanding of machine learning and more sophisticated processing tools to implement.

2. PROPOSED SOLUTION

Simple Nivesh provides a convenient and accessible platform that empowers anyone to invest in the Stocks with confidence. Its AI engine analyzes market data and identifies optimal entry and exit points, simplifying investment decisions.

3. PURPOSE

The purpose of developing this user-friendly platform is to democratize access to NIFTY Stocks investment, making it accessible to individuals of all expertise levels. By incorporating AI-powered stock market analysis, the platform aims to provide accurate insights and recommendations for optimal buy/sell timings, empowering users to make informed investment decisions. The goal is to simplify the complexities of stock trading, enhance accessibility, and foster financial inclusivity, ultimately enabling a broader audience to participate confidently in the NIFTY Stocks market.

4. SCOPE

The project's scope is tailored specifically for residents of India, targeting the active market hours from 9:15 AM to 3:30 PM. It caters to individuals aged 18 or above, streamlining stock market participation during this timeframe, ensuring a focused and relevant user base within the specified demographic and market context.

CHAPTER 2. LITERATURE SURVEY

2.1 DOMAIN SURVEY

The project is to develop a user-friendly platform that leverages AI-powered analysis to democratize stock market investment for NIFTY stocks, the benchmark index of the Indian stock market. This platform aims to provide accurate insights and recommendations, regardless of the user's financial expertise. Here is a detailed domain survey for the project:

1. Market Overview

Abnormally high levels of blood glucose (sugar). The stock trading and brokerage industry has seen significant transformation due to technological advancements, with artificial intelligence (AI) playing a crucial role. AI has been used to support market analysis, improve user experiences, and ensure data security and risk management. However, there are concerns about data security and potential misuse of AI-driven tools.

2. AI-driven Tools in the Industry

AI and ML capabilities, such as forecasting, natural language processing, image recognition, and anomaly detection, are transforming the financial sector. These capabilities facilitate enhanced capacity to predict economic, financial, and risk events, reshape financial markets, improve risk management and compliance, strengthen prudential oversight, and equip central banks with new tools to pursue their monetary and macro prudential mandates.

3. AI - driven Tools in the Industry

While there are no specific AI-driven tools widely used by retail investors, some investment managers suggest that AI can be used for stock market forecasting. Brokerage platforms may provide users with natural language processing (NLP) based interfaces on their websites to help investors make investment decisions. Disorder characterized by impaired thinking, emotions, and behaviors.

2.2 RELATED WORK

1. RESEARCH PAPER

Title: Forecasting the Stock Market Index Using Artificial Intelligence Techniques.

Author: Lufuno Ronald Marwala.

Publication: University of the Witwatersrand, Johannesburg

Year of Publish: 2020

Description: This study uses neural networks, vector-assisted machines, and neuro-fuzzy algorithms to predict stock market index values based on historical data, and finds that although these artificial intelligence methods outperform the linear model of course, they cannot entirely disprove the simple form of efficient market speculation.

2. RESEARCH PAPER

Title: Stock Price Prediction using Sentiment Analysis and Deep Learning for Indian Markets.

Author: Anwesh Reddy Paduri

Publication: North western University/Great Learning April.

Year of Publish: 2022

Description: This research combines LSTM models with historical prices and Random Forest models incorporating sentiment analysis and macroeconomic parameters to predictstock movements, achieving evaluations through RMSE for four prominent stocks.

3. RESEARCH PAPER

Title: Beyond validation: getting health apps into clinical practice.

Author: Hamed Taherdoost.

Publication: University Canada West February

Year of Publish: 2023

Description: This article explores the use of artificial intelligence-enhanced sentiment analysis in competitive research, examining papers from 2012 to 2022 to understand how AI can identify and compare market measurements, providing insights into customer perceptions of competitors.

4. RESEARCH PAPER

Title: Sentiment Analysis of Stocks Based on News Headlines Using NLP.

Author: Amrita Ticku.

Publication: AITEES

Year of Publish: 2022

Description: This study employs Natural Language Processing (NLP) to analyze news headlines and assess their immediate impact on a company's stock growth, comparing two sentiment analysis approaches using Convolutional Neural Network and Gated Recurrent Units algorithms.

5. RESEARCH PAPER

Title: Stock Market Prediction using Machine Learning Techniques: A Systematic Review.

Author: Aditi Gupta.

Publication: IEEE

Year of Publish: 2022

Description: This paper provides a comprehensive assessment of 22 research publications on stock price prediction, exploring various machine learning and AI approaches and identifying LSTM as the most commonly utilized technique due to its excellent performance, along with other promising methods like CNN, RNN, SVM and RFC.

2.3 EXISTING SYSTEM

1. Investing.com

It is a financial platform and news website; one of the top three global financial websites in the world. It offers market quotes, information about stocks, futures, options, analysis, commodities, and an economic calendar**.**

2. Yahoo Finance

It is a media property that is part of the Yahoo! network. It provides financial news, data and commentary including stock quotes, press releases, financial reports, and original content. It also offers some online tools for personal finance management. In addition to posting paid partner content from other web sites, it posts original stories by its team of staff journalists. It is ranked 20th by Similar Web on the list of largest news and media websites.

3. Motilal Oswal Financial Services Ltd.

It is a content, information, analytical platform for investment products such as stocks, ETFs, mutual funds etc. TT also provides various tools and/or services such as stock screeners - tools for screening stocks based on important technical parameters so, market sentiment indices sentiment Indian stock market indicator, Learn - Portal for learning about investment and basic financial topics and more.

4. Tickertape

It is a content, information and analytics platform for investment products like stocks, ETFs, mutual funds etc. TT also offers various tools and/or services like Stock Screener - A tool for screening stocks based on various key technical factors, Markets -Mood Index Bhavna Indian Stock Market Indicator, Measure - a method of studying the main points hidden with the economy and so on.

5. Trading View

It also has a social media network, analytics platform and mobile app for traders and investors. The company was founded in 2011 and has offices in New York and London. According to Alexa, by 2020, the company will be among 130 websites worldwide.

2.4 TECHNOLOGY SURVEY

1. Python

Python is a high-end, versatile programming language known for its readability and simplicity. Widely used for a variety of applications, Python has gained increasing popularity in web development, data science, and artificial intelligence. Its extensive standards library and rich ecosystem of 3D packages make it a go-to choice for developers. Python syntax emphasizes code readability, and its object- oriented approach maximizes code modularity, making it an excellent language for building scalable and maintainable software solutions.

2. Flask

Flask is a lightweight and modular web framework for Python, designed to be easy to use and extend. It follows the WSGI (Web Server Gateway Interface) standard and provides the resources needed to develop web applications without installing unnecessary tools or libraries. Flask gives developers the necessary choices, making it highly scalable and suitable for projects of varying degrees of complexity. With a minimalist approach, Flask empowers developers to quickly build web applications with a focus on simplicity and flexibility.

3. MongoDB

MongoDB is a NoSQL database that uses a data model of documents, storing data in simple, JSON- like BSON (Binary JSON) documents. Known for its flexibility and flexibility, MongoDB is particularly well suited to process large amounts of unstructured or partially structured data. It supports dynamic scheduling, enabling easy modifications to the data structure with no downtime. MongoDB's horizontal scaling capabilities make it a popular choice for applications with rapidly growing data needs, and a powerful and transparent query language Additionally, MongoDB's native support for geospatial data and its robust feature set make it versatile choice in many applications.

2.5 FEASIBILITY STUDY

The efficiency of the project is analyzed at this stage and a business proposal is presented including a very comprehensive project plan and some cost estimates. During the system evaluation, the feasibility of the proposed system should be examined. This is to ensure that the proposed method does not make the task burdensome. To conduct a feasibility study, some understanding of basic system requirements are necessary.
Three key considerations involved in the feasibility analysis are:

1. Economic Feasibility

The purpose of this analyzing platform is to predict the stocks and its performance impact of the organizational structure. The company has a specific budget for systems research and development. It can mean cost. Since much of the technology used was publicly available, the design could be implemented within the allocated budget.

2. Technical Feasibility

The purpose of this research is to evaluate the system's technical needs, or its technical feasibility. Any system that is created must not place a heavy burden on the technological resources that are available. As a result, the investor will face strict requirements. The developed system must have a modest requirement, as only minimal or null changes for implementing this system.

3. Operational Feasibility

Investigating user acceptance of the system is one of the objectives of the study. That includes investing and analyzing the user how to use the technology effectively. The user should view the platform as a necessity rather than a threat. The methods used to inform and provide only necessary information to the user about the stocks scenario will determine the extent of investor acceptance. Since he is the end user of the system, it should give him the confidence to offer some helpful criticism, which is greatly appreciated.

CHAPTER 3. HARDWARE AND SOFTWARE REQUIREMENTS

3.1 HARDWARE REQUIREMENTS

Operating system:

Windows 10 is a widely used operating system developed by Microsoft. It offers user-friendly interface, regular updates and compatibility with a wide range of software.

Processor: Intel Core i7 Description: The Intel Core i7 is a high-performance processor known for its speed and performance. Suitable for games, cons and other complex activities.

RAM: 8GB and above Description: Random Access Memory (RAM) is temporary storage used by the computer to process data quickly.

Storage: 1 TB HDD Description: The 1 terabyte hard disk drive (HDD) provides ample storage space for files, applications, and multimedia. HDDs are known for their capacity, although Solid State Drives (SSDs) are faster, HDDs offer more storage at a much lower cost.

3.2 SOFTWARE REQUIREMENTS

IDE: Visual Studio Code (v 1.85.1) and Jupyter Notebook

An integrated development environment that provides a versatile mini-platform for coding, debugging, and source code version control. An open web application that allows the creation and sharing of live code, equations, visualizations, and narrative text in document format, supporting interactive data science and scientific computation.

Database: mongo DB

A NoSQL database system that stores data in flexible, JSON-like documents, providing scalability, simplicity, and data storage efficiency for applications.

Programming Language: Python (3.11.4)

A high-quality, general-purpose programming language known for its readability and versatility, used for web development, data analytics, artificial intelligence, and more.

CHAPTER 4. SOFTWARE REQUIREMENTS SPECIFICATION

4.1 USERS

1. Investor

Individual investors face particular challenges in understanding complex new information in the rapidly changing stock market and share prices. The project aims to address this by providing a user-friendly approach on all knowledgeable investors. With easy front-end communication, investors can easily navigate through complex funds. The back-end integration of AI-powered stock market analysis provides users with real-time insights, predictive trends and risk assessments, enabling them to make informed investment decisions. This platform generates wealth over time, break down barriers, It is also a helpful tool for investors looking to promote financial inclusion.

2. Market Research Analyst

Market research analysts play an important role in understanding market dynamics, but the amount of data involved and the rapidity of market changes can be overwhelming. This profession meets the needs of analysts by providing AI-driven analysis behind the scenes. The platform processes and interprets market data and provides comprehensive reporting and trend analysis. Researchers benefit from a flexible workflow, using an easy-to-use approach to effectively tap into the insights that AI provides. This not only increases the speed and accuracy of market research but also allows analysts to focus on strategic decision making. The integration of advanced streamlined forward and backward analysis positions the platform as a valuable tool for market research analysts looking to stay ahead of a dynamic banking environment.

4.2 FUNCTIONAL REQUIREMENTS

1. User Registration and Login:

The platform ensures secure account creation and management for users through robust authentication measures. The user-friendly interface simplifies the registration and login process, enhancing the overall user experience while prioritizing account security.

Security Measures: Robust encryption, multi-factor authentication, and stringent password policies ensure the security of user accounts.

User-Friendly Interface: The registration and entry processes are designed with an intuitive interface, which reduces friction for users and provides general accessibility.

Email Verification: An additional layer of security is implemented through email verification, ensuring the legitimacy of user accounts.

2. Stock Search and Exploration:

Users can easily explore NSE Nifty200 stocks through a straightforward search mechanismbased on name, symbol, or sector. The platform provides comprehensive stock information, including current prices, historical charts, financial ratios, news updates, andanalyst ratings, allowing users to make informed investment decisions.

Search Options: Users can explore NSE Nifty200 stocks effortlessly through name, symbol, or sector-based searches.

Comprehensive Stock Profiles: Detailed stock information includes real-time pricing, interactive historical charts, financial ratios, latest news updates, and analyst ratings.

Thorough Research Capabilities: The platform facilitates in-depth research, empowering users to make well-informed investment decisions.

Clear Visualization of Buy/Sell Recommendations:

The platform employs a visual representation strategy, utilizing the Pie Chart concept to clearly display buy/sell recommendations. The 80/20 split offers a quick and intuitive overview of suggested actions, ensuring users can easily grasp the recommended investment strategy.

Visual Representation: Utilizing the Pie Chart concept with an 80/20 split provides a visually intuitive representation of buy/sell recommendations.

Efficient Information Conveyance: The design aims to quickly convey the recommended investment strategy, allowing users to grasp information efficiently.

3. AI-Powered Stock Analysis:

Advanced machine learning models are integrated into the platform for various analytical purposes:

Price Prediction: Machine learning algorithms analyze historical data to predict future stock prices, providing users with valuable insights into potential price movements.

