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Predictions of Stock Price Trends

Purpose

One of the goals that investors commonly share is to predict the trend given the historical data as well as current news. They are constantly searching for the strategies that give them maximized profit when trading. A simple approach to stock market would be to analyze the trend theoretically given recognizable features (Eg. DOJI). However, the real-world stock market is more complicated in that market's uncertainty exists, and certain features often occur in partial forms, indicating that theoretical trading strategies might not be sufficient enough to beat the market. Therefore, one direction to look for reasonable prediction is that I am curious to see if a combined trading strategy would perform better than the theoretical trading strategy. Another direction of this research could be sorting out to what extent the stock price would be influenced if the relevancy of the financial news could be measured.

Approach (Intended)

For the first direction, I am doing the experiment under the assumption that trading occurs under a zero-sum, competitive game[1]. In other words, I am treating the stock price as an amount chosen by rational actors. By combined trading strategy, I mean forming a basis that contains different trading rules and combines the necessary rules into one new strategy by assigning weights to the selected rules.

As for the second direction, I am thinking of implementing Latent Dirichlet allocation to see if the relevancy of the financial news to a certain company could be quantified and measured.

Data Collection

This research is aiming to figure out the optimized strategy for a single stock. I will use part of the company's historical stock price data to develop a strategy and test it on the rest of the company's stock price data to see if this approach is appropriate (machine learning).

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[1] Inspired by Greenwood, Garrison W., and Richard Tymerski. "A game-theoretical approach for designing market trading strategies." *Computational Intelligence and Games, 2008. CIG'08. IEEE Symposium On*. IEEE, 2008.