

Naive Bayesian Stock Pattern Analysis

Project Proposal

Ahmed Bilal, Shu Bin

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Our project goal is to classify stock data patterns and determine their potential impact on the stock market. As stock patterns can be either the results of or reasons for shifts in market sentiments, we can use them to predict the direction that stock market is heading towards. To be more specific, we will use local patterns (Pennant, Cup and Handle, Ascending Triangle, etc.) to determine the likelihood of an upcoming continuation or reversal pattern in the stock market.

To achieve our goal, the data set we will be using is going to be daily closing index of SP 500. Since components to the SP 500 index are constantly changing, for simplicity's sake, we will only be looking at companies that are currently included in the SP 500 index (this might change as the project progresses. Since some of the current SP 500 component companies are relatively young, and their stock patterns in the companies' early development stages might be vastly different from that of a mature SP 500 component company). Our data set will be over a period of 10 years (subject to change) and will be retrieved from stock index websites such as NASDAQ and Investing.com. This will yield us approximately 1.3 million data points.

In terms of techniques, we plan on using time series regression to clean the data set and take out seasonal trends. After that, we will use the naive Bayesian process to identify and classify the cleaned data into different patterns, and then calculate the probability of each pattern leading to a continuation or reversal.