

Advanced algorithmic trading system

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Abstract— Algorithmic trading and artificial stock markets have generated big interest just not amongst agents and traders in the economic markets but additionally, throughout numerous disciplines in the academia. The emergence of algorithmic buying and selling have created brand-new surroundings wherein the classic manner of buying and selling requires new processes. on the way to understand the impact of one of these buying and selling system at the functioning of the marketplace, new tools, theories and processes need to be created. as a consequence, artificial inventory markets have emerged as simulation environments to check, apprehend and model the effect of algorithmic trading, in which humans and software program marketers may additionally compete on the identical market. The purpose of this paper is to create a framework to test and analyse numerous trading strategies in devoted artificial surroundings.

Keywords—Machine learning models, algorithmic trading, distributed cognition, model overfitting, explainability.

I. INTRODUCTION

Algorithmic trading and artificial inventory markets have been in the final decade of excessive interest for commercial enterprise, IT studies and academia. The emergence of algorithmic buying and selling has created a new environment where the conventional way of trading requires new tactics. high trading pace and automatic algorithms have elevated the buying and selling technique beyond human capabilities transferring agents in a brand-new vicinity that can be referred to as 'micro-2d economics'. In order to address this, new equipment theories and processes want to be created. as a result, artificial inventory markets have emerged as simulation environments wherein to test, recognize and version the already complicated human behaviours and additionally to examine the impact within the device of algorithmic trading where people and software retailers may also compete on the equal marketplace. thinking about this, the cause of this paper is to create a framework to test and analyse diverse buying and selling.

II. PURPOSE OF THE DOCUMENT

Algorithmic buying and selling constantly display units' markets and locations orders while situations fit a set of parameters together with extent, fee, resistance, guide, or any other thing that the dealer or marketplace player is relaxed with. one of the blessings of algo-buying and selling is that through using available records, it may effortlessly and quickly perceive an ongoing fashion. It is otherwise an undertaking for market members to behave fast through analysing a big pool of records in brief time. except, marketplace members can use more than one strategy without delay and determine the net final results of the approach. The principal goal of algo-trading isn't always just to income by way of trading but to store prices, minimize market impact, and the execution hazard of a trading order. investors don't want to look at stocks or send slices manually. Algorithmic trading is specifically used by institutional buyers and big brokerage houses to reduce down on expenses associated with trading in accordance to research, algorithmic trading is specifically beneficial for massive order sizes that may incorporate as a great deal as 10% of common buying and selling quantity. typically, market makers use algorithmic trades to create liquidity. Algorithmic buying and selling additionally allows for faster and easier execution of orders, making it attractive for exchanges. In turn, this means that traders and buyers can speedy eBook profits off small adjustments in rate. The scalping buying and selling method usually employs algorithms because it includes speedy buying and selling of securities at small price increments.

III. GOALS OF PROPOSED SYSTEM

- 1) Planned approach towards working – The working of the system will be well planned and organized.

- 2) Accuracy – When we are working with our code the accuracy is the most important thing that is needed. The code for the project has been prepared with complete accuracy.
- 3) Reliability – For daily trading the system should be reliable so that it can work without any discrepancy.
- 4) Immediate Retrieval of Information – For faster trading the immediate retrieval of information is needed so for that we have used the api to retrieve the market data.
- 5) Easy to operate – The project is made in an easier way to handle it in a well manner for daily use with notifications.

IV. SCOPE OF THE PROJECT

Algo trading has seen a huge boost in the recent years all around the world. Manual trading can lead to many discrepancies in daily life. Trading manually is also a slow process for daily trading. So, to avoid all this the evolvement of algo trading had take place. This project is a step towards the evolvement of automation trading. Through this project user can automate their trade and can do their trading according to the moving average and RSI. The user will also be getting notifications for the execution of their trade through telegram. This will help in increasing the scope of algo trading in future.

V. PROGRAMMING LANGUAGES AND SOFTWARE USED

- 1) Python
- 2) FYERS API Bridge
- 3) Websocket
- 4) Selenium WebDriver
- 5) WebDriver Manager
- 6) Pandas
- 7) Ta-Lib
- 8) Flask

VI. ARCHITECTURAL DESIGN

Architectural design represents the structure of data and program components that are required to build a computer-based system. It considers the architectural style that the system will take, the structure and properties of the components that constitute the system, and the interrelationships that occur among all architectural components of a system.

