

CSC 425 Project Executive Summary

This project studies how real-world stock data behaves through using time series analysis. The dataset I chose has daily closing prices for all of the stocks in the New York Stock Exchange between January 4, 2010 through December 30, 2016. I chose to look a handful of stocks initially based on interest (Apple, Cisco, Alphabet Class A, Alphabet Class C, HP Inc., Intel, Microsoft, Nvidia, Oracle, Red Hat, Texas Instruments, Western Digital, Xerox, and Yahoo). I also looked at different granularities of the data (the original daily, weekly, and monthly). The daily data was averaged appropriately to obtain the weekly and monthly data. I looked at several different transformations of the data, including calculating the difference and simple returns. By looking through the results of the initial analysis of these stocks, I decided to focus the rest of my analysis on the Apple stock. I used the simple return of the Apple weekly stock for modeling. The final model passed all required criteria for forecasting. This model was then used to forecast the simple return value for the first week in January 2017. The model resulted in an increase in return between the last week in December 2016 and the first week in January 2017. The back-testing with the model resulted in a 1.22% error between the observed and predicted values, which means the model is accurate to within that percentage. The increase in simple return means that investors will make money because the price of stock will increase, causing the return to increase. Based on the low error and the forecasted return increase, I would recommend buying Apple stock.