

New World Technologies

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Neural Network

Stock Price Prediction Algorithm

Example Cases Description

Summary

The concept behind this technology is that company stock price profiles contain patterns that are indicative of future movements and directions. Ted Warren published a book in the 1960s about how to recognize and invest (and profit) based on certain easily recognizable geometric patterns (this approach falls under the heading of Technical Analysis). A type of artificial intelligence, called Artificial Neural Networks, takes this concept a quantum leap forward because it can recognize complex patterns that are not discernable to the human eye. Fundamentally the Neural Network is analyzing the history of the stock and then predicting where the price will end up over the next year (up or down).

Thus a Neural Network is “trained” to recognize patterns in company price and volume (and other data) profiles, and then to predict the high-end or low-end price of each stock over the next year. In this case Neural Networks were trained with inputs spanning a period of 1,200 trading days and outputs of the high/low price points over the next 300 trading days.

The performance of each Neural Network is forecast-tested by having it analyze the stock profiles of other companies which were not in its training data set (companies that it had never “seen” before). The Neural Network stock selection set needs to be able to beat the market average Return on Investment (ROI) – that is the net increase/decrease of all of the forecast test stocks over the investment period - in order for it to be considered “successful”.

Of a pool of companies, the first half are used for training of the Neural Networks and the remaining half are used for forecast testing of these same Neural Networks.

Example Cases Discussion

The intent of Example Case #1 through #6, and the Rolling Forecast Test, is: 1) to show that the Neural Networks' ability to successfully pick winning stocks is not random and not "by chance", and 2) to demonstrate the incredible performance.

In each Example Case, a series of Neural Networks are trained over a group of companies' stock profiles and then tested on another completely different group of companies' stock profiles.

Example Case #1: Uses a group of 98 companies, from the NYSE and NASDAQ exchanges, for training and forecast testing of the Neural Networks. The time span of data is 10 years – between 2005 and 2015. The Neural Networks are trained on the first 49 company stock profiles and then forecast-tested on the second 49 company stock profiles.

Example Case #2: Uses the same group of 98 companies from Example Case #1 but the companies are shuffled so it uses different training and forecast test sets.

Example Case #3: Uses a new group of 100 companies, from the NYSE and NASDAQ exchanges, for training and forecast testing of a new set of Neural Networks. The time span of data is 24 years – between 1991 and 2015. The Neural Networks are trained on the first