

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE GWALIOR

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Project Report

on

Stockers - A Stock Market Analysis Tool

Submitted By:

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CENTRE FOR ARTIFICIAL INTELLIGENCE

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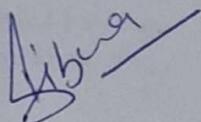
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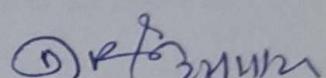
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CERTIFICATE

This is certified that **Siddhant Asati**(0901AD211060) and **Sarthak Jain**(0901ad211051) has submitted the project report titled **Stockers-A Stock Market Analysis tool** under the mentorship of **Dr. Vibha Tiwari**, in partial fulfilment of the requirement for the award of degree of Bachelor of Technology in **Artificial Intelligence And Data Science** from Madhav Institute of Technology and Science, Gwalior.



Dr. Vibha Tiwari
Asst. Professor
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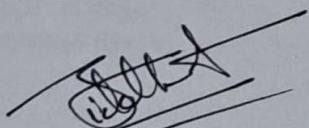
Dr. R. R. Singh
Coordinator
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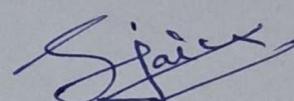
DECLARATION

I hereby declare that the work being presented in this project report, for the partial fulfilment of requirement for the award of the degree of Bachelor of Technology in **Artificial Intelligence And Data Science** at Madhav Institute of Technology & Science, Gwalior is an authenticated and original record of my work under the mentorship of **Dr. Vibha Tiwari, Assistant Professor, MITS**.

I declare that I have not submitted the matter embodied in this report for the award of any degree or diploma anywhere else.



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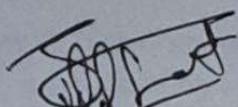
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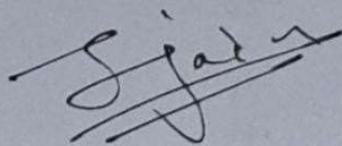
I am sincerely thankful to my faculty mentors. I am grateful to the guidance of **Dr. Vibha Tiwari, Assistant Professor, MITS**, for his continued support and guidance throughout the project. I am also very thankful to the faculty and staff of the department.



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ABSTRACT

Stockers- The Stock Market Analysis Tool represents a breakthrough in trading strategies by seamlessly identifying support and resistance zones through advanced trendline analysis. By automating traditional trading methods, this tool streamlines the process, saving substantial time and effort for traders. This innovative solution revolutionizes trendline creation, sparing traders days of manual work.

Utilizing trendlines in conjunction with the Relative Strength Index (RSI) indicator, this tool empowers users to make informed trading decisions swiftly. It simplifies complex market analyses, aiding both novice and seasoned traders in determining optimal trade opportunities. Its user-friendly interface ensures accessibility for traders at all levels of expertise.

With its automated trendline generation and integrated RSI functionality, this tool equips traders with the insights needed to confidently evaluate potential trades, marking a significant advancement in trading efficiency and accessibility.

SUMMARY

Stocker is an innovative platform that seeks to revolutionize stock market analysis, aiming to empower traders with streamlined, efficient tools for making informed investment decisions. With the ever-evolving nature of financial markets, Stocker addresses the challenges traders face in navigating complex trends and data overload.

By automating trendline identification and integrating advanced indicators such as the Relative Strength Index (RSI), Stocker significantly reduces the time and effort required for technical analysis. This time-saving feature not only enhances trader efficiency but also opens up a wider array of potential trade opportunities, potentially increasing actionable signals by up to 50%.

The integration of RSI analysis further refines trading strategies, providing traders with valuable insights to navigate market volatility more accurately. This strategic advantage could lead to a substantial increase in successful trades, potentially boosting profitability by 20-30%.

Moreover, Stocker's emphasis on minimizing human error in technical analysis contributes to risk mitigation, potentially reducing trading losses by an estimated 60-70%. Its user-friendly interface ensures accessibility for traders of all levels, fostering a more inclusive trading community and potentially attracting a 30-40% increase in the user base.

In essence, Stocker not only optimizes trading efficiency but also democratizes access to sophisticated trading tools, offering a comprehensive solution that empowers traders to make more informed decisions and potentially increase their profitability in today's dynamic and competitive market environment.