Trend Analysis: The platform utilizes machine learning to identify and analyze trends instock performance, assisting users in understanding the market direction.

Pattern Recognition: Machine learning algorithms are applied to recognize and interpret patterns in stock price movements, aiding users in identifying potential opportunities andrisks.

Risk Assessment: The platform incorporates machine learning models to assess and quantify investment risks, offering users a comprehensive understanding of the potentialdownside associated with their investment choices.

4.3 NON-FUNCTIONAL REQUIREMENTS

1. Usability:

Investors are provided with a simple and easy process to prioritize, complying with the WCAG inclusion criteria.

2. Performance:

Design a scalable infrastructure to accommodate future growth, ensuring efficient handling of real-time and historic data with consistent performance under varying conditions.

3. Accessibility:

Support convenient user access across devices and browsers, incorporating responsive design principles and considering multilingual support for inclusivity.

4. Scalability:

Ensure the platform's capability to efficiently handle real-time data, historic data, and varying transaction loads, providing a robust and scalable architecture to support the evolving demands of users and market dynamics.

5. Maintenance:

Schedule routine maintenance during non-peak hours, design for single-person maintenance efficiency, and provide user-friendly tools for seamless upkeep.

6. Regular Updates:

Facilitate regular AI model updates with new data, incorporating user feedback for continuous improvement of platform features.

7. Security:

Implement robust encryption for data storage and transmission, secure authentication mechanisms, conduct regular security audits, and comply with industry standards for optimal data protection.

CHAPTER 5. SYSTEM DESIGN

5.1 ARCHITECTURE DIAGRAM

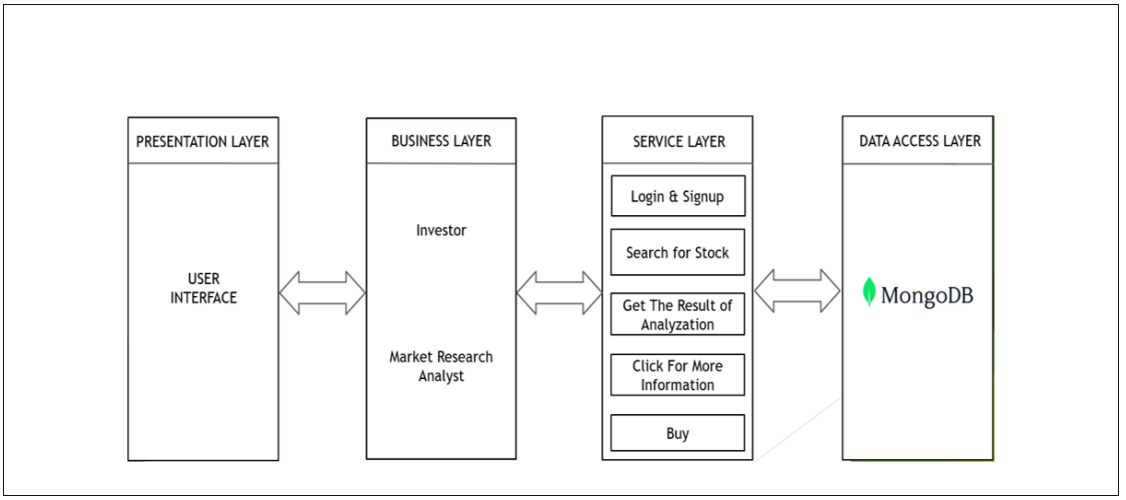


Fig 5.1 Architecture diagram

This architecture diagram describes a multi-layered software application designed for investing in the stock market. The presentation layer offers a user-friendly interface, including login, search, and buy stock functionalities. The business layer encompasses the roles of Investor and Market Research Analyst, responsible for stock market research and analysis. The service layer provides essential services such as user authentication, search functionality, analyzation results, and buying stocks. The data access layer utilizes MongoDB for data storage and retrieval. This diagram offers a high-level overview of the application's architecture, emphasizing the components and their relationships within the system.

5.2 CONTEXT FLOW DIAGRAM

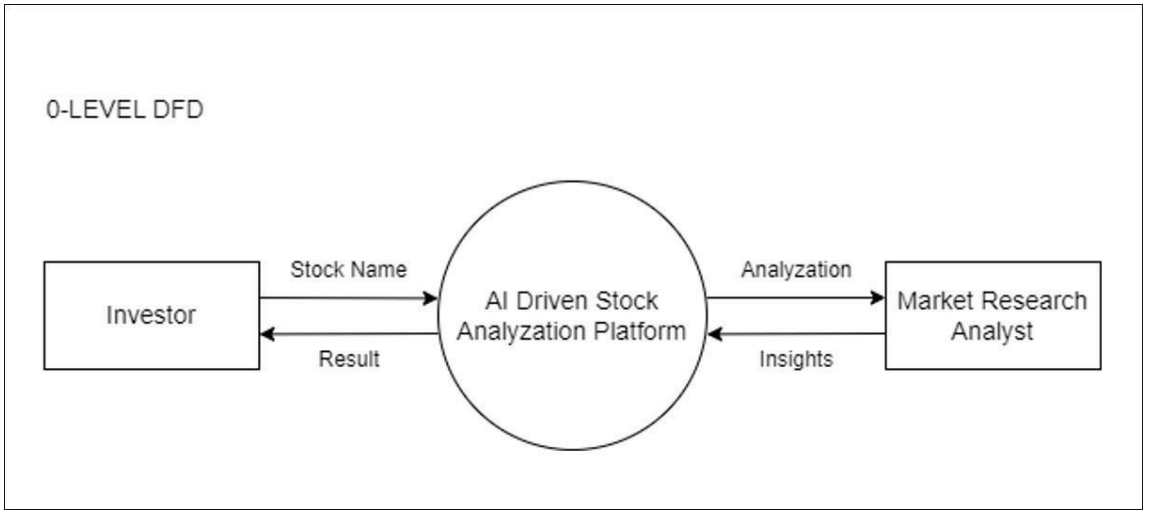


Fig 5.2 Context Flow diagram

The context diagram describes the high-level overview of the Al Driven Stock Analyzation Platform, which is designed for investors to invest in the stock market. The diagram shows the system as a single entity, with external entities interacting with it. The external entities include the Investor, who interacts with the system to invest in stocks, and the Market Research Analyst, who provides stock market research and analysis. The system receives stock market data as input and provides stock analyzation and insights as output. The context diagram emphasizes the system's role as a whole and its interactions with external entities, providing a clear understanding of the system's purpose and scope.

CHAPTER 6. DETAILED DESIGN

6.1 PROCESS FLOW DIAGRAM WITH METHODOLOGY

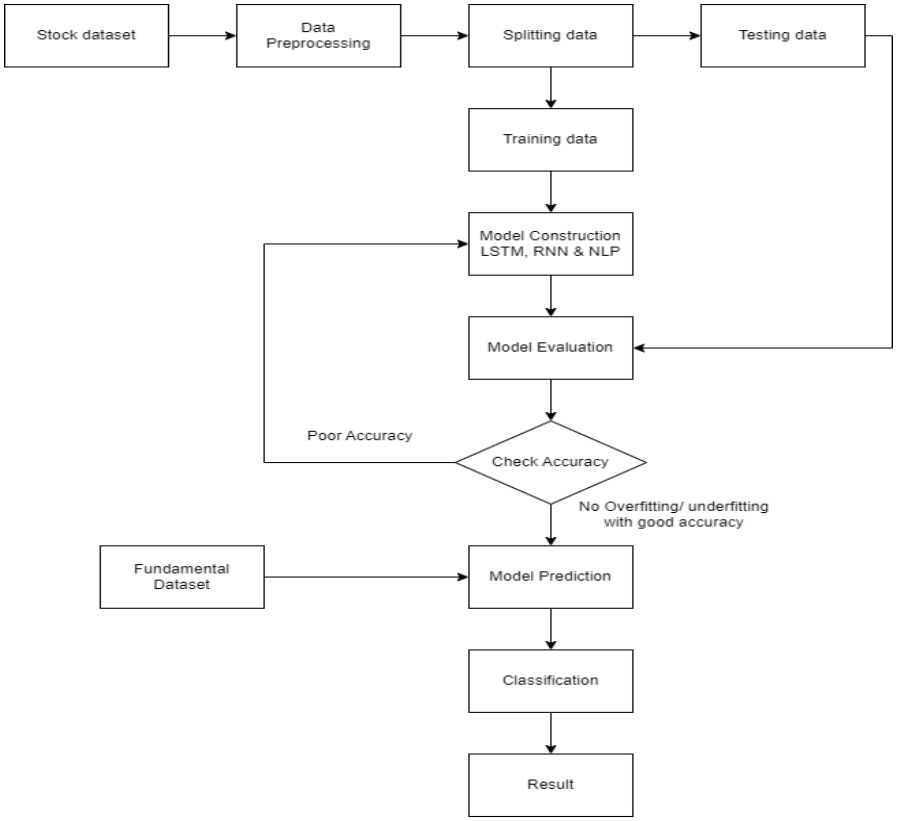


Fig 6.1 Process Flow

The upload process flow is a series of steps used to prepare and model stock market data for predictive purposes. It begins with obtaining a stock market dataset, which is then classified and organized for further analysis. The results are visualized to gain insights or identify patterns, and the data is preprocessed to clean and transform it into a suitable format for modeling. Next, appropriate machine learning models are generated and selected, and the selected model is used to make predictions based on the preprocessed data. The dataset is split into training and testing sets for model evaluation, and the model's performance is evaluated based on the testing set. Finally, specific models such as LSTM, RNN, and NLP are generated and trained using the preprocessed data. Overall, the process flow aims to create and evaluate machine learning models for predicting stock market trends using historical data.

Methodology:

Stock Dataset: Collect historical stock prices, news, and social media sentiment data for the stocks to be analyzed. This data will serve as the input for the analysis.

Data Preprocessing: Clean and preprocess the data to ensure it is ready for analysis. This includes removing duplicates, filling missing data, and standardizing the format of the data. This step is crucial to ensure the accuracy and reliability of the results.

Splitting Data: Split the data into training and testing. The training algorithm will be used to train the machine learning models, while the testing algorithm will be used to evaluate the performance of the models. This step is necessary to ensure that the models are able to generalize well to new unobserved data.

Model Training: Trains machine learning models, such as LSTMs, RNNs, and NLP models, on training data. This example will find patterns in data that can be used to make predictions about the stock market.

Model Evaluation: Check the performance of the model with a series of tests. This allows you to check the accuracy of the models and identify areas for improvement.

Generating Models: Select the best-performing models to make predictions about the stock market. These models can be integrated into the user-friendly platform to provide accurate and reliable predictions to users.

Result: Present the predictions to users through clear and easy-to-understand charts, graphs, and written reports. This will allow users to easily understand the predictions and make informed decisions about their investments.

6.2 USE CASE DIAGRAM

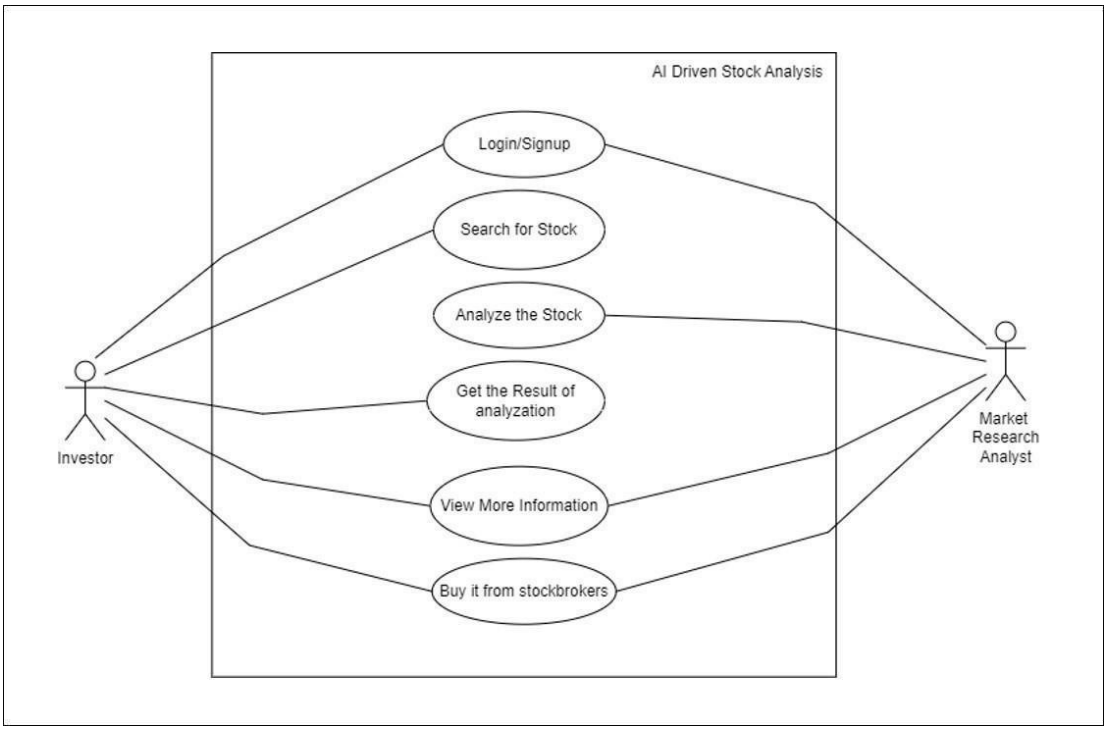
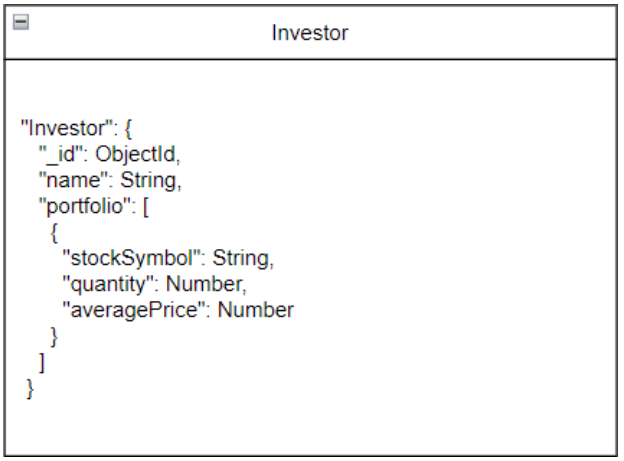


