Stock Analysis Using Natural Language Processing
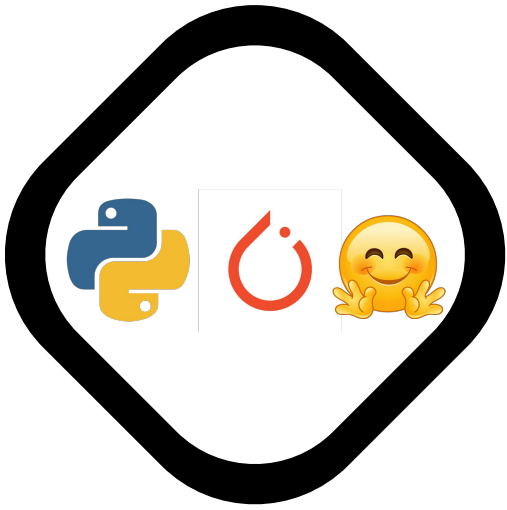
Group 5 - Bryan Arciniega, Jacob Reyes,

Tristan S, Harper Van, Anas Alakkad,

Andrew D

Objectives

Our goal for this project is to use sentiment analysis in order to determine whether a stock has bearish or bullish outlook and then use this knowledge to successfully execute stock trades for profit.
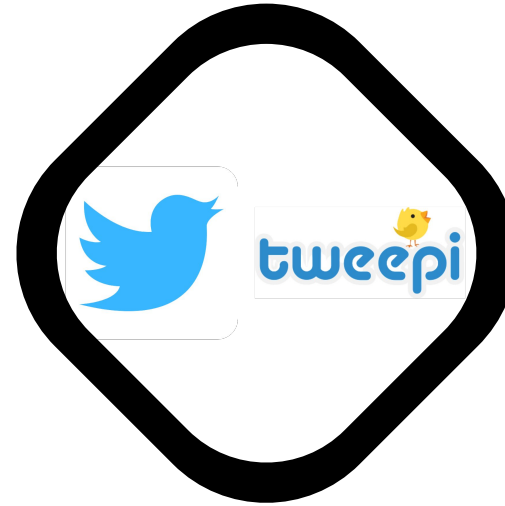
Tools for Implementation

- **Python**
- **PyTorch**
- **BERT**

- **Jupyter Notebook**
- **Colab's GPU**

- **Twitter**
- **Tweepy API**

- **Alpaca API**

Pipeline Structure

BERT 🤗

Model Prediction

Kaggle Data Set

X	Y
"AAPL, LOOKING GOOD"	1 (BULLISH)
"AMZN, APPROACHING A BUBBLE"	0 (BEARISH)

	bearish	bullish
bearish	170	56
bullish	41	313

True sentiment

Predicted sentiment

Save
Prediction

CVS

Cont'd...

Twitter API

Live Tweet

TWEET	ID
"AAPL GETTING ANOTHER LEG UP "	142987......

Prediction: 1 (bullish)

Alpaca

Buy $AAPL Stock
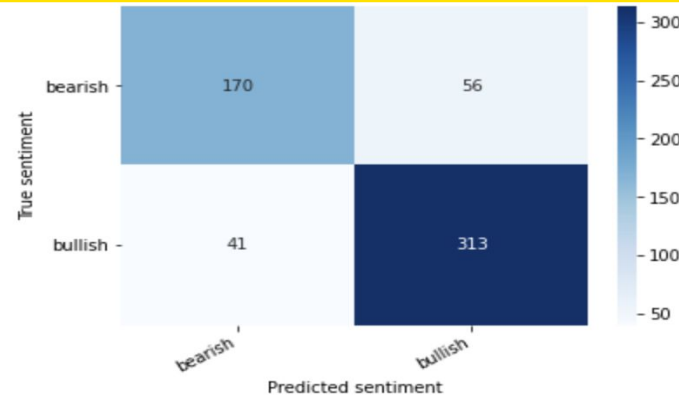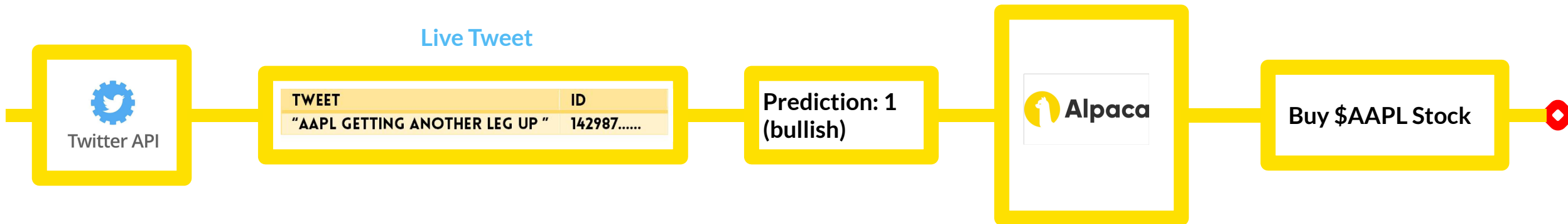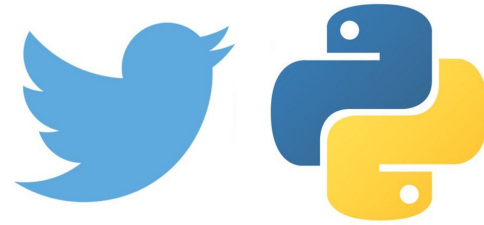
Twitter