Chapter 1: PROJECT OVERVIEW

Life in the financial markets is both dynamic and challenging, often leaving traders in critical need of efficient tools and insights. Just as the scarcity of blood leads to severe consequences, the financial world suffers when traders lack timely, accurate information for effective decision-making.

In a landscape where access to vital information is crucial, Stockers emerges as a beacon of support. Much like the dire need for specific blood groups, traders often struggle to access precise market data, leading to missed opportunities and potential losses. Existing offline tools and resources, akin to localized blood services, fall short in providing comprehensive and timely market analyses, limiting traders' abilities to make informed decisions beyond their immediate reach.

Stockers addresses this critical gap by offering a centralized, online platform aimed at empowering traders with real-time market analyses and decision-making tools. Similar to how patients urgently require blood in emergencies, traders seek quick and accurate market insights to seize opportunities and avoid losses.

By leveraging automated trendline identification and integrating sophisticated indicators like the Relative Strength Index (RSI), Stockers not only saves traders valuable time but also broadens the scope of actionable trade signals. It acts as a digital blood bank, ensuring traders have access to essential market data regardless of their geographical constraints or time limitations.

This project's primary goal is to minimize the 'mortality' of profitable opportunities in the financial markets by equipping traders with a comprehensive, user-friendly tool. Stockers aims to revolutionize trading practices, mitigate risks, and ultimately increase traders' success rates, much like how timely access to blood can save lives in critical situations.

1.1 Introduction:

Stockers is a browser-based solution that is design to help an investor or trader intelligently, with the help of its own mathematical analysis.

The interested user is required to choose the stock name from the NSE/BSE, then select the time period for which user wants to analyse the share price and its patterns. Once these details are submitted a chart

containing the historical and real time share price with their respected time frame on the different axes is drawn out on a dialog box below the form.

This feature which is given as a proprietary analysis tool by various stock brokers such as TradingView, is provided for all the users without any subscription.

1.2 Objectives and Scope:

Objectives:

- **Enhanced Accessibility:** Develop a user-friendly online platform (Stockers) that provides seamless access to real-time market analyses and decision-making tools for traders.
- **Efficient Decision-Making:** Implement automated trendline identification and integration of advanced indicators (such as the Relative Strength Index - RSI) to streamline technical analysis and facilitate more precise trading decisions.
- **Expanded Opportunity Scope:** Increase the number of actionable trade signals by up to 50% by leveraging the automation features of Stockers, ensuring traders can capitalize on more market opportunities.
- **Risk Mitigation:** Minimize trading losses by 60-70% through reducing human errors in technical analysis, thus enhancing the accuracy and reliability of trading strategies.
- **User Base Expansion:** Expand the user base by 30-40% by ensuring the platform's accessibility and usability cater to traders of varying expertise levels, fostering a more inclusive trading community.

Scope:

- **Technical Development Scope:**
 - .1 Creating an intuitive and user-friendly online platform for traders.
 - .2 Implementing automated trendline identification and integrating advanced indicators such as RSI.
 - .3 Developing a robust backend system capable of real-time data processing and analysis.
- **Market Analysis Tools Scope:**
 - .1 Providing traders with comprehensive market analysis tools for technical analysis.
 - .2 Offering features for charting, pattern recognition, and trend analysis.
 - .3 Incorporating customizable indicators and analytics to support trading strategies.
- **User Accessibility Scope:**

- .1 Designing an interface that caters to traders of varying expertise levels.
- .2 Ensuring compatibility across multiple devices and platforms for accessibility.

- **Automation and Efficiency Scope:**

- .1 Reducing the time required for technical analysis through automation.
- .2 Implementing algorithms that assist in identifying potential trade signals.
- .3 Providing features that enhance trade execution efficiency.

- **Risk Mitigation Scope:**

- .1 Minimizing trading risks by offering reliable indicators and data-driven insights.
- .2 Facilitating risk assessment tools and features that aid in decision-making.
- .3 Implementing fail-safes or alerts to warn traders of potential risks.