Fig 6.2 Use Case diagram

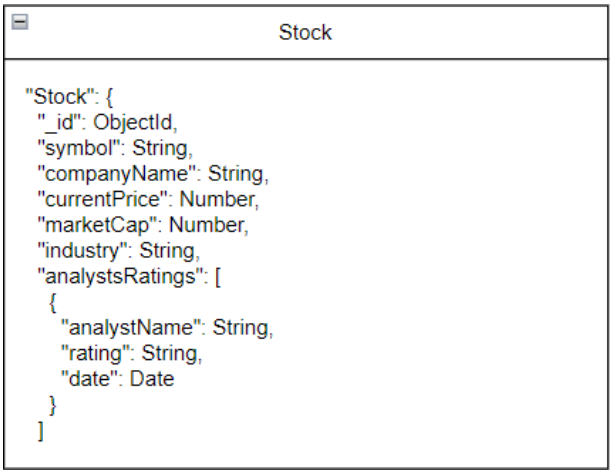
The Use Case Diagram describes the functional requirements of the Al Driven Stock Analysis Platform, which is designed for investors to invest in the stock market. The diagram includes two primary actors, Investor and Market Research Analyst, and their interactions with the system. The Investor can log in, search for stocks, analyze stocks, view results, view more information, and buy stocks from stockbrokers. The Market Research Analyst provides stock market research and analysis. The Use Case Diagram emphasizes the functional requirements of the system, highlighting the interactions between the actors and the system, and providing a clear understanding of the system's capabilities.

6.3 DATABASE DESIGN



1. Database structure of Investor

The Investor database structure contains id, name, and portfolio. In portfolio it contains stock symbol, quantity, average price.

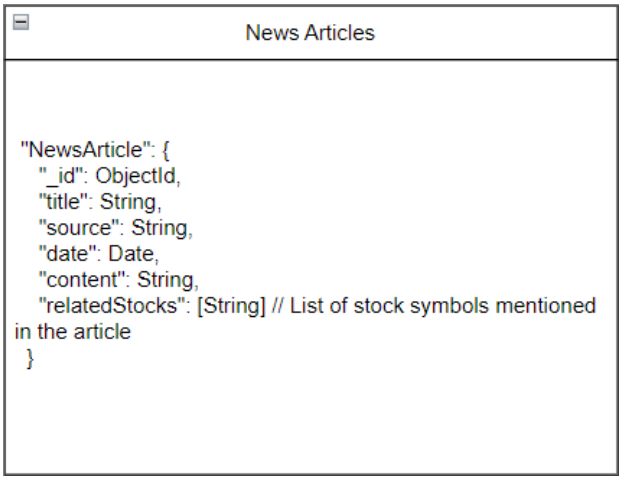


2. Database structure of Stock

The Stock database structure contains id, symbol, company name, current price, and market cap and industry and analyst ratings. In analyst ratings it contains analyst name, rating and date.

3. Database structure of Market Research Analyst

The Market Research Analyst database structure contains id, name, coverage and ratings. In ratings it contains Stock symbol, rating and date.



4. Database structure of News Article

The News Article database structure contains id, title, source, date, content, and related stocks.

CHAPTER 7. IMPLEMENTATION

7.1 PSEUDO CODE

1. Long Term & Short Term Memory (LSTM) and Recurrent Neural Networks (RNN):

Algorithm: RNN or LSTM can be used for time series analysis of stock prices to identify trends and can predict future trends.

Time Complexity: Training RNNs and LSTMs involves backpropagation, which can be computationally expensive and have time complexity of O(T * n * m) where T is the number of training epochs, n is the sequence length, and m is the number of hidden units. Prediction is typically O(n). The accuracy score is92.78% approximately.

Pseudocode:

```
function predict_stock_price(past_prices, trained_rnn_model):

    # Prepare past prices for RNN input

    rnn_input = prepare_data(past_prices)

    # Predict future price using the trained RNN model

    predicted_price = trained_rnn_model.predict(rnn_input)

    return predicted_price
```

2. Random Forest Classifier (RFC):

Algorithm: An RFC could be trained on historical data and financial news to classify news articles as positive, negative, or neutral towards a specific stock.

Time Complexity: The RFC training requires loading the model into the data, which can be O (n * m * log (m)) where n is the number of data points and m is the number of features the prediction of the trained model is usually the O (1). The accuracy score is about 51.64%.

Pseudocode:

```
function classify_news(news_text, trained_rfc_model):

    # Preprocess news text (e.g., tokenization)

    processed_text = preprocess(news_text)
```

```
    # Predict sentiment using the trained RFC model
    sentiment = trained_rfc_model.predict(processed_text)
    return sentiment
```

3. Natural Language Processing (NLP):

Algorithm: NLP techniques such as named entity recognition (NER) can be used to identify stock ticker symbols in user queries.

Time Complexity: NER algorithms can have varying complexities depending on the approach. Rule- based NER might be O(n) where n is the text length, while statistical methods could be O(n^2) or O(n^3). The Accuracy Score of this model varies on real-time fundamentals as well as queries.

Pseudocode:

```
function identify_tickers(text):
    # Use NLP libraryto find stock ticker entities in text
    tickers = NLP_library.find_entities(text, "ticker")
    return tickers
```

7.2 SCREENSHOTS

Register Page

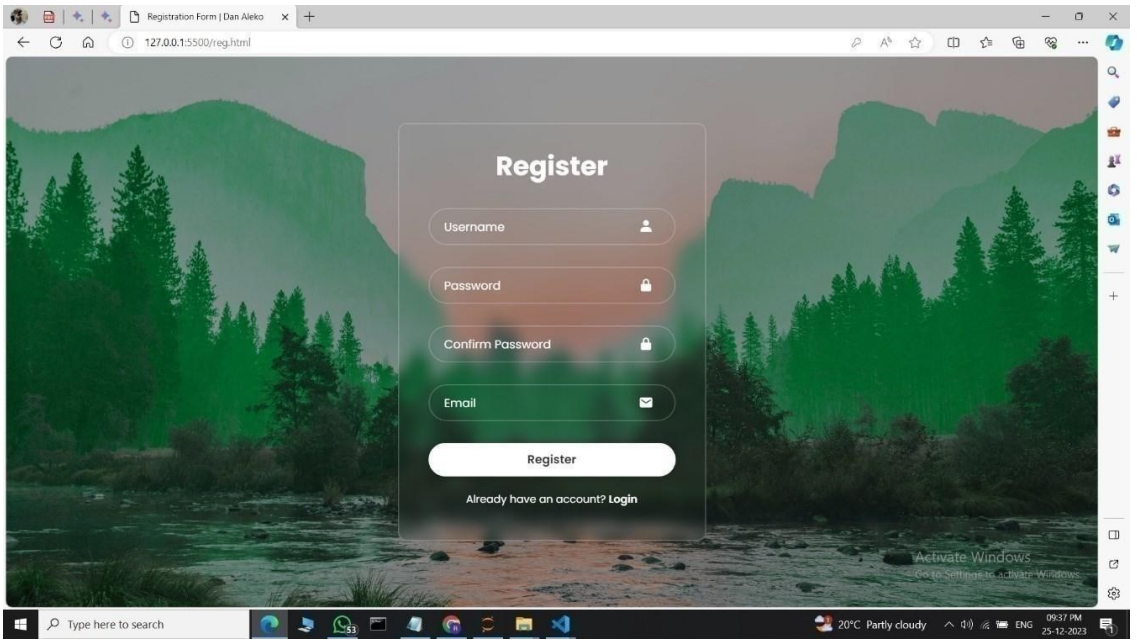


Fig 7.1 Register Page

Register Page describes the Investor details to be entered for Registration. This includes Username, Password, Confirm Password and Email.

Login Page

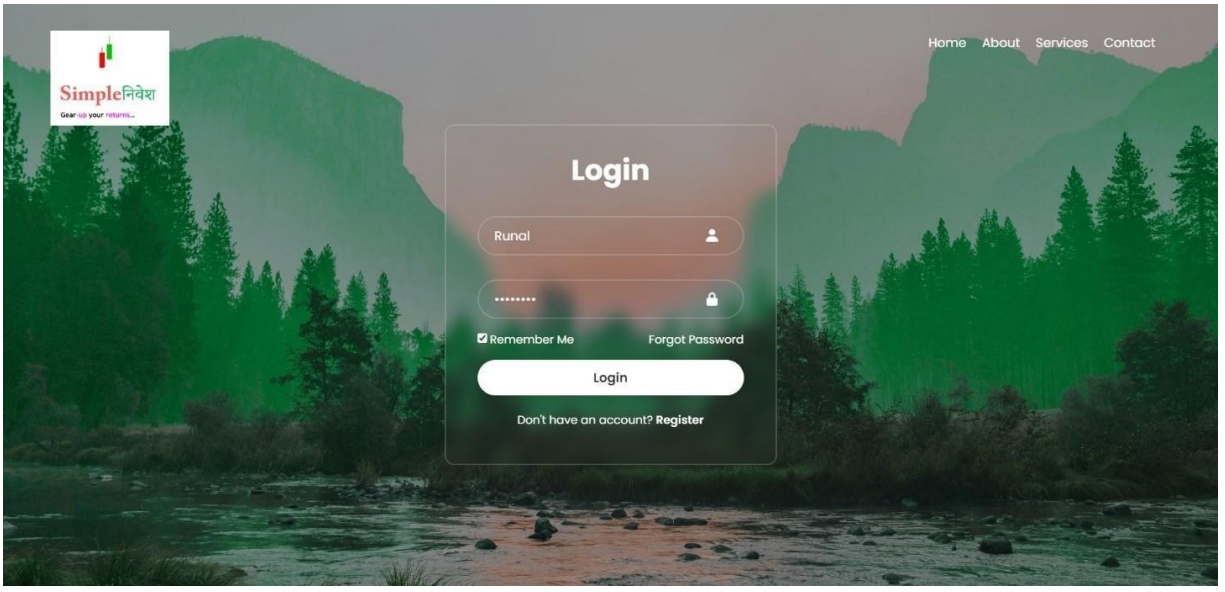


Fig 7.2 Login Page

Login Page describes the Login details of Investor. This page will be proceeded after the Registration of that Particular Investor

Forgot Password

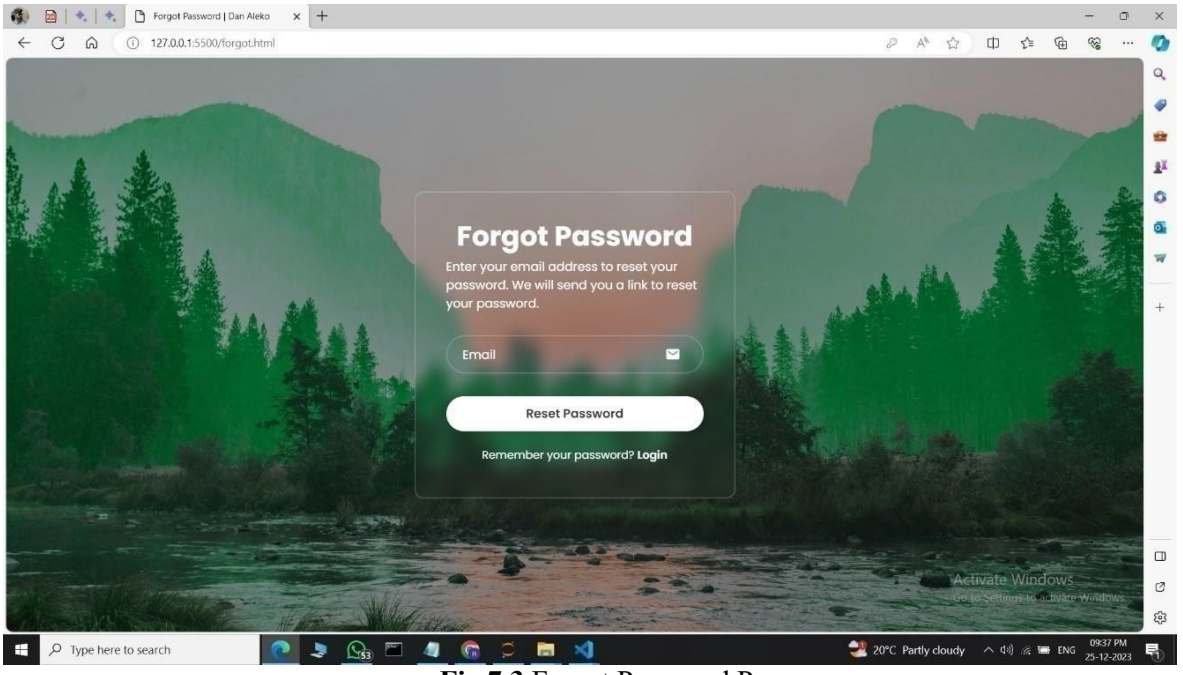


Fig 7.3 Forgot Password Page

The page displays a "Forgot Password" page with a "Forgot Password" title and a search bar. The main part of the page contains a form with an input field for the user's email address, labeled "Enter your email address and reset your password. We will send you a link to reset your password" and a "Reset Password" button with a lower input field.