- We are using the twitter API in order to pull specific tweets related to stocks

- We had to create a twitter account and request developer access to their API

- By using hashtags and pulling from specific investing accounts we are able to get a decent consensus on the sentiment towards specific stocks outlook.
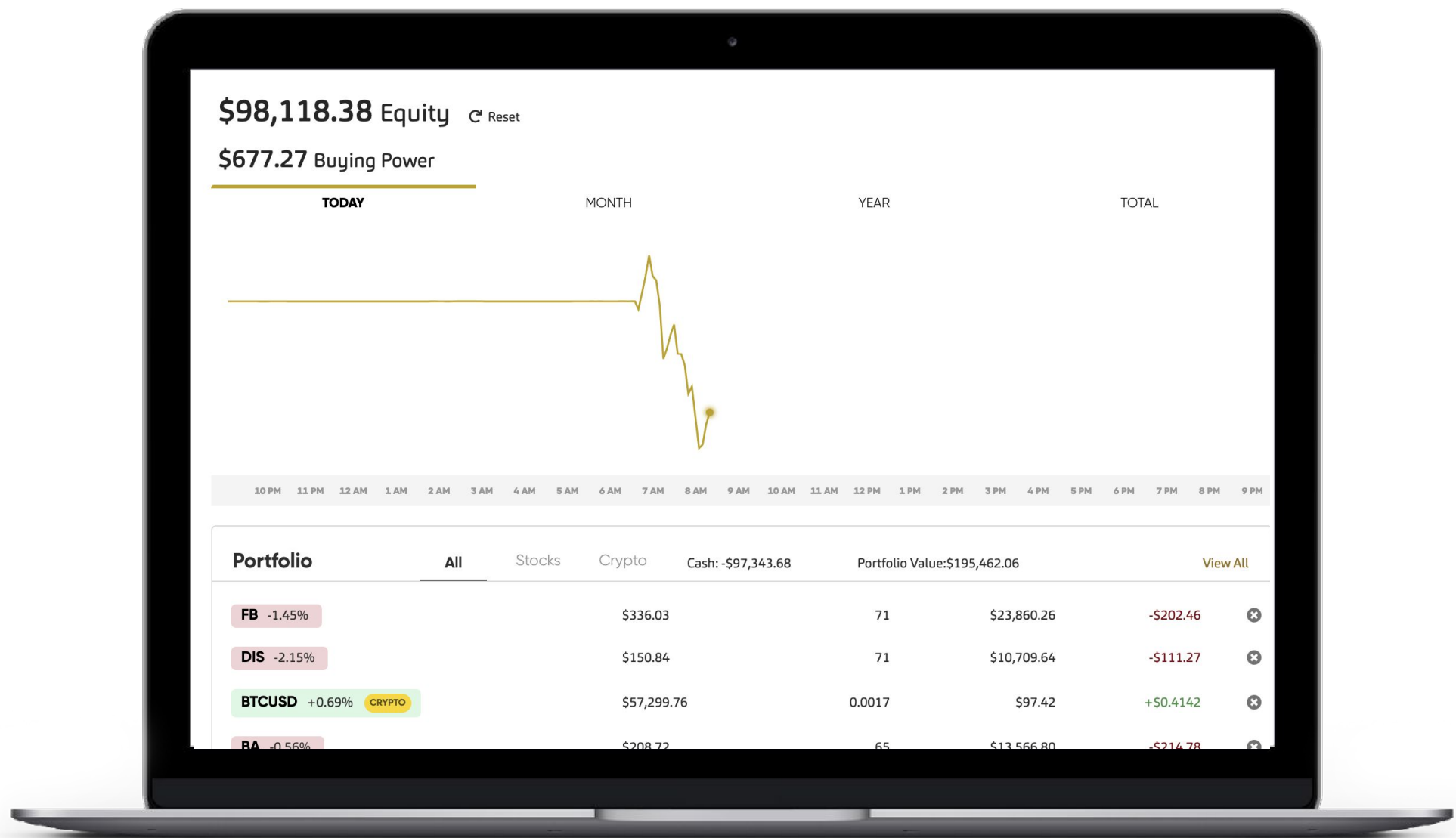
Sentiment Analysis

- **The sentiment analysis code was written in python using the helpful NLTK library. (Natural Language Toolkit)**

- **The tweets were first cleaned up by removing unnecessary symbols and numbers.**

- **We then labeled a set of tweets and used them to train the model**

- **Each tweet that was pulled would then be ran through the model and determine whether there was a positive or negative sentiment**

Stock Trading

- Once the sentiment is determined the sentiment and stock ticker is sent to an algorithm that sends an API call to a paper trading stock API that is able to either buy or sell the stock depending on the sentiment calculated.

- The paper trading stock API is called Alpaca which can track your live portfolio performance

Demo