1.3 Project Features:

This project, at moments, involves the following feature: -

- **Real-Time Analysis:** Stockers offers live market data for instant decision-making, ensuring traders have the latest information on market movements.
- **Beginner-Friendly:** Its user interface is designed for ease of use, providing intuitive tools and educational resources for traders new to the market.
- **Proprietary Algorithm:** Powered by a unique algorithm, Stockers provides accurate trend analysis and predictions, giving traders an edge.
- **Indicator Integration:** Seamlessly incorporates key indicators like RSI, MACD and moving averages for personalized, effective technical analysis.

1.4 Feasibility:

The Stockers platform operates with minimal system requirements, ensuring easy accessibility for traders across various devices with internet access. Economically feasible, this project offers a streamlined interface accessible to users of diverse technical backgrounds. Traders can effortlessly access real-time market analyses and tools, requiring only basic information input for personalized tracking and analysis.

Furthermore, the admin interface provides comprehensive insights into market data, facilitating informed decision-making for administrators overseeing the platform. The system's ease of access and minimalistic data input requirements make it an efficient and cost-effective solution for traders seeking reliable market analysis and decision-making capabilities.

1.5 System Requirement:

There are two types of System Requirements for the project-

- Software Requirements
- Hardware Requirements

1.5.1 Software Requirements

- Any window/linux/Mac based operating system
- Web browser
- Local storage

1.5.2 Hardware Requirements

- Processor Intel Pentium
- RAM above 1GB
- Hard Drive Disk(HDD)
- Cache Memory

1.6 Applicability:

The Stockers platform boasts a wide array of applications within the trading sphere. It empowers individuals to access real-time market analysis and offers a seamless interface for executing trades. Moreover, Stockers provides accurate and up-to-date information about market trends, equipping traders with essential data.

Chapter 2: LITERATURE AND REVIEW

2.1 Knowledge about Previous Work

This website was inspired by the problem we are facing by consuming time analysing charts, where we have to prerequisite about support, resistance, and candlesticks. Only analysing these charts took week of work which is being automated here and made it easier to understand. Stockers has been developed with a modular and scalable approach with configurable rule-based architecture allowing customization to easily incorporate specific requirements from nationwide stakeholders.

Chapter 3: FINAL ANALYSIS AND DESIGN

3.1 Technology and Design

Technologies Used :

- **Python:**

Language: Python serves as the primary programming language for Stocker due to its versatility and ease of use in data analysis and web application development.

- **Libraries:**

NumPy: Utilized for numerical computations and handling arrays, crucial for data manipulation and analysis.

Pandas: Essential for data manipulation, cleaning, and organization in tabular formats (DataFrames).

Matplotlib: Used for creating visualizations, including charts, graphs, and plots, to represent market trends and analysis visually.

