



New Mexico State University

Applied Machine Learning
(C S - 487)

Stock Market Prediction System

Project Report

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Project Proposal : Create a Stock Market Prediction System in Python

The Stock Market can be very unpredictable. It is one of the most well-known infrastructures through which anyone can potentially make a fortune. Computer scientists, specifically data science people, find it very interesting to be able to predict the unknown. Machine Learning has the potential to help predict the financial forecast of the stock market. This is our first experience with Machine Learning, and we think this would be a fun project to work on.

Problem:

Recently, we have noticed that stocks related to travel such as different airlines and cruises have been falling due to all sorts of travel bans because of the COVID-19. We plan on looking into the airline stock data and predicting a model. Although, it will probably take time for everything to get back to normal, the model would give an idea as to how long it will take for the stocks to get back up, once everything is back to normal.

Solution:

We downloaded daily data of three airlines - Southwest Airlines (LUV.csv), American Airlines (AAL.csv) and United (UAL.csv) - for the past 5 years from finance.yahoo.com.

We will split the data into three parts:

- Training Data - 60%
- Testing Data - 20%
- Validation Data - 20%

We will do this each of the three datasets and we use the validation data to tune the model parameters. We will train the data using the training data and evaluate the performance of the model using the testing data.

We will use the following methods for defining and creating our model:

- Last Value
- Moving Average
- Linear Regression
- Extreme Gradient Boosting
- Long Short Term Memory

To evaluate the effectiveness of our methods, we will use the root mean square error and mean absolute percentage error metrics. For both metrics, the lower the value, the better the prediction.