University of Detroit Mercy

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This project will be directly related to the stock market. The stock market is a market where stocks, or portions of a company, are traded. People can invest in companies by buying their stock. The value of a stock will fluctuate, and it depends on the current value of the company itself. Google’s parent company, Alphabet’s stock currently sells for 1,102 dollars per share. Google the company is worth over 500 billion dollars. So, the higher the stock, the more valuable the company. The higher the stock rises, the more it is worth. Stocks rises and drop unexpectedly all the time. Algorithms for stock markets are hard to determine, because a good algorithm is kept secret. No one wants other people making money off their algorithm. What we want to do is to examine stock prices of various companies and implement a more known algorithm to see how accurate it is at predicting future stock prices.

Deep Learning algorithms can be used to predict the trajectory of the stock market, and, particularly, individual stocks within the stock market. The goal of these algorithms is not to predict the exact price of stocks. This would be impossible to do with any great accuracy. The goal behind the algorithms is to predict the general trajectory of stocks, and whether they are likely to go up or down in the near future. This is a very important thing for investors to know. Algorithms can be useful in creating an investment plan, and they can give investors a better idea of which companies are likely a good idea to invest in.

One deep learning method that is often used in stock market prediction is called Recurrent Neural Networks (RNN). Using this method, adaptive filtering is performed on raw price data. The RNN model is then trained using this filtered data. Predictions are made, and recommendations can be made based on those predictions (Lukovkin, 2016).

Another method of stock market prediction is called fundamental analysis. Fundamental analysis evaluates the past performance of a company, as well as the credibility of its accounts. Warren Buffett uses the fundamental analysis method (Stock Market Prediction, 2018).

Technical analysis, on the other hand, attempts to determine the future price of a stock based entirely upon the trends of the past price. Patterns can be found in the past price of a stock.

A prominent method involving computers uses artificial neural networks (ANN) and Genetic Algorithms. An ANN is, essentially, a mathematical function approximator. The feed forward network is the most common form of ANN involved with stock market prediction. It uses the backward propagation of errors algorithm to update the network weights. The backward propagation of errors algorithm calculates a gradient needed to update these weights (Stock Market Prediction, 2018).

The plan for this project is to use some form of ANN and genetic algorithms to create a system that will be able to perform stock market prediction. We will attempt to make the system as accurate as possible in its predictions, which is not something that is easily done in terms of the stock market. There are no widely known systems that can do this. If they do exist, they are not known, because if they were known, then the people who use them would not be able to make any money with them anymore. We will record the results of our observations with the system we will create. We will pay attention to how closely the system is able to predict the trajectory of stocks, as well as whether an investor would be able to make any money using the decisions of the system.

The data we will use is from Yahoo finance. Yahoo finance has extensive data regarding many stocks, and we can collect up to 5 years of stock market data for a company. We will use this information and we will be using Java to implement the algorithm to code the program.

Because stock predicting is so complicated and difficult to predict, we want our system to be at least 85 % accurate as the machine learns the data and predicting the stock price rising or falling.

We will be dividing the work accordingly in that Austin will do half the coding of the program. He will be able to get the data into java so that I can run the algorithm we will use. I will take notes of the data and give them to Austin. We want to have the data we want to use by 2/28 and the code written in the next 3-4 weeks. The final paper will be written with the time remaining until the project is due. I will create the project poster and Austin and I will do the PowerPoint/paper half and half to make sure that we do equal amount of work for the project.

References:

Lukovkin, D. (2016, December 7). Which algorithms can predict stock price? Retrieved February 20, 2018, from <https://www.quora.com/Which-algorithms-can-predict-stock-price>

Stock market prediction. (2018, February 17). Retrieved February 20, 2018, from https://en.wikipedia.org/wiki/Stock\_market\_prediction