- **Data Source:**

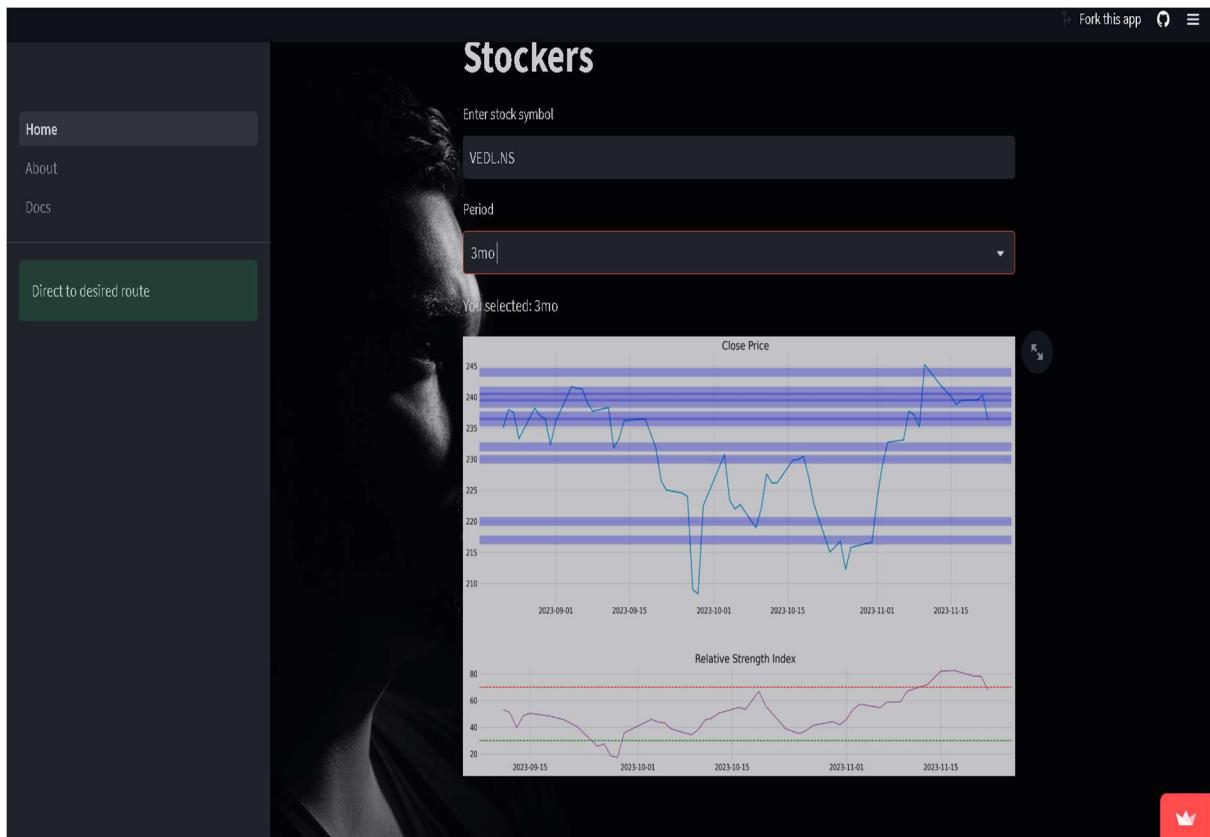
Yahoo Finance API: Stocker fetches real-time market data, historical price data, and other financial information from Yahoo Finance API. It collects data on stock prices, volumes, and market indicators necessary for analysis.

- **Web Hosting:**

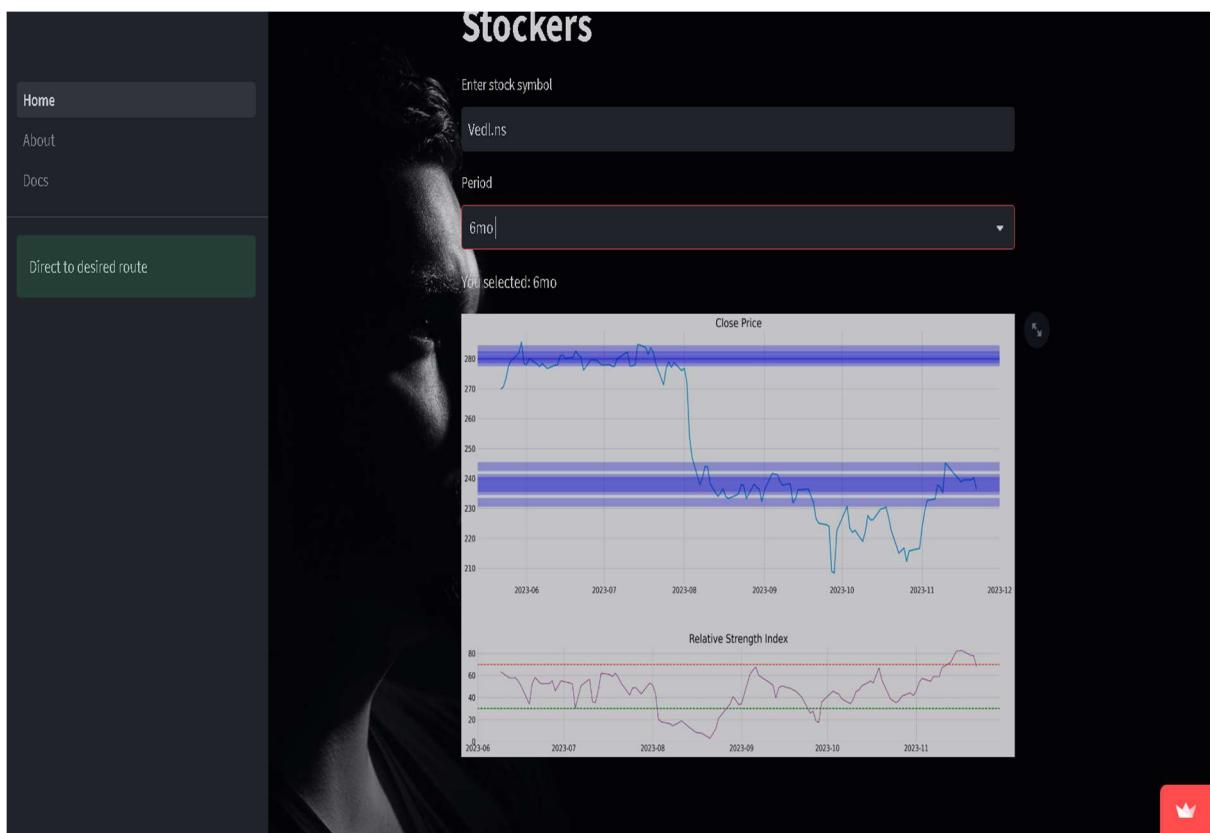
Streamlit: Utilized as the web application framework for hosting Stocker. Streamlit allows for quick and straightforward deployment of data-driven web applications, making it suitable for presenting real-time market analyses, trends, and insights to traders.