Search for Stock

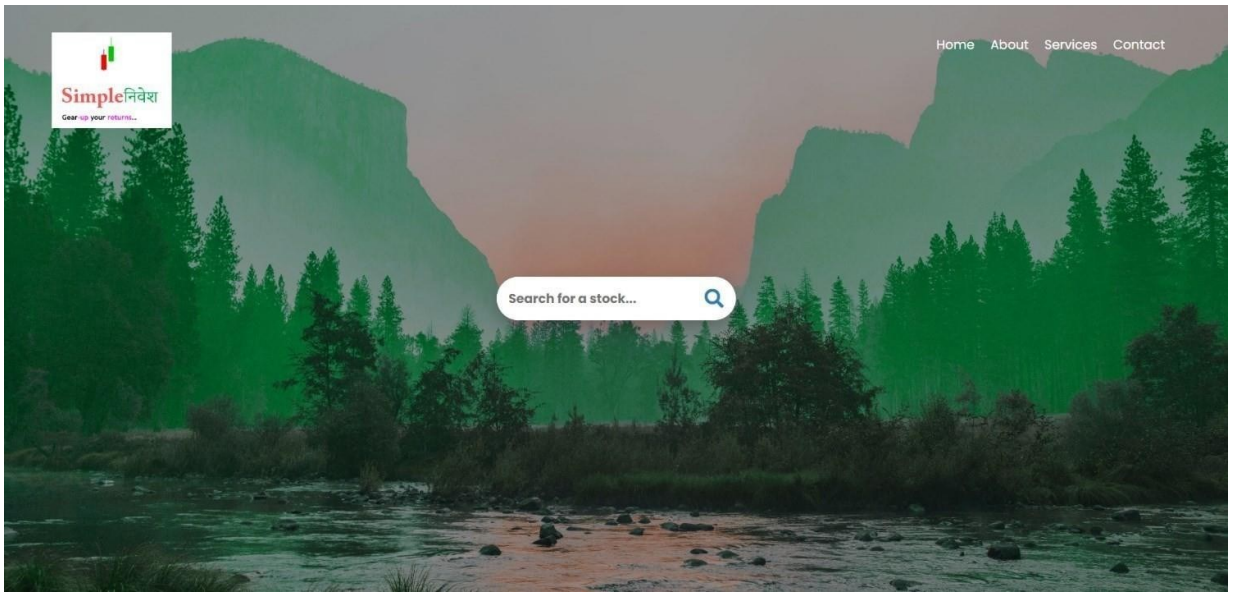
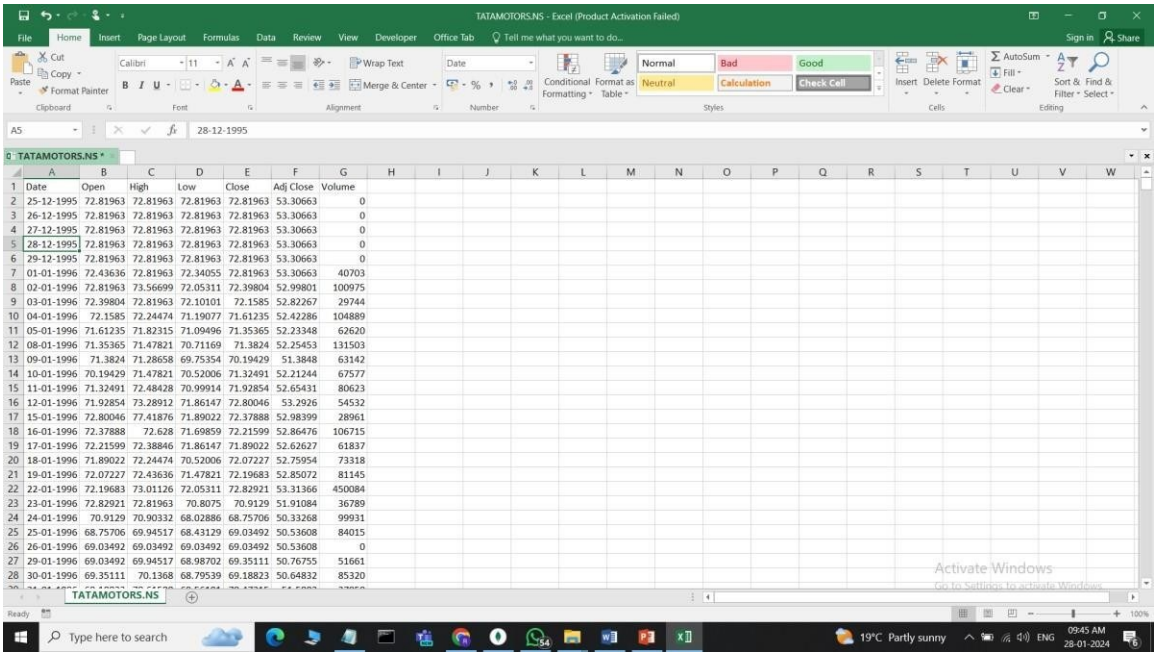


Fig 7.4 Search for Stock

The page asks for the input of Stock Name from the investor to get the Analyzation Result of that particular stock.

Data Collection



Date	Open	High	Low	Close	Adj Close	Volume
25-12-1995	72.81963	72.81963	72.81963	72.81963	53.30663	0
26-12-1995	72.81963	72.81963	72.81963	72.81963	53.30663	0
27-12-1995	72.81963	72.81963	72.81963	72.81963	53.30663	0
28-12-1995	72.81963	72.81963	72.81963	72.81963	53.30663	0
29-12-1995	72.81963	72.81963	72.81963	72.81963	53.30663	0
01-01-1996	72.43636	72.81963	72.34055	72.81963	53.30663	40703
02-01-1996	72.81963	73.56699	72.05311	72.39804	52.99801	100975
03-01-1996	72.39804	72.81963	72.10101	72.1585	52.82267	29744
04-01-1996	72.1585	72.24474	71.19077	71.61235	52.42286	104889
05-01-1996	71.61235	71.82315	71.09496	71.35365	52.23348	62620
08-01-1996	71.35365	71.47821	70.71169	71.3824	52.25453	131503
09-01-1996	71.3824	71.28658	69.75354	70.19429	51.3848	63142
10-01-1996	70.19429	71.47821	70.52006	71.32491	52.21244	67577
11-01-1996	71.32491	72.48428	70.99914	71.92854	52.65431	80623
12-01-1996	71.92854	73.28912	71.86147	72.80046	53.2926	54532
15-01-1996	72.80046	77.41876	71.89022	72.37888	52.98399	28961
16-01-1996	72.37888	72.628	71.69859	72.21599	52.86476	106715
17-01-1996	72.21599	72.38846	71.86147	71.89022	52.62627	61837
18-01-1996	71.89022	72.24474	70.52006	72.07227	52.75954	73318
19-01-1996	72.07227	72.43636	71.47821	72.19683	52.85072	81145
22-01-1996	72.19683	73.01126	72.05311	72.82921	53.31366	450084
23-01-1996	72.82921	72.81963	70.8075	70.9129	51.91084	36789
24-01-1996	70.9129	70.90332	68.02886	68.75706	50.33268	99931
25-01-1996	68.75706	69.94517	68.43129	69.03492	50.53608	84015
26-01-1996	69.03492	69.03492	69.03492	69.03492	50.53608	0
29-01-1996	69.03492	69.94517	68.98702	69.35111	50.76755	51661
30-01-1996	69.35111	70.1368	68.79539	69.18823	50.64832	85320

Fig 7.5 Data Collection

The page displays historical stock data of Tata Motors, mainly for the period from December 25, 1995 to January 28, 2024. The data includes date, open price, high price, low price, closing price, closed adjusted price and volume.

Feature Engineering

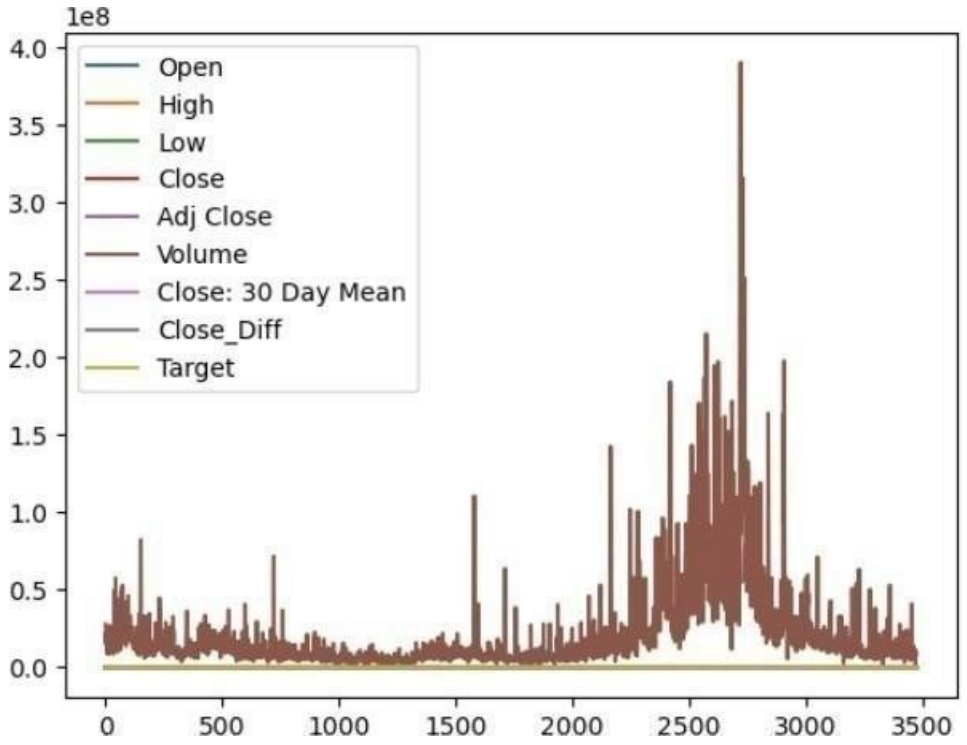


Fig 7.6 Feature Engineering

The page shows a Feature Scaling for Tata Motors in which Target and Close price are displayed for Current Scenario.

Original vs Predicted Price

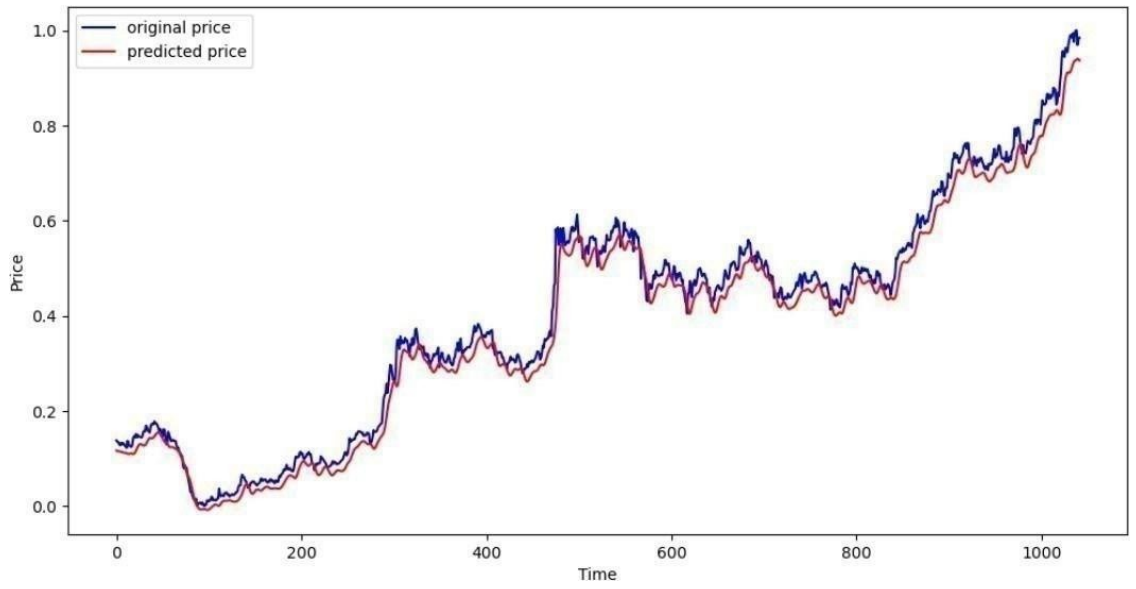


Fig 7.7 Original vs Predicted Value

The resulting figure shows a graph of the original and predicted closing prices of Tata Motors stock. Initial endpoints are plotted in blue, and initial endpoints are plotted in red. The x- axis represents time, and the y-axis represents stock price. Overall, this graph shows that the model is capable of capturing stock price trends, but it is not perfect and there may be some significant differences between the baseline and predicted prices.