DFD:

The data flow diagram enables the software engineer to develop models of the information domain and functional domain at the same time. As the DFD is refined into greater level of detail, the analyst performs an implicit functional decomposition of the system. At the same time, the DFD refinement results in corresponding refinement of data as it moves through the processes that embody the application.

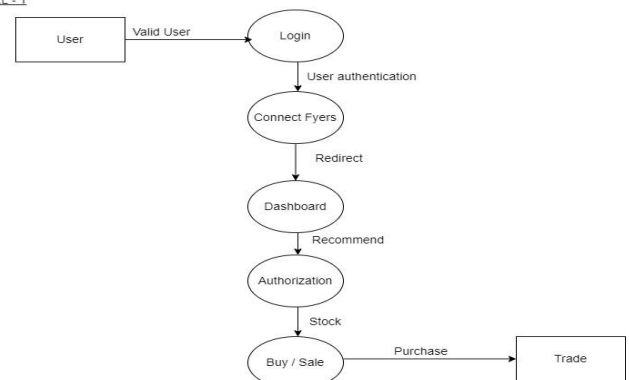
DFD

LEVEL - 0



DFD

LEVEL - 1



VIII. CONCLUSION

Algorithm trading is all about the use of computers programs to automate one or more stages of the trading process: pre trade analysis (data analysis), trading signal generation (buy and sell recommendations), and trade execution. Today, Algorithmic trading is amongst the most talked about technologies in the recent years. It has given trading Firms more power in the rapidly evolving markets by eliminating human errors and changing the way financial markets are interlinked today. Its usage is credited to most markets and even to commodity trading. For this project we will use python and machine learning. Machine learning models are becoming increasingly prevalent in algorithmic trading and investment management. The spread of machine learning in finance challenges existing practices of modelling and model use and creates a demand for practical solutions for how to manage the complexity pertaining to these techniques. The process to retrieve, format and use data is an essential part of trading using Python, as without data there is nothing we can go ahead with.

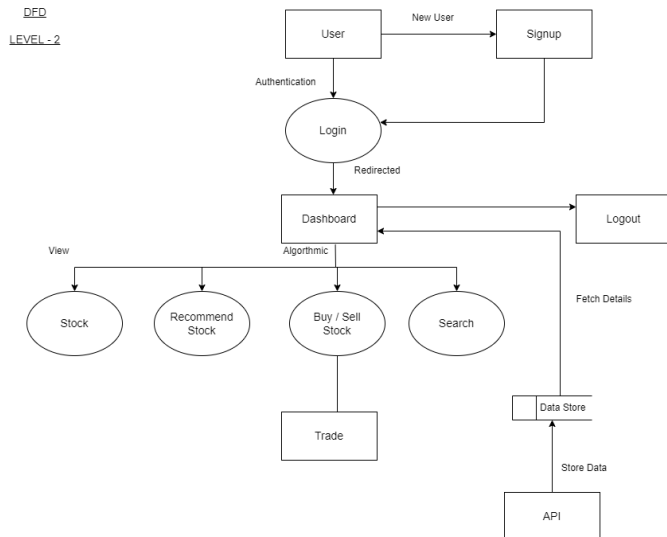
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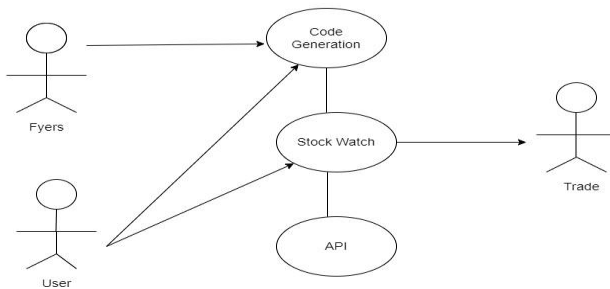
We express our sincere gratitude for providing us an opportunity to undergo this Project as the part of the curriculum.

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Use Case Model:

Use Case Diagram



VII. PROBLEM DEFINITION

In 90s when there was not much technological advances trading manually was used to be hectic work for big enterprises who use trading as their daily profession. There were many occurrences of error due to which they have to suffer huge loss of money. By trading manually, they were also not able to do faster processing due to which they use to miss many good chances to earn profit. So, with the advancement of technologies, they were able to use programming for daily trading. By using programming, they were able to automate their trade. This helped to trade faster and efficiently and were able to earn consistent profit. This project is also an algo trading to automate the trade based on different strategies

Finally, as one of the team members, I would like to appreciate all my group members for their support and coordination, I hope we will achieve more in our future endeavours.

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