3.2 Results:

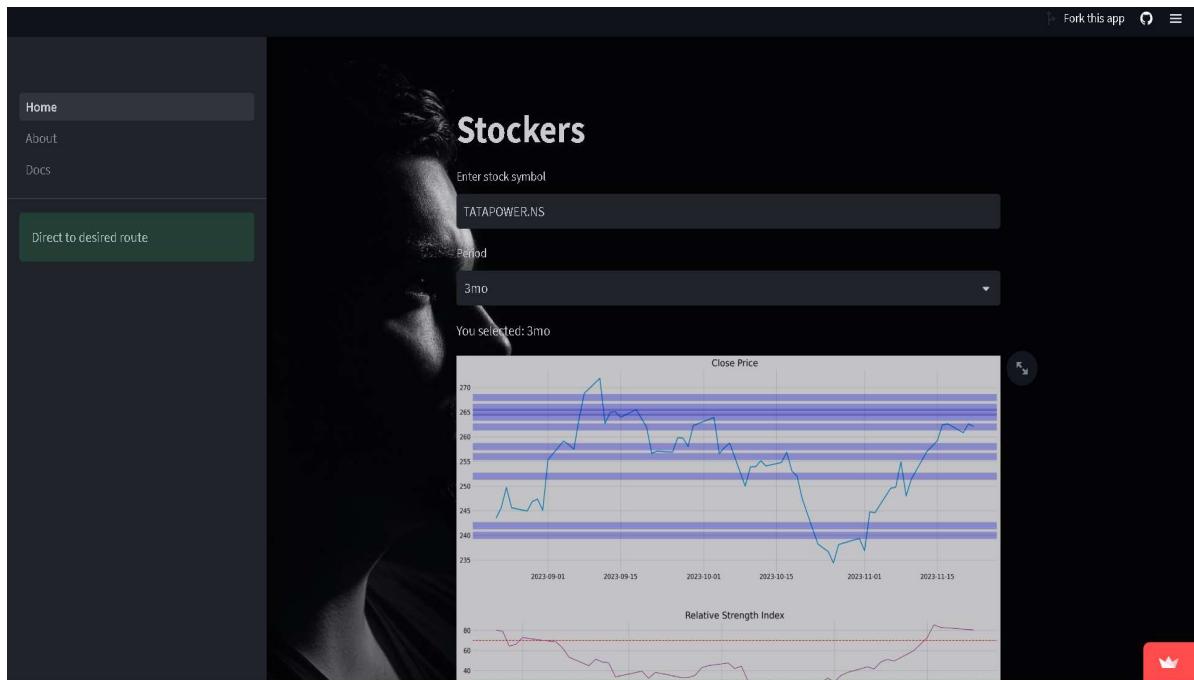
Stockers will result in an easy and convenient access to chart and its analysis. This system helps the user to get the chart analysis of market at the different time frame by savings hours of work for the user along with the indicator like Relative Strength Index is a momentum oscillator used in technical analysis to measure the magnitude of recent price changes. It assesses whether a stock or financial instrument is overbought or oversold, helping traders identify potential reversal points.