Fundamental Details

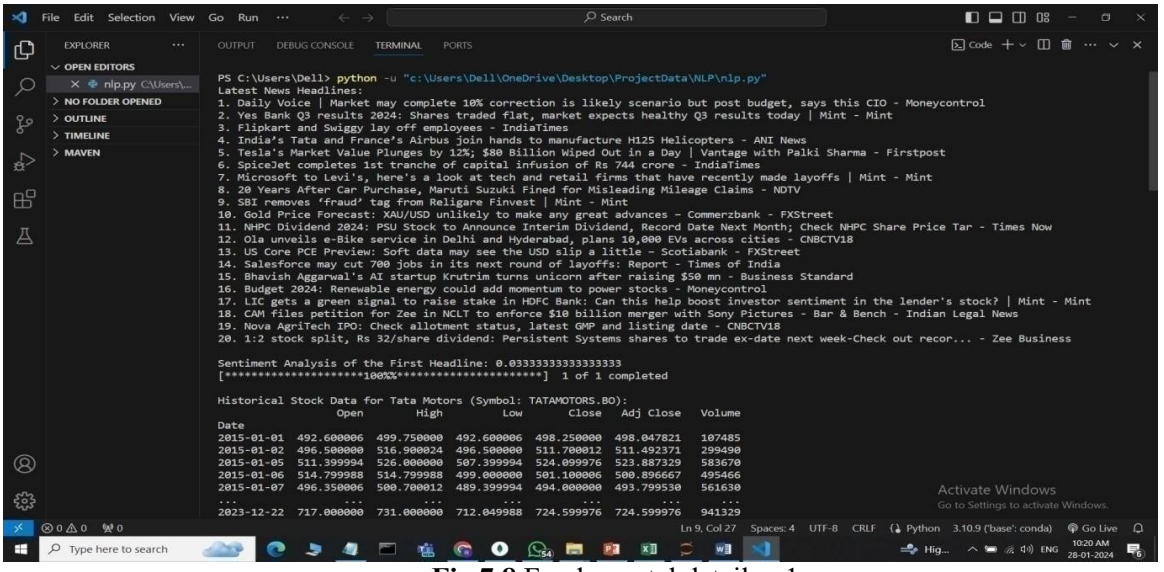


Fig 7.8 Fundamental details - 1

Displaying the latest news headlines related to the stock market. Analyzing the sentiment of the first headline (which is positive).

Fundamental Details

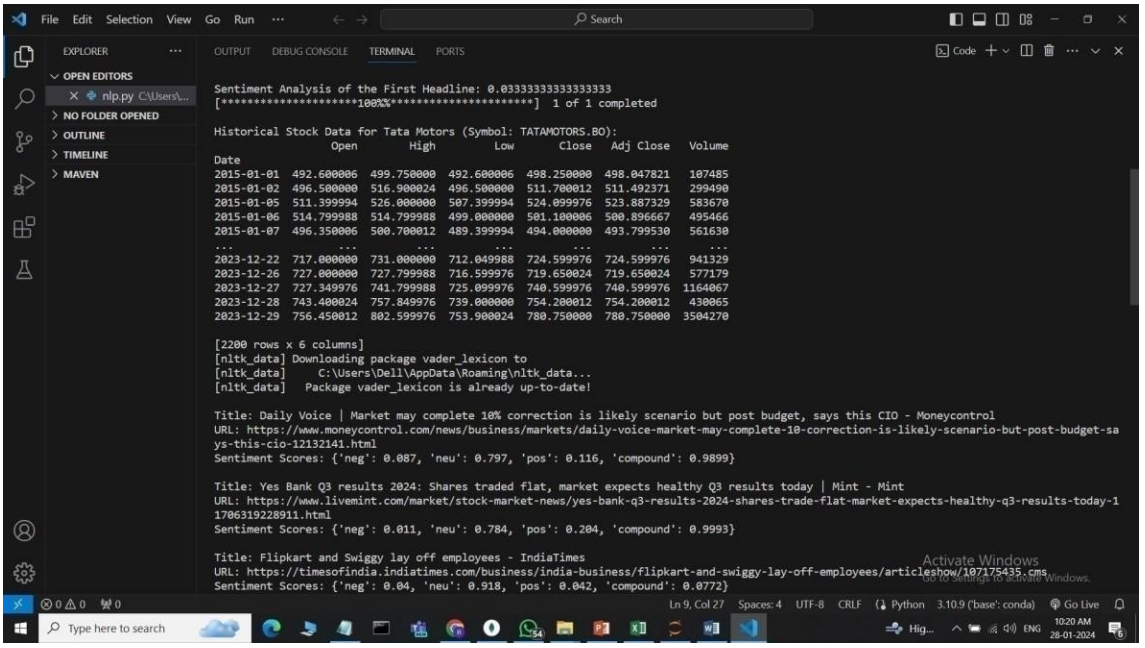


Fig 7.9 Fundamental details - 2

Displaying historical stock data for Tata Motors, including the open, high, low, close, and adjusted close prices. Displaying the volume of shares traded for each date.

Current Scenario for Buying this Stock

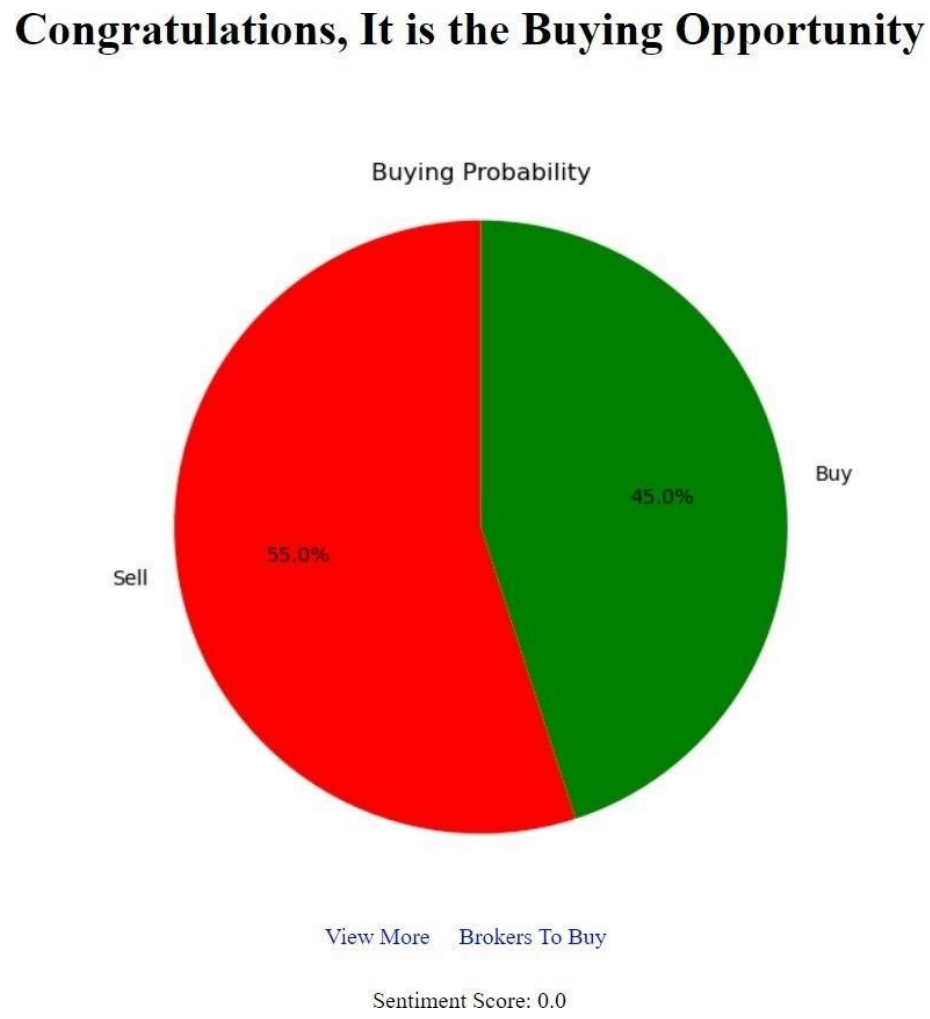


Fig 7.10 Current scenario for buying the stock

This is due to the probability of buying or selling the stock, based on the current closing price and closing volume. The chart shows a 53.0% probability of buying the stock and a 47.0% probability of not buying (which can be interpreted as selling the stock).

.

Buying percentage

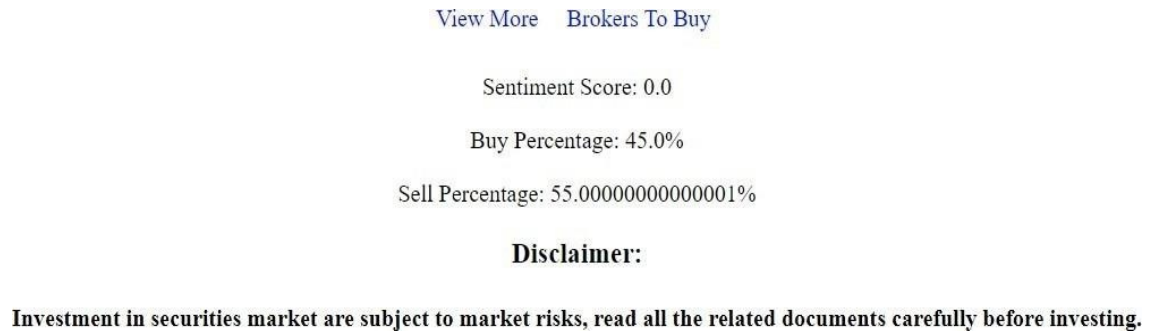


Fig 7.11 Buying Percentage

The image displays a stock analysis web page featuring a pie chart indicating a sentiment distribution of 45% buy and 55% sell, along with a disclaimer about investment risks.

Summary

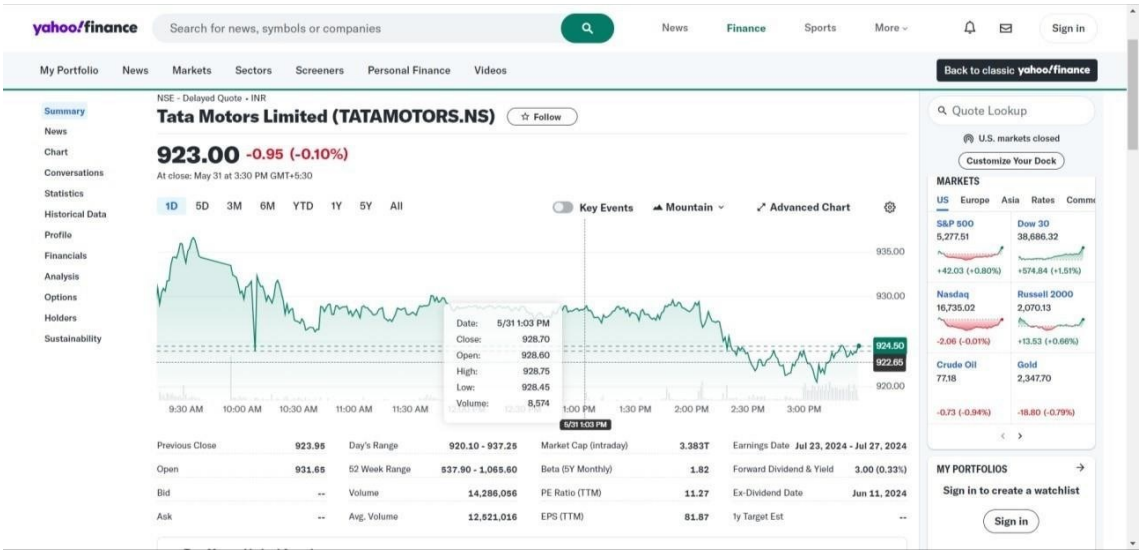


Fig 7.12 Summary

This image is of Tata Motors Limited (TATAMOTORS.NS) stock listing on the National Stock Exchange of India (NSE) The stock is currently trading at INR 960.55, up INR 1.80 (-0) from previous close .19% is low. Some key points include the stock's daily range (958.00 - 970.95), 52-week range (512.20 - 1,065.60), market cap (3.522T INR), PE ratio (11.72), and earnings per share (81). 99 INR) and other key data points include average volume (12,717,094), beta (1.82), and next availability date (July 23-27, 2024). The right part of the figure shows market indicators and related factors.

