

# Algorithmic Trading Strategies

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**Abstract:** In electronic financial markets, algorithmic trading refers to the use of computer 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. Trade execution is further divided into agency/broker execution (when a system optimizes the execution of a trade on behalf of a client) and principal/proprietary trading (where an institution trades on its own account). Each stage of this trading process can be conducted by humans, by humans and algorithms, or fully by algorithms.

**Keywords:** python, visualization, Trading, Apple.

## I. INTRODUCTION

Algorithmic trading uses algorithms that follow a trend and define a set of instructions to perform a trade. The trade can generate revenue at an inhuman and enhanced speed and frequency. The characterized sets of trading guidelines that are passed on to the program are reliant upon timing, value, amount, or any mathematical model. Aside from profitable openings for the trader, algo-trading renders the market more liquid and trading more precise by precluding the effect of human feelings on trading. The global algorithmic trading market is expected to grow significantly between 2018 and 2026. Our project aims to further this revolution in the markets of tomorrow by providing an effective and efficient solution to overcome the drawbacks faced due to manual trading like –

- Trades are executed at the best possible prices.
- Trade request situation is instant and precise (there is a high possibility of execution at the ideal levels).
- Trades are coordinated effectively and immediately to keep away from huge value changes.
- Reduced exchange costs.
- Simultaneous automated checks with different market scenarios.
- Reduced hazard of manual mistakes when trading.
- Algo-trading can be back-tested utilizing historical and live data to check whether it is suitable for trading.
- Reduced the chance of errors by human traders as a result of emotional and psychological factors. The problem statement is to build an Algorithmic Trading Bot which will work on Random Forest to work alongside effective strategies like Range Trading / SMA, Gold Cross, Multi Data Strategy, etc. for day-to-day (Intraday) trading and throughout the course of the day invest and trade with continuous modifications to ensure the best trade turnover for the day while reducing the transaction cost, hence enabling huge profits for concerned users be it Organizations or individuals

## II. PROPOSED SYSTEM

Algo trading is now a 'prerequisite' for surviving in tomorrow's financial markets. Industry reports suggest global algorithmic trading market size is expected to grow from \$11.1 bn in 2019 to \$18.8 bn by 2024. So, the future of Algorithmic trading is yet to come. A lack of a "Simple yet Efficient Bot" for use by "Common-Man" has driven the need for this project. In our model the knowledge which is required to take the decisions are injected to the bot. With the help of the knowledge the bot takes the decisions and also provides suggestions as well. It is more accurate and flexible

**III. TECHNOLOGIES USED**

- **Python:** Python is commonly used for developing websites and software, task automation, data analysis, and data visualization. Since it's relatively easy to learn, Python has been adopted by many non-programmers such as accountants and scientists, for a variety of everyday tasks, like organizing finances.
- **Visualization:** The purpose of data visualization is pretty clear. It is to make sense of the data and use the information for the organization's benefits. That said, data is complicated, and it gains more value as and when it gets visualized. Without visualization, it is challenging to quickly communicate the data findings and identify patterns to pull insights and interact with the data seamlessly.
- **Matlab:** MATLAB has gained wide recognition because of its importance in floatingpoint linear algebra. As far as trading is concerned, this programming language can generate plots and other such interactive tasks which is why it is favored by a majority of the traders out there.
- **Numpy:** Numpy or Numerical Python, provides powerful implementations of large multi-dimensional arrays and matrices. The library consists of functions for complex array processing and high-level computations on these arrays

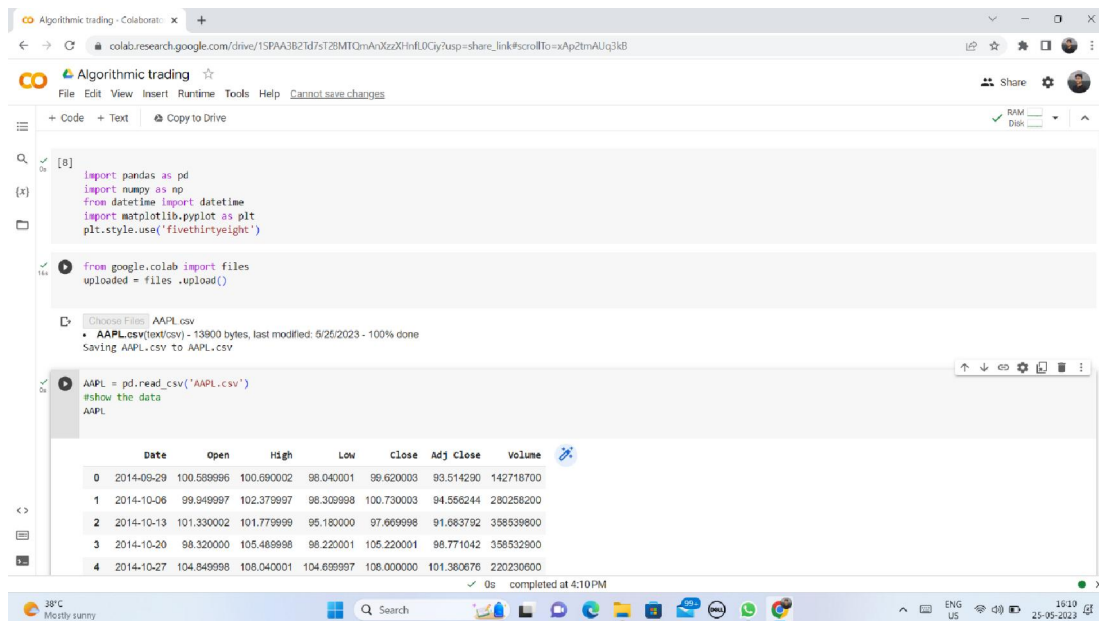
**3.1 Software Requirements:**

- Browser like Google Chrome
- Visual Studio Code Editor
- PgAdmin4 for PostgreSQL database
- Python 3.7 Django Framework
- Alpaca Trading and Paper Trading Account