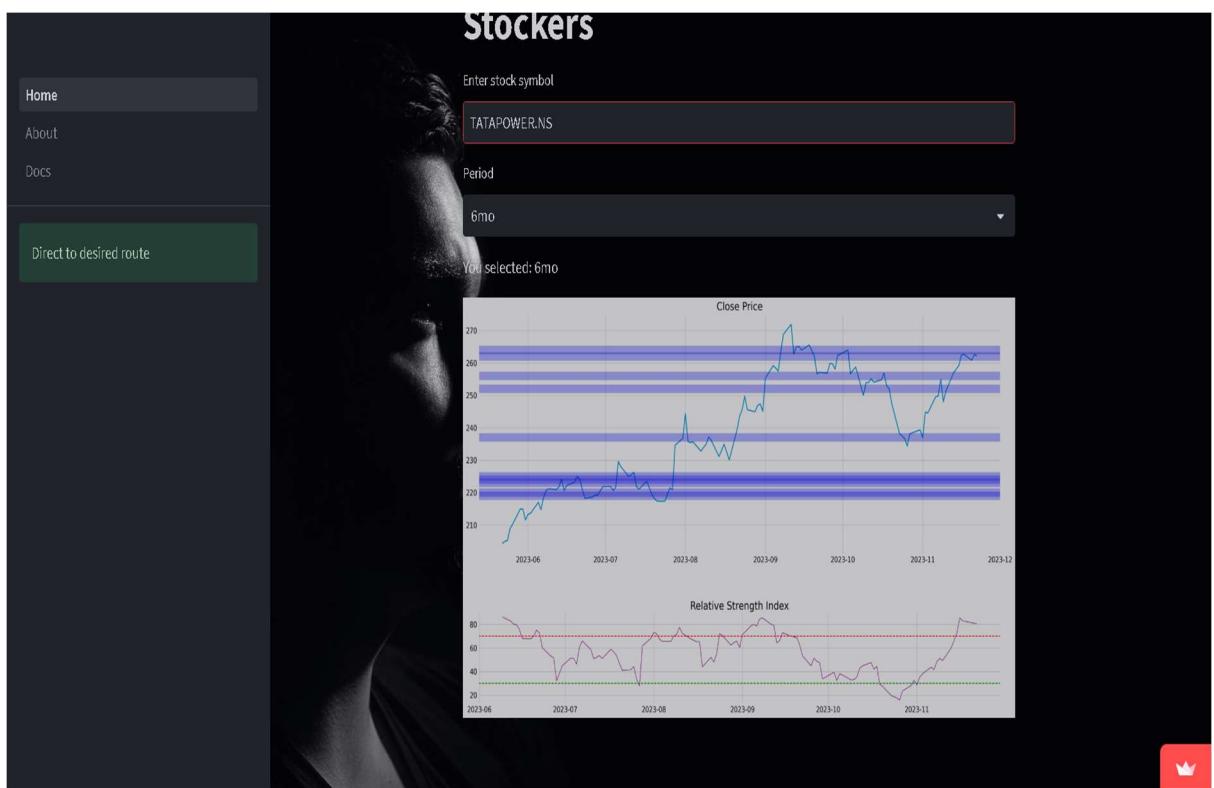
Vedanta Limited analysis in 3-month timeframe