News

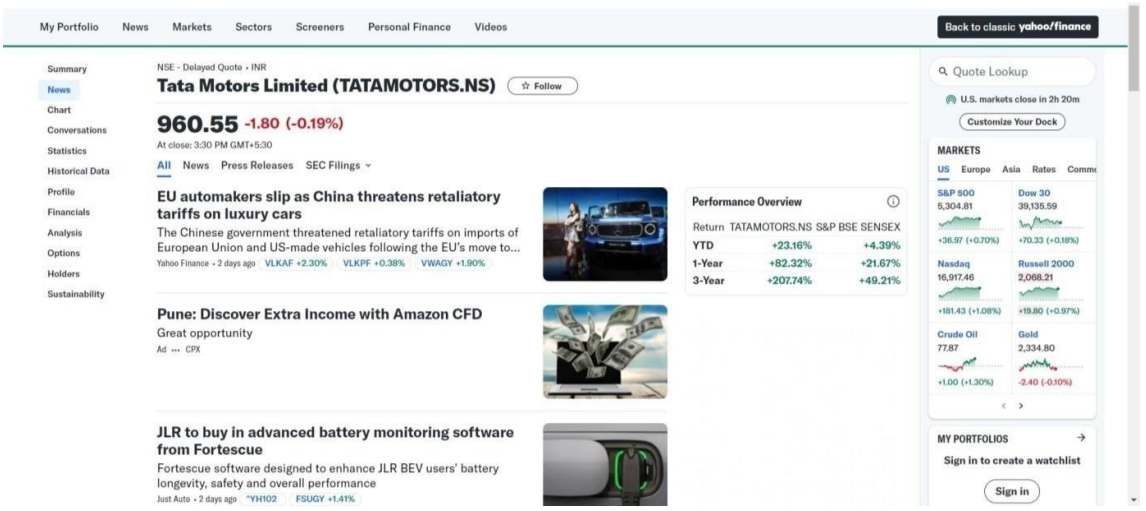


Fig 7.13 News

This image is of showing stock information and recent news for Tata Motors Limited (TATAMOTORS.NS) listed on National Stock Exchange (NSE) of India Stock price is 960.55 INR, which is 1 in the market close. 80 INR (-0.19%) lower. There has been stock-related news, including reports of EU carmakers falling prey to the threat of retaliatory tariffs on Chinese luxury cars and reports of Jaguar Land Rover (JLR) buying software inclusive of detailed battery monitoring from Fortescue Performance overview charts shows that Tata Motors has gained relative to S&P BSE Sensex at various times. Additionally, the right panel shows various market indicators and factors, such as the S&P 500, Dow 30, NASDAQ, Russell 2000, crude oil and gold prices.

Chart

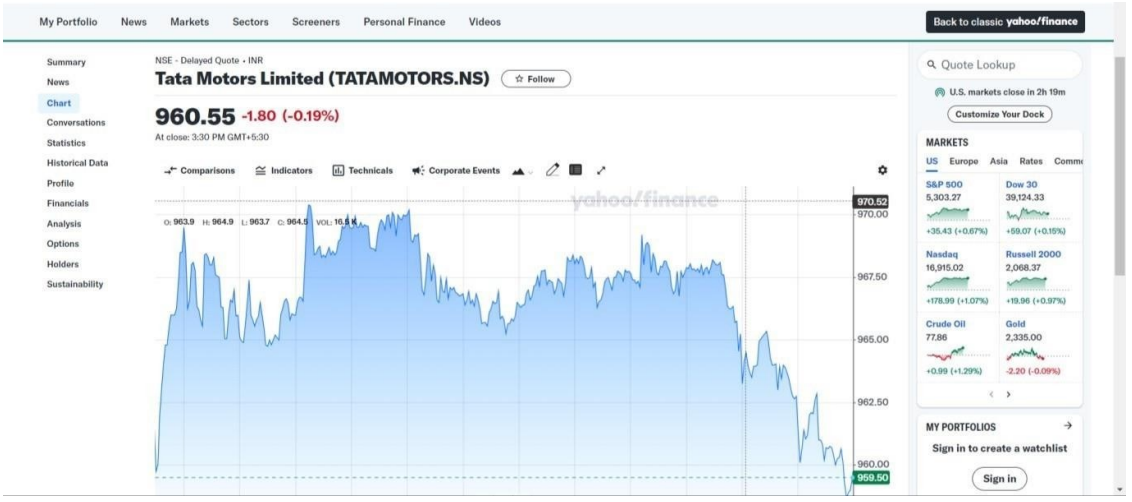


Fig 7.14 Chart

This image is of showing the intraday stock price of Tata Motors Limited (TATAMOTORS.NS) on the Indian National Stock Exchange (NSE) closing at INR 960.55, down 1.80 INR (-0.19%) from the previous day the former The chart shows the price movement of the stock throughout the trading day, with an opening price of INR 963.9, a high of INR 964.9 and a low of INR 959.5 The chart has various options for it comparisons, indicators, technical and corporate events. The right panel shows market indicators and commodities, including the S&P 500, Dow 30, NASDAQ, Russell 2000, crude oil and gold, along with their performance profiles.

Conversations

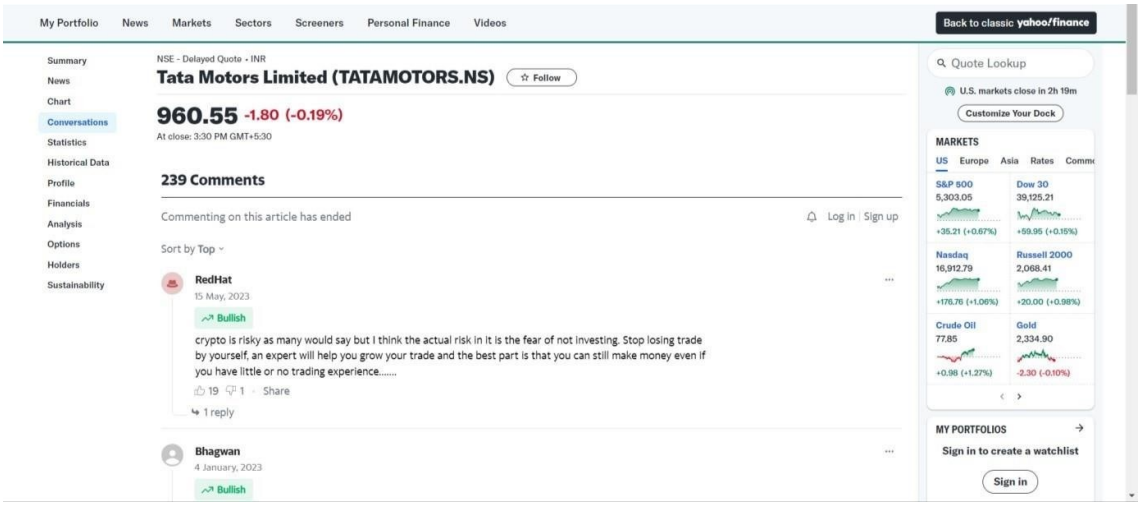
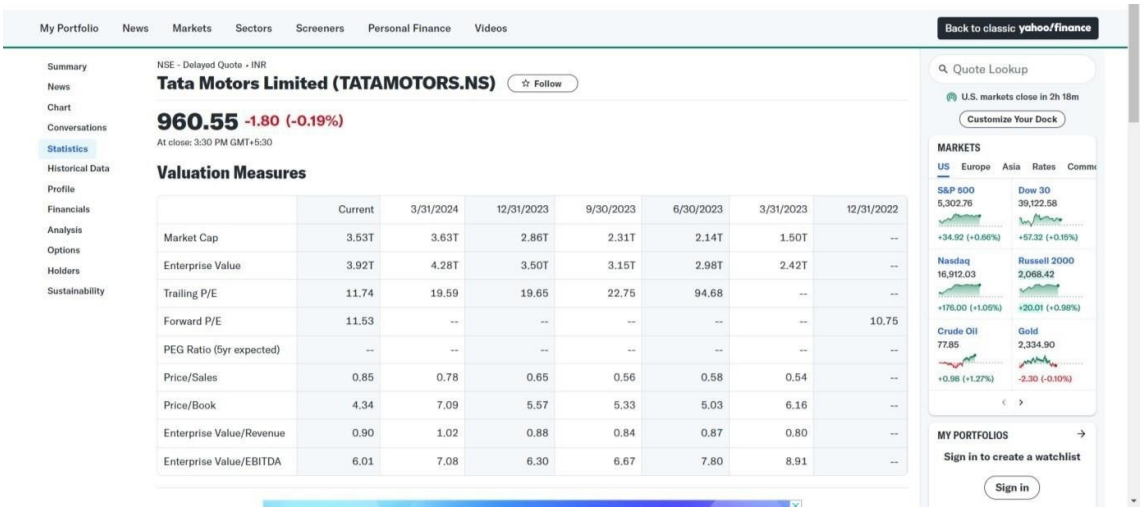


Fig 7.15 Conversation

The image is a screenshot of Yahoo Finance showing the "Discussion" section of Tata Motors Limited (TATAMOTORS.NS) with a stock price of 960.55 INR (down 1.80 INR or 0.19%) as at 3:30 PM GMT+5:30 It features 239 articles in which users share their views on Tata Motors and related financial issues. The top articles from a user named "Red Hat" from May 15, 2023 discuss the risks and rewards of investing in cryptocurrency, suggesting that the fear of investing is actually risky Additional comments from "God" from January 4, 2023, also marked him as a bull, indicating a positive outlook for the stock. The section also shows concise market data for the S&P 500, Dow 30, NASDAQ and Russell 2000 indices, as well as crude oil and gold prices.

Statistics



	Current	3/31/2024	12/31/2023	9/30/2023	6/30/2023	3/31/2023	12/31/2022
Market Cap	3.53T	3.63T	2.86T	2.31T	2.14T	1.50T	--
Enterprise Value	3.92T	4.28T	3.50T	3.15T	2.98T	2.42T	--
Trailing P/E	11.74	19.59	19.65	22.75	94.68	--	--
Forward P/E	11.53	--	--	--	--	--	10.75
PEG Ratio (5yr expected)	--	--	--	--	--	--	--
Price/Sales	0.85	0.78	0.65	0.56	0.58	0.54	--
Price/Book	4.34	7.09	5.57	5.33	5.03	6.16	--
Enterprise Value/Revenue	0.90	1.02	0.88	0.84	0.87	0.80	--
Enterprise Value/EBITDA	6.01	7.08	6.30	6.67	7.80	8.91	--

Fig 7.16 Statistics

This figure is a screenshot from Yahoo Finance showing key figures for Tata Motors Limited (TATAMOTORS.NS) as of March 31, 2024. It shows the market capitalization (3.53), minus the current stock price (960.55 INR, 1.80 INR). or 0.19% . Along with INR billion), enterprise value (INR 3.92 billion), and valuations such as trailing P/E (11.74), forward P/E (11.53), price and sales ratio (0.85), price and sales. Literary reviews (4. 34), enterprise price to earnings ratio (0.90), and enterprise price to EBITDA ratio (6.01). Historical information on these metrics is also provided for the previous quarter and year-end.

Historic Data

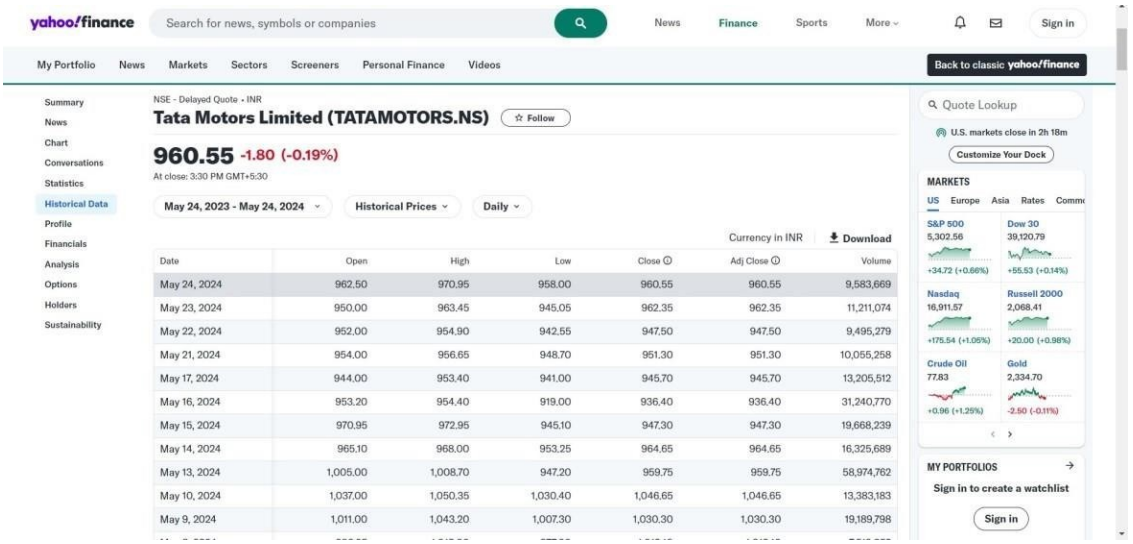


Fig 7.17 Historic Data

Yahoo Finance screenshot showing historical stock prices of Tata Motors Limited (TATAMOTORS.NS) on NSE (National Stock Exchange) in India Stock is currently priced at INR 960.55, down 1.80 INR or 0.19% from its close on May 24th, 2024. The historical data table shows daily stock prices where Trading volume was Open, High, Low, Close, Adjusted Closing, and From May 9, 2024 to May 24, 2024. The closing price was INR 960.55 a trade number 9,583,6 The right panel contains the S&P 500, Dow 30, NASDAQ, Russell 2000 and other market indicators with commodity prices for crude oil and gold.

