

## Environment set up

import pandas as pd: use for data processing

install method: use “pip install pandas” in terminal

import requests: use for requests URL

install method: use “pip install requests” in terminal

from sklearn.linear\_model import LinearRegression: use for muti linear regression

install method: use “pip install sklearn” in terminal

import numpy as np: use for data processing

install method: use “pip3 install --user numpy scipy matplotlib” in terminal

import streamlit as st: use for creating app on website

install method: use “pip install streamlit” in terminal

## Code High Light

```
def muti_regression(self):
    x = []
    if len(self.stock_shake) < 21:
        raise ValueError("stock_shake list not long enough for muti_regression test")
    for i in range(0, len(self.bbands_rate)):
        x.append([self.bbands_rate[i], self.stock_shake[i + 20]])
    x = x[:-1]
    if len(self.increase_list) < 22:
        raise ValueError("increase_list not long enough for muti_regression test")
    y = self.increase_list[21:]
    x_bbands_rate_stock_shake = np.array(x)
    y_increase = np.array(y)
    regressor = LinearRegression()
    regressor.fit(x_bbands_rate_stock_shake, y_increase)
    x_predict = np.array(x[-1]).reshape(1, -1)
    result = []
    for i in x:
        i_x = np.array(i).reshape(1, -1)
        y_predict = regressor.predict(i_x)
        if y_predict >= 0:
            result.append(1)
        else:
            result.append(0)
    y_predict = regressor.predict(x_predict)
    if y_predict >= 0:
        return "This stock has a 60% probability of making a profit on the next trading day"
    else:
        return "This stock has a 60% probability of losing money on the next trading day"
```

My primary focus in computer learning centers around predicting and analyzing data through machine learning, and my recent success with the multiple linear regression model has been particularly gratifying. This marks my inaugural achievement in applying a multiple linear regression model for stock prediction. While the model's accuracy may not be exceptionally high, it represents a significant advancement for me.

In earlier attempts, I delved into constructing a multiple linear regression model from the ground up, even utilizing the gradient descent method to determine coefficients that best fit the formula. Unfortunately, in a previous endeavor, a calculation error led to an overflow issue. This time, opting for sklearn's model has proven highly effective, providing a robust framework for exploration and allowing me more mental space to contemplate data relationships.

With this accomplishment in hand, my next steps involve rigorous testing to assess how I can enhance the predictive accuracy of my model. This experience has not only expanded my understanding but also underscored the importance of leveraging existing tools to streamline and enhance the machine learning process.

## **Next Step**

To enhance the predictive accuracy of my model, I plan to introduce additional parameter variations through experimentation. This involves a systematic exploration to gauge whether the inclusion of more variables contributes to improved prediction outcomes. Beyond refining the predictive model, I aim to generate a ranking list that highlights the top 10 stocks exhibiting daily growth.

To ensure the list is practical and relevant, I will incorporate trading volume as a filter. This strategic inclusion serves to exclude smaller companies with minimal market capitalization, providing traders with a focused selection of stocks that present profitable opportunities on a daily basis. This approach is designed to streamline decision-making processes, allowing traders to swiftly identify potential profit points in the market.

## **Reflection**

This assignment has proven immensely valuable, providing me with a wealth of knowledge, particularly in the realms of API utilization and the MVC (Model-View-Controller) structure. As a novice in these areas, I initially found myself grappling with confusion. Countless iterations, failures, and subsequent corrections have culminated in a significantly improved understanding of API usage and a solid grasp

of the MVC architecture.

My overarching goal is to construct a personalized quantitative trading system. I previously ventured into building my own database using MySQL, which presented considerable challenges. The advent of APIs has been a game-changer, offering an elegant solution to this hurdle. With this newfound flexibility, I am now able to explore and experiment with machine learning on a foundational level.

The primary challenge in this project emerged from navigating the intricacies of mocks in MVC and unittest. As a newcomer to this field, I encountered numerous pitfalls and made errors along the way. However, through persistence and learning from these mistakes, I eventually comprehended the underlying principles, marking a crucial milestone in my journey.