Predicting the Stock Market One Quarter at a Time

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***Abstract*—Predicting the stock market is a very challenging task, with hundreds if not thousands of papers addressing this problem. This paper sets out to explore predictingstock quarterly trends by determining the best quarterly features to use and then leveraging them to determine the direction of the upcoming quarterly report. The thought was to eventually marry this will daily trends to improve accuracy of predicting stock market pricess by factoring in the quarterly direction. By determining the stocks that will go up or down for a quarter, we will predict whether buying or selling is the best course of action for a stock. Testing for accuracy, we will simuilate buying and selling in the stock market based on our predictions to determine if this project was a succsess or failure.**

****Add more details to this section as we further develop our strategy**

***Index Terms*—Index Terms - Stock Market, Prediction, Machine Learning**

I. Introduction

Determining the direction of a stock from day to day is both a challenging and frustrating problem. There are so many features to choose from and that factor into a stock changing price from day to day. It can be as simple as positive or negative news, changes in the overall market or industry, technological breakthroughs, production hurdles and many more, which don't even cover the technical or quantative numbers that typically are used to determine a stock rating and predicting its movement from day to day. This paper is goign to attempt a different tact on predicting stocks, at a more generic and higher level, using the companies quarterly returns. The thought is this information can be added to other predictors to better refine the accuracy of those models. In this project we have gathered twenty five Technology, Software and IT Services large and mega cap stocks with earnings history for their entire existence, typically between ten and thirty years. We started with the features used in the paper Stock Market Trends Prediction after Earning Release [1]. We reviewed and refined those quarterly features by using Mutual Info Regression over the datasets that we obtained, which provided us with the most important columns to leverage in our machine learnging algorithm. We decided to implement Support Vector Machine (SVM) to help us determine what stocks to buy or sell each quarter. Using our model, we then started with a set amount and bought/sold as recommended to see how we faired in the long run.

II. Review of existing techniques for predicting the stock market

For this project, we started by reviewing papers that were published in the realm of stock market analysis via machine learning. One of the first papers we found [5] discusses how stock market analysis falls into four categories, statistical, pattern recognition, machine learning, and sentiment analysis. Since this paper focuses on machine learning, we

III. Formulation of our solution

IV. Applicable mathmatical theory

V. Experimental Results

VI. Summary and Conclusion

Citations

- Predicting the daily return direction of the stock market using hybrid machine learning [2]
- Stock Market One-Day Ahead Movement Prediction Using Disparate Data Sources [3]
- Automated Stock Price Prediction using Machine Learning [4]
- Stock Market Analysis: A Review and Taxonomy of Prediction Techniques [5]
- International Journal of Computer Science and Telecommunications 4.17-23 [6]
- An Empirical Study of Machine Learning Algorithms for Stock Daily Trading Strategy [7]
- Deep architectures for long-term stock price prediction with a heuristic-based strategy for trading simulations [8]
- How to use Machine Learning to become a millionaire predicting the stock market [9]
- I spent 20 minutes trying to predict the stock market with AI, these are my results [10]

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