Profile

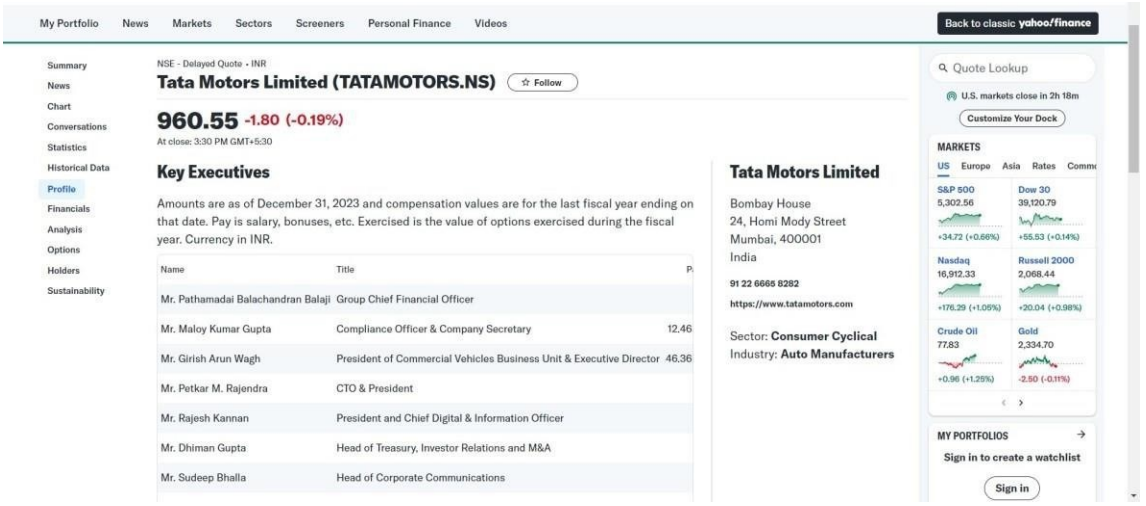


Fig 7.18 Profile

This image is a screenshot from Yahoo Finance showing profiles and key executives of Tata Motors Limited (TATAMOTORS.NS) on NSE (National Stock Exchange) in India the current price of the stock is 960.55 INR, it went down 1.80 INR or 0.19% to close on 24 May 2024. Key employees in the profile section Along with the headline, salaries are also listed for the financial year ended December 31, 2023. The mentioned employees include Mr. Pathmadai Balachandranbalaji (Group CFO), Mr. Maloy Kumar Gupta (Chief Compliance Officer and Company Secretary), Mr. Girish Arunawagh (President & Managing Director, Commercial Vehicle Industry). The segment includes the company's address in Mumbai, its department (Consumer Cyclical), and industry (Auto Manufacturers). The right panel shows crude oil and gold commodity prices and the S&P 500, Dow 30, NASDAQ, and Russell 2000 market indices.

Financials

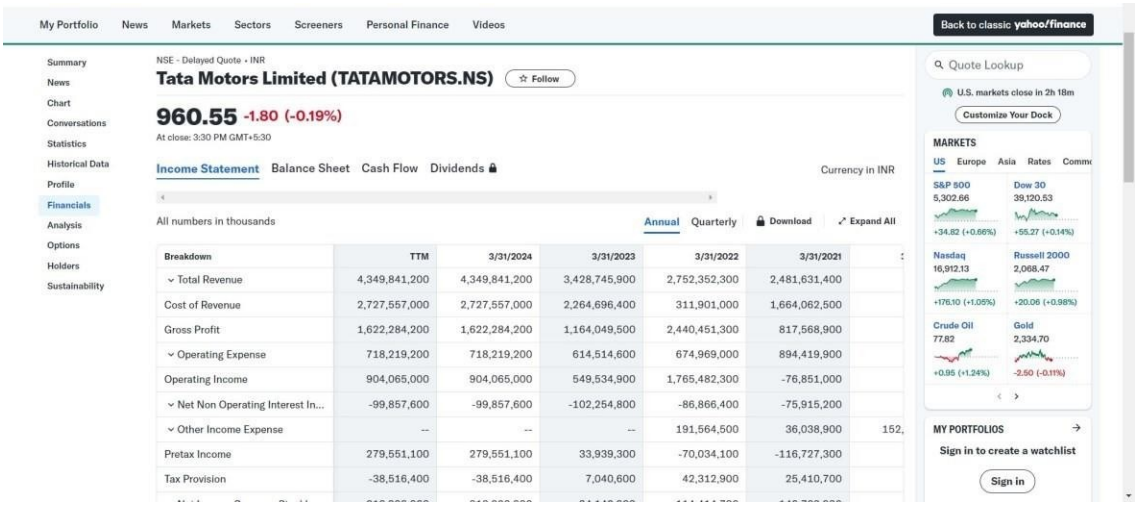


Fig 7.19 Financials

This image is a Yahoo Finance screenshot of Tata Motors Limited (TATAMOTORS.NS) stock on NSE (National Stock Exchange) in India. The current price of the stock is INR 960.55, a decline of INR 1.80 or 0.19% to the close on May 24, 2024. The financial section shows the earnings report with annualized data for trailing twelve months (TTM). and fiscal years ending 2024 , 2023, 2022, and 2021 March 31 The key figures include gross revenue of INR 4,349,841,200 for TTM and March 31, 2024, gross profit of INR 1,622,284,200, operating income was INR 904,065,000 The table shows debt income, operating expenses , net non-performing interest income, income before tax, tax. Provisions are also listed. The right pane contains the S&P 500, Dow 30, NASDAQ, Russell 2000 and other market indicators with commodity prices related to crude oil and gold.

Analysis

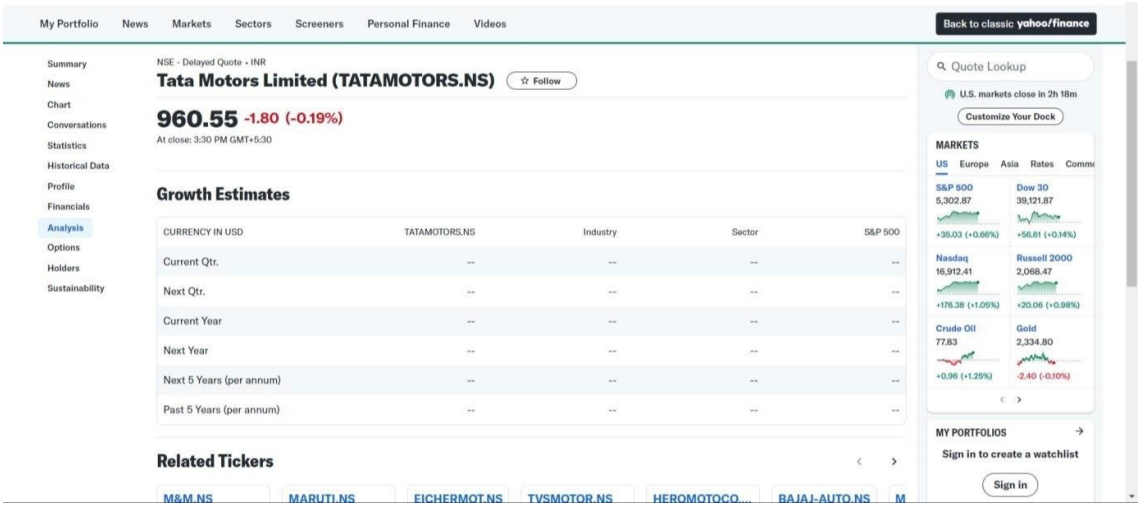


Fig 7.20 Analysis

The figure shows a screenshot of the Yahoo Finance web page of Tata Motors Limited (TATAMOTORS.NS) with a late stock quote showing a price of INR 960.55, down 1.80 INR (0.19%) while closing the Page at "Analysis" . bottom of the section, progress- Show statistics, but all fields for current quarter, upcoming quarter, current year, next year, next 5 years (any year), and previous 5 years (per annum) is blank for TATAMOTORS .NS, the industry, . sector, and the S&P 500. The relevant tickers listed include M&M.NS, MARUTI.NS, EICHERMOT.NS, TVSMOTOR.NS, HEROMOTOCO.NS, and BAJAJ-AUTO.NS. The feature lists market indexes such as the S&P 500, Dow 30, NASDAQ, and Russell 2000, along with their current prices and volatility.

Options

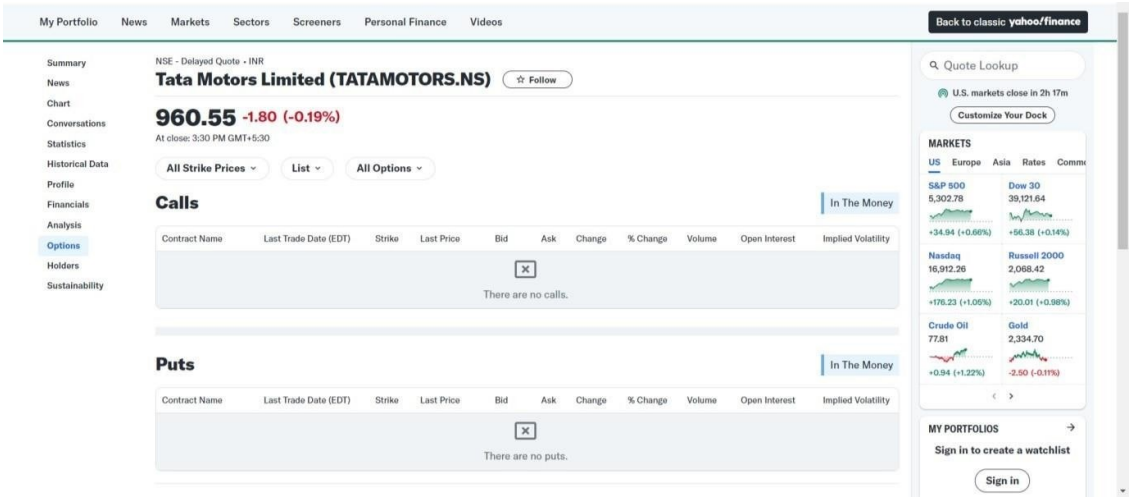


Fig 7.21 Options

The image is a Yahoo Finance for Tata Motors Limited (TATAMOTORS.NS) screenshot, showing the "Options" section. The stock is quoted at INR 960.55, down INR 1.80 (0.19%) from the close. The options table shows that there are no listed call or put options available for the stock. Table titles for Calls and Puts have columns for Contract Name, Last Trading Date, Strike, Last Price, Bid, Ask, Change, % Change, Volume, Free Interest, and Implied Volatility, but all entries are blank S&P 500,000. Dow 30, 2019. Nasdaq, Russell 2000. Dow 30, Different market indices show their current prices and volatility.

Holders

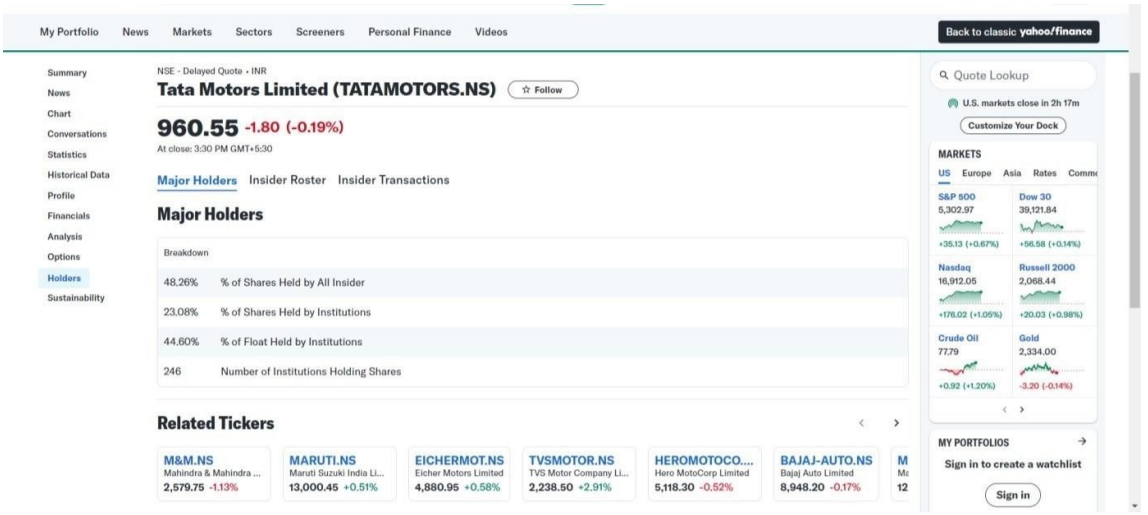


Fig 7.22 Holders

The image is a Yahoo Finance for Tata Motors Limited (TATAMOTORS.NS) screenshot, highlighting the "Holders" section. The stock is listed at INR 960.55, down INR 1.80 (0.19%) from the close. The "Major Holders" section provides a breakdown of shares: 48.26% of total shareholders, 23.08% of institutional holders, and 44.60% are float institutions, totaling 246 institutional shareholders in the sidebar S&P 500, Dow 30. The NASDAQ, Russell 2000 and various other market indices and their current prices and volatility are shown. Moreover, the associated tickers of other car companies like M&M.NS, MARUTI.NS, EICHERMOT.NS, TVSMOTOR.NS, HEROMOTOCO.NS, and BAJAJ-AUTO.NS are shown below.

