

Stock Market App Design Document

Modules

1. Buy model: Given past stock performance and current price, decides to buy or not to buy
2. Sell model: Given past stock performance and current price, decides to sell or not to sell
3. Database: Stores
 - a. Price and quantity of all owned stocks, value at which they were bought and timestamp at which they were bought
 - b. All past transactions with which to measure overall performance
4. Scraper: Interface with which to get stock performance data from the internet
5. Reporting: Web console to view current performance, trends, metadata
6. Genetic algorithms: Mutates and measures performance of different buy/sell models. Saves best models and mutates them further to tune algorithm parameters

Procedures

Hourly buy/sell analysis

1. Check owned stocks for fail hard stocks (stocks that have been held longer than MAX_HOLD_TIME or have lost more value than accepted limit). Sell said stocks to prevent further loss
2. Download open/close/high/lose data on desired tickers
3. Feed ticker data to Sell Model, sell stocks recommended by Sell Model. Save transactions to DB
4. Feed ticker data to Buy Model, buy stocks recommended by Buy Model. Save transactions to DB

Reporting

1. Query database for gain/loss on all transactions for each strain of buy/sell model
2. Use d3 to display graphs on the learning progress of the best strains and meta data on aggregate strain performance

Genetic Algorithms

1. Use fitness function of reporting module to pick 2 best strains.
2. Use best strain, next best strain, and mixture of the 2 for 3 base strains.
3. Mutate all of them to produce new strains.
4. Save strains to be run over the next testing period