**Project 4 Proposal**

**Project Title: Stock Projection with Machine Learning**

USC - Data Analytics Boot Camp

April 2022

***Goal:***

The goal of this project is to use previous stock stats from datasets to predict future highs and lows with machine learning. In doing so we will be able to answer questions such as what are the strongest stocks to invest in for increased gains, or which stocks to not invest in to avoid losses based on the previous stock history. We will provide an analysis and visualization to help the reader better understand the prediction of stock flow.

***Team:***

* + Alexandra Baker
  + Farimah Shirmohammadi
  + Erika Gonzalez
  + Jordan Janer

***Research Questions:***

Are the major stocks the best to invest in? What are the best stocks to buy for next year? What are the safest types of stocks to buy based on past and projected stats? What period of the year showed the most potential to invest?

***GitHub Repo:***

<https://github.com/JordanJaner/Stock_Projection_with_Machine_Learning>

***Data Sets:***

<https://datahub.io/core/nasdaq-listings>

<https://finance.yahoo.com/>

<https://pkgstore.datahub.io/core/nasdaq-listings/nasdaq-listed-symbols_csv/data/595a1f263719c09a8a0b4a64f17112c6/nasdaq-listed-symbols_csv.csv>

<https://thecleverprogrammer.com/2020/08/22/real-time-stock-price-with-python/>

<https://pypi.org/project/yfinance/>

***Outline:***

* Create Proposal (all)
* Github repository (Jordan)
  + Creation
  + Maintenance
* API calls using finance or world stock data site to pull all ticker symbols
  + Create webscraping script (Alex)
* Data Preprocessing (Farimah)(Alex)
* Machine learning
  + Create Sequential model
    - Neural network
    - 3 layers
  + Train model
    - sclearn
  + Use model to make predictions for real-time stock data
* Database (Sql)
  + Push data into database from py script
  + Call data from database w/ flask app
  + Store data on cloud servers (aws, databricks, pyspark etc.)
* Flask app
  + Run Webscraping Script
  + Database call
  + Running machine learning script
* Javascript interactive charts
  + Plotly line chart trends
    - For multiple stocks
    - For one stock
    - Designs
    - Percent change bubble
  + Code for search box for stock name
* Website Dashboard (Jordan)
  + Design website with html, bootstrap, css
  + Call interactive charts into the dashboard
  + Dashboard should update with new data regularly
  + Search box for stock name
* Heroku (Alex)
  + Create a pipeline to connect github repo, flask, live website