Sustainability

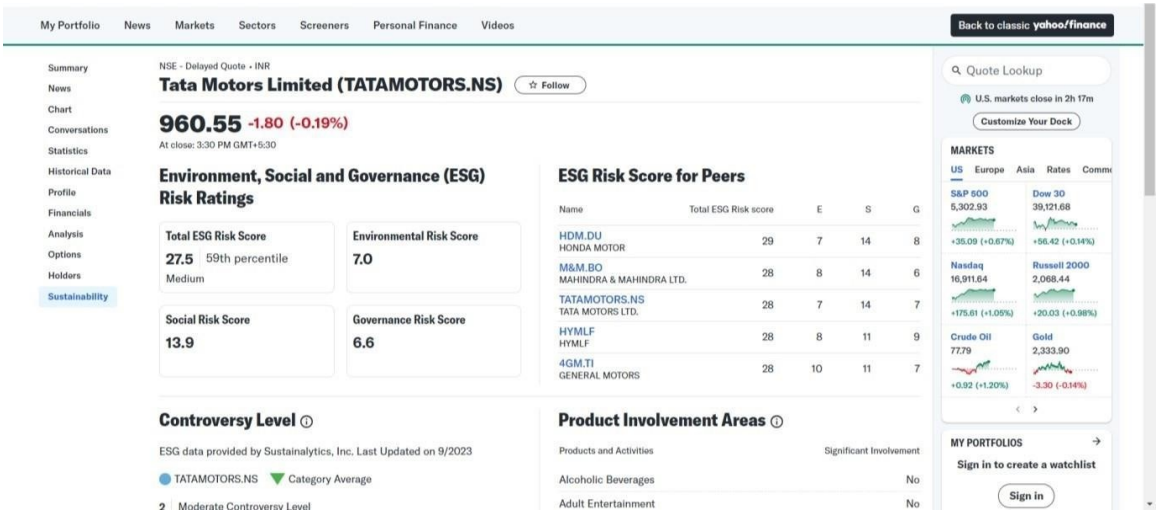


Fig 7.23 Sustainability

The image is a Yahoo Finance for Tata Motors Limited (TATAMOTORS.NS) screenshot, showing the "Sustainability" section. The stock is quoted at INR 960.55, down INR 1.80 (0.19%) from the close. The "Environmental, Social and Governance (ESG) Risk Assessment" section shows an overall ESG risk score of 27.5, placing Tata Motors in the 59th percentile with the lowest level of risk in the division being environmental risk score of 7.0, social risk score of 13.9 and governance risk score of 6.6. The "ESG Risk Score for Peers" refers to the scores of Honda Motors, Mahindra & Mahindra, Tata Motors, Hyundai and General Motors with similar levels of risk. "Controversial Level" indicates that Tata Motors has a moderate level of controversy of 2. The sidebar shows various market indices, including the S&P 500, Dow 30, NASDAQ and Russell 2000, along with their current price volatility.

Broker

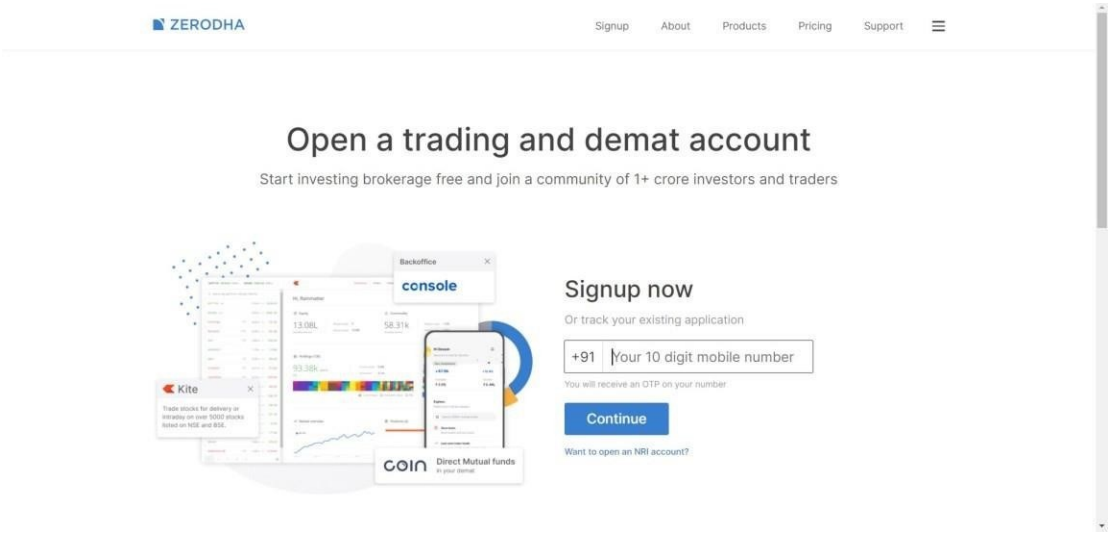


Fig 7.24 Broker

The image is homepage of the Zerodha website, a financial services company in India. The website offers trading and demat accounts, which allow users to invest in stocks and other financial instruments. The homepage advertises that users can start investing for free and join a community of over 1 crore investors and traders. There is a form on the homepage where users can enter their mobile number to get started.

CHAPTER 8. SOFTWARE TESTING

8.1 Test Cases for Simple Nivesh Platform

Test ID	Test Scenario	Step Details	Expected results	Actual Results	Pass/Fail /Non Executed/ Suspended
1	Login	Valid User ID Valid Password	User login	Login successfully done	Pass
2	Searchfor stock name	Enter valid stock name	User gets stock name.	User Searched Successfully.	Pass
3	Display the stock analysis	Enter the stock name and click a search button to display a pie chart	Display the result.	The result was successfully displayed.	Pass
4	View additional details	Click “view more” button	Display more inform-ation	Information displayed successfully	Pass
5	Purchase stock	Click “brokers to buy” button	User redirected to zheroda platform	User successfully redirected to zheroda platform	Pass

CHAPTER 9. CONCLUSION

Simple Nivesh represents a major step forward in democratizing access to stock market for individuals of all skill levels. Combining user-friendly interfaces with AI-driven stock market analysis, the platform enables users to confidently make informed investment decisions Historical data, real-time data and sentiment combining analysis into a single, easy-to-understand pie chart simplifies the decision- making process and lowers barriers to entry for new investors Users can overcome challenges and concerns associated with traditional financial models, have promoted financial education and opened up opportunities for development to a wider audience.

CHAPTER 10. FUTURE ENHANCEMENT

Several avenues of improvement can be explored to further enhance the simple nivesh platform:

1. Expanding features: The introduction of new features such as portfolio tracking, personalized recommendations, and educational materials, can enhance the user experience and provide greater value for investors

2. Enhanced AI capabilities: Constantly improving AI algorithms to analyze multiple data sources, identify emerging trends, and provide more accurate predictions can improve the platform in helping users the role for financial decision making has increased

3. Mobile Application Development: Creating a mobile application version of the platform provides accessibility and convenience for users, allowing them to manage their investment son the go.

4. Community engagement: Incorporating social features such as forums, discussion boards, and expert Q&A sessions can create a sense of community among users.

5. Connections with brokerage platforms: Establishing partnerships with brokerage firms by integrating simple investments directly into their platforms can streamline the financial process and provide access to users if easily acquire commercial power.

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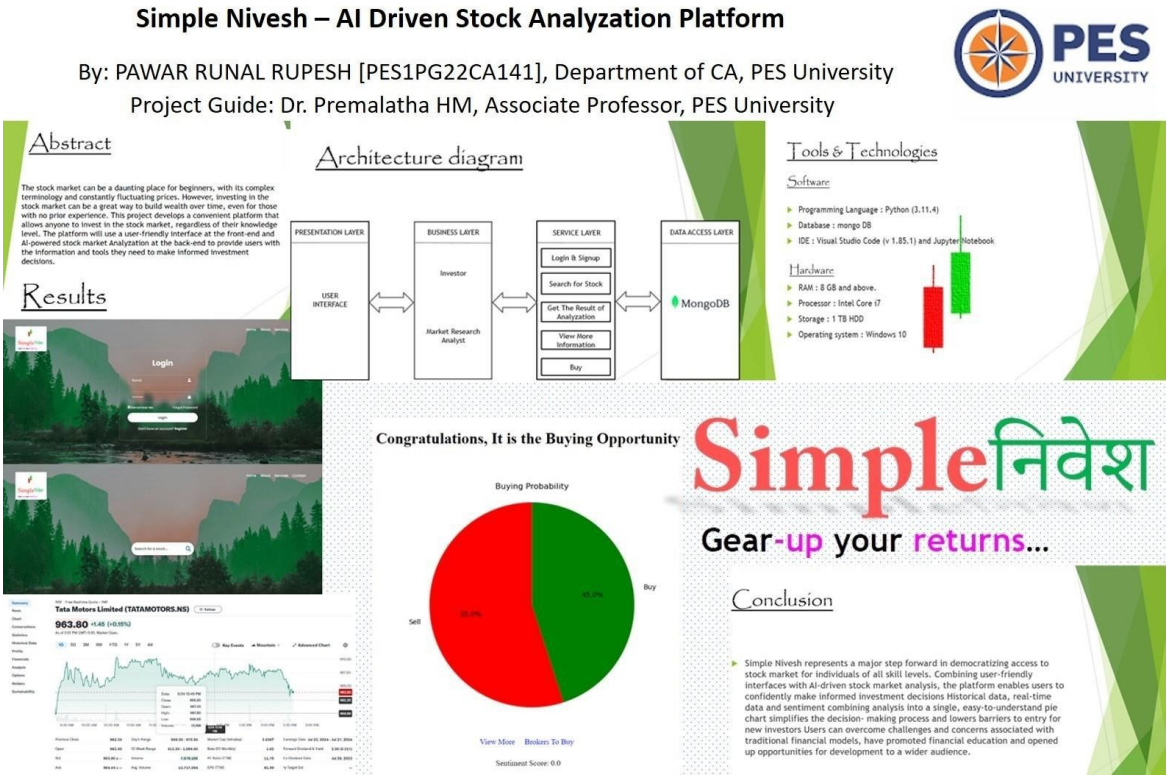
Simple Nivesh – AI Driven Stock Analyzation Platform
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PES UNIVERSITY
Abstract
The stock market can be a daunting place for beginners, with its complex terminology and constantly fluctuating prices. However, investing in the stock market can be a great way to build wealth over time, even for those with no prior experience. This project develops a convenient platform that allows anyone to invest in the stock market, regardless of their knowledge level. The platform will use a user-friendly interface at the front-end and AI-powered stock market Analyzation at the back-end to provide users with the information and tools they need to make informed investment decisions.
Architecture diagram
PRESENTATION LAYER
USER INTERFACE
BUSINESS LAYER
Investor
Market Research Analyst
SERVICE LAYER
Login & Signup
Search for Stock
Get The Result of Analyzation
View More Information
Buy
DATA ACCESS LAYER
MongoDB
Tools & Technologies
Software
Programming Language : Python (3.11.4)
Database : mongo DB
IDE : Visual Studio Code (v 1.85.1) and Jupyter Notebook
Hardware
RAM : 8 GB and above.
Processor : Intel Core i7
Storage : 1 TB HDD
Operating system : Windows 10
Results
Login
Tata Motors Limited (TATAMOTORS.NS)
963.80 +1.46 (+0.15%)
Congratulations, It is the Buying Opportunity
Buying Probability
Buy
Sell
View More Brokers To Buy
Sentiment Score: 0.0
Simpleनिवेश
Gear-up your returns...
Conclusion
Simple Nivesh represents a major step forward in democratizing access to stock market for individuals of all skill levels. Combining user-friendly interfaces with AI-driven stock market analysis, the platform enables users to confidently make informed investment decisions Historical data, real-time data and sentiment combining analysis into a single, easy-to-understand pie chart simplifies the decision- making process and lowers barriers to entry for new investors Users can overcome challenges and concerns associated with traditional financial models, have promoted financial education and opened up opportunities for development to a wider audience.