The problem I will be tackling for my final project is creating an algorithm that predicts stock prices using machine learning and deep learning techniques. The number of factors involved in predicting the stock market makes it very difficult to determine how it will perform. There are physical, physiological, and natural factors that can affect stock prices. The behavior of brokers, rational or irrational, can also impact the stock market. Leading to an action-reaction atmosphere in the stock market. I would like to use machine learning to try and find patterns that are currently going unseen that could produce accurate predictions to create a greater level of security in the stock market. Analysis of the stock market is split into Fundamental Analysis, predicting a company’s future profitability based on its business environment and current financial performance, and Technical Analysis, which is using statistical data to identify the trends on the company’s stock. I will be using technical analysis in this case because the strength of machine learning can shine in this approach. In conclusion my goal is to give statistical data to a machine and have it recognize trends in a specific company’s stock and use that to predict the future profitability.

My motivation for choosing this problem is my future career aspirations currently align with me pursing a PhD in Mathematics and then working in the field of quantitative analysis. This career has me working delicately with bots to make the most efficient model of the stock market to maximize profit and minimize loss. This project will be a great way for me to start to gain a deeper understanding of the stock market and how to utilize computers to analyze and work with stock prices.

The data set I will use comes from Quandl, a public website that provides financial and economic data on publicly traded companies. Specifically, I will use the data set of “The Boeing Company (BA) Stock Prices, Dividends and Splits.

The tools I will use are subject to change while I work on the project but here, I list what I believe I will use. The packages I will import are pandas and numpy. Also I will import matplotlib.pyplot so that I can plot within my jupyter notebook. I will also utilize rcParams from matplotlib.pylab so I can set figure sizes. Finally I will use MinMaxScaler from sklearn.preprocessing so I can normalize the data.

The research I have done and will continue to do is find relevant information on the stock market. What information can be utilized to form a trend and which might be counter productive to my algorithm.

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