Abdulrahim Tahlil & Zhan Hao Xu (Tiger) **Market Project**

1. background / motivation / summary of the project

The motivation for this project is a long term interest in finance (especially the markets) and an interest in understanding how stock prices move for publicly traded companies, through this project we'll be able to try to anticipate ticker movements based on historical data in relation to companies in the SP500(from which we select). We want to do this project because we recently wanted to create a technical analysis tool but didn't understand the scope or material we actually wanted to create, now that we have a better understanding of stocks and markets generally, this project with the help of the material learned in the course, through its nuanced aspects we'll be able to further understand ticker changes and what may cause a trend either upward or downward in the markets.

We see the daily up and downs of the market and imagine there must be patterns, through this project we want to collect data from the markets and analyze a myriad of different dates/times and examine the future/present price based on the data collected/analyzed. i.e Check out the relationship between how data science can be used to predict future stock performance.

Subset of stocks we will start with - AMD, NVDA, FB, AAPL, MSFT, BABA, SHOP

Measures will likely analyze:

Stock Prices

Standard Deviation

Beta - x>1 higher volatility than market, x<1 lower volatility than market,

beta=covariance(stock +market)/variance(market)

Value at Risk (VaR)

Sharpe Ratio

Backtesting

2. goals and non-goals

Goals:

- Create a paper trading account, and based on data collected and metrics we choose to measure our data with (volumes, sp history, etc) execute trades with paper account and determine reliability of data collection/analysis - through P/L
- Determine future stock trend (upward or downward) based on historical data i.e 6/12/24 months
- Does technical analysis alone give a slight edge compared to fundamental analysis

Non- Goals:

- Since stocks tend to correlate with how well the economy as a whole is performing, it can also help us make economic forecasts. However, in this project, we will not be focusing on such forecasts. All we are interested in is the stocks movement themselves, and not what they indicate for the economy in the future as a whole.

3. datasets you plan to use / collect
IEX - Price Data, Various Asset Statistics
Alpaca is an API built for algorithmic traders, trading bots, and building applications; it allows for simple order execution
Stocker for Prediction - Stocker is a Python tool for stock exploration.
Quandl
Yahoo Finance

4. questions you plan on answering
1. Is the process of Technical Analysis,(includes reading the charts and using statistical figures to identify the trends in the stock market.) actually beneficial - (through making paper trades based on the tool we use to measure are the outcomes in our favor when using such tool,P/L i.e short term trading)in determining future stock price/performance?
2. Does it boil down to fundamental analysis or mixture of the two?
3. How effective (measured by analyzing data and determining whether our predictions for future stock price movement is correct, or whether more information is needed which may come from the help of fundamental analysis) is technical analysis?
4. Is the history of stock prices an indicator(by analyzing or data and seeing if our movement predictions are correct) for future stock prices/movement?

We will know when we are done with this project once we choose from the companies we select and analyze data on market activity such as historical returns, stock prices, and volume of trades to chart patterns to determine what the stock price might do in the short term, and whether our P/L accurately represents the plays we made based on our data.
Ultimately we want to determine if the short term nature of technical analysis can yield results similar to the long term nature of fundamental analysis or a mixture of the two is needed in order to accurately represent the future movement patterns of select companies.