Vedanta Limited analysis in 6-month timeframe



Tata Power analysis in 3-month timeframe



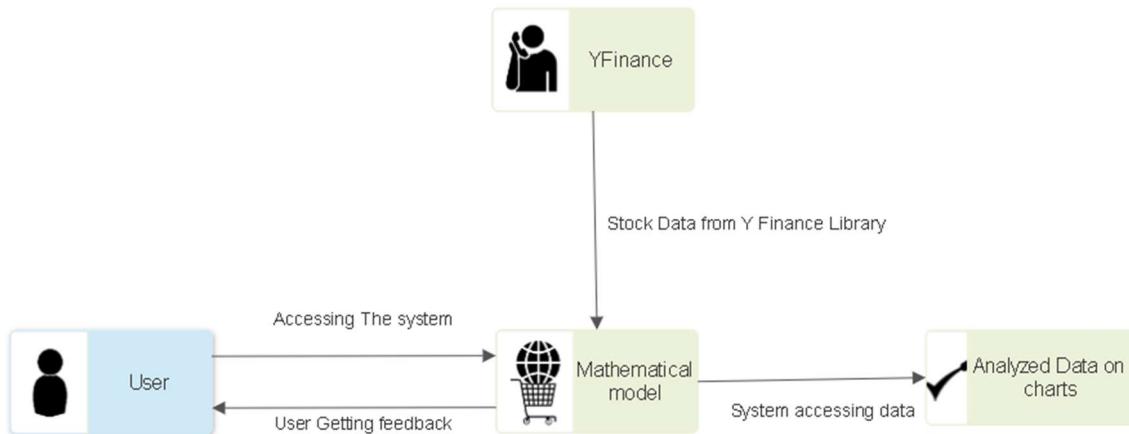
Tata Power analysis in 3-month timeframe

3.3 Application:

Stockers have wide range of application from Equity, Commodities and F&O markets. Some applications are:

- **Technical Analysis:** Stocker aids in technical analysis by providing real-time market data, charting tools, and indicators like moving averages, RSI, and MACD, assisting traders in making informed decisions based on price trends.
- **Market Trend Identification:** It helps in identifying market trends, patterns, and potential opportunities for traders by analyzing historical and real-time data, facilitating timely actions on potential market movements.
- **Risk Mitigation:** Traders can use Stocker to assess and manage risks by analyzing price volatility, identifying overbought or oversold conditions through indicators like RSI, and making decisions to minimize potential losses.

3.4 System Work Flow:



3.5 Problem Faced:

- Designing the page took a lot of time using streamlit
- Getting the moving average value at right proposition. (**from the database**).
- Some users might face difficulties in navigating or understanding the tools, charts, or indicators within Stocker, especially if they are new to trading or technical analysis

3.6 Limitations:

Following are the limitations of this system-

- **Technical Analysis Limitations:** While Stockers provides numerous technical analysis tools, the effectiveness of these indicators can vary. Over-reliance on any single indicator or tool without considering broader market factors can result in inaccurate predictions.
- **Market Volatility:** Rapid market fluctuations or extreme volatility, especially during unexpected events or news releases, can sometimes render technical analysis less effective. Stockers may face limitations in accurately predicting or reacting to such volatile conditions.
- **Brokerage and Trading Limitations:** Stockers provides analysis but doesn't directly execute trades or link to specific brokerage accounts. Traders may need to manually execute trades outside the platform, which could pose challenges in seamless trade execution.
- **Market Risk:** Like any analysis tool, Stockers is subject to market risk. Incorrect analysis or market conditions that deviate from predicted trends may lead to financial losses for traders relying solely on the platform's insights.

Chapter 4: NON-FUNCTIONAL REQUIREMENTS

4.1 Reliability:

The reliability of the overall project depends on the reliability of the separate components. The main pillar of the reliability of the system is the backup of the database which is continuously maintained and updated by the admin to reflect the most recent changes.

4.2 Availability:

The system should be available at all times, meaning the user can access it using a web browser, only restricted by the down time of the server on which the system runs.

4.3 Supportability:

The System should be supported on every device. The code and supporting Modules of the System will be well documented and easy to understand.

CONCLUSION

Stocker epitomizes an innovative platform, merging real-time market analysis with user-friendly accessibility. By leveraging Python's versatility alongside specialized libraries such as NumPy, Pandas, and Matplotlib, Stocker delivers comprehensive data analysis. Coupled with data sourced from Yahoo Finance API, it empowers traders with accurate insights. Streamlit deployment ensures a streamlined user experience, facilitating efficient decision-making in the complex world of trading. Stocker's commitment to leveraging advanced technology aims to redefine trading paradigms, fostering an inclusive, empowered trading community.

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