**3.2 Hardware Requirements**

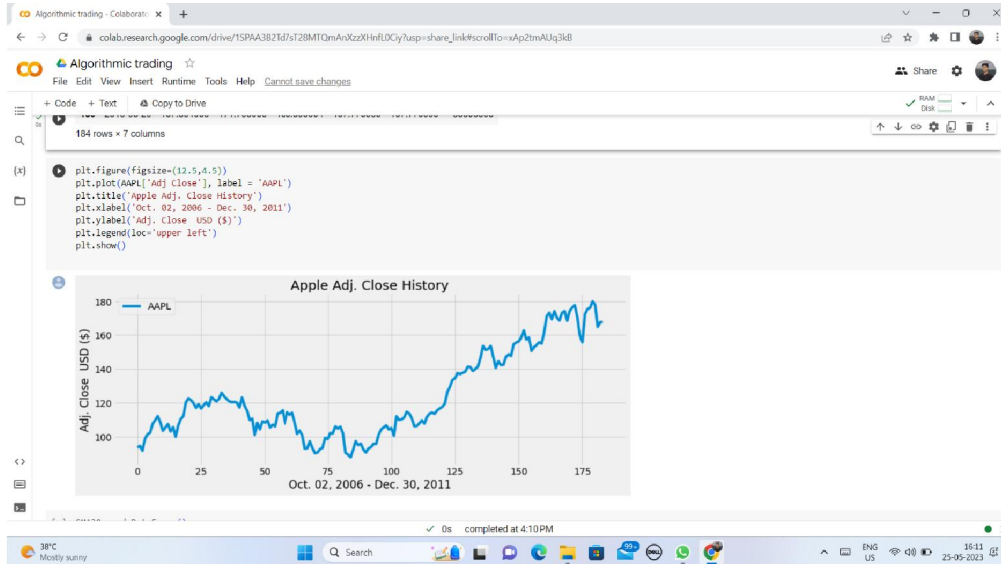
- Inter Core i7-9750H
- CPU 2.60GHz
- 8GB RAM
- 1TB HDD

**IV. DESCRIPTION**

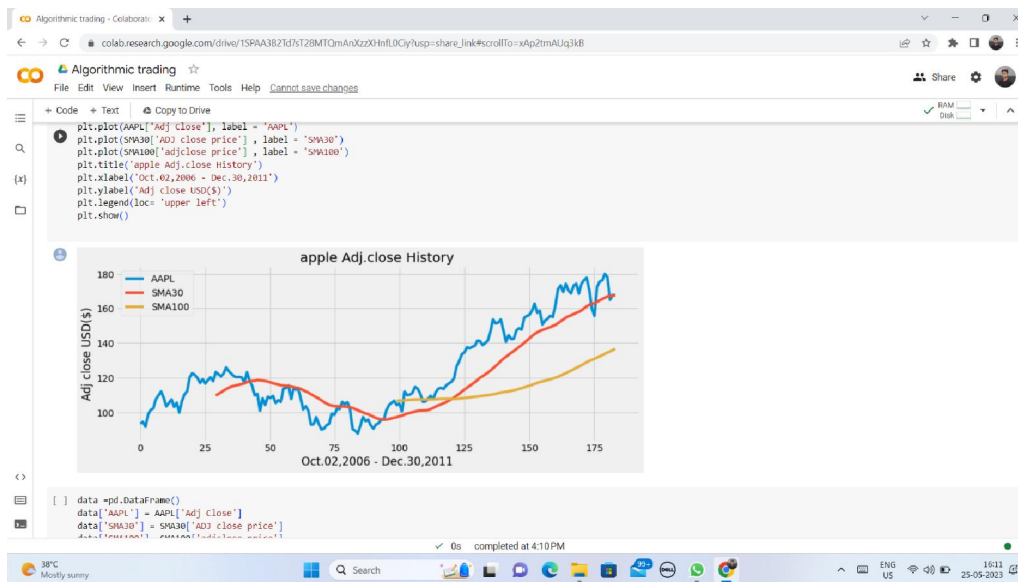


**Figure 1:** It shows importing the required libraries and uploading the csv file

The first source you need to have is a python compiler. Open the python compiler and import the libraries and upload your csv file then start plotting the trend with the help of visualization This data is collected from apple trading as to test whether the model developed starts working well or not. Apple Inc is the biggest tech Gaint of the present world. The ups and downs of the company can Seen here clearly .The main aim of our mode is to make the common man and an illetarate to the understand the stock market and make sure that everyone bounds with only the profit and contribute to the development of the nation.



**Figure 2:** It shows how the trend is being changing gradually in the period of 2006 – 2011



**Figure 3:** It shows how profit and loss occurring during days with visualization



**Figure5:** It show the period where the most stocks bought with the help of scatter plot

### V. CONCLUSION

Algorithmic trading Bot not only provides Security, Cost, and Speed but is also a revolutionary technology for the future financial markets and economy. Algorithmic Trading Bot makes it easier for both new traders as well as established ones in getting profitable outcomes with minimized effort, time, and loss. The integration of Financial Knowledge with Machine Learning is a demand of future Trading and enhances both performance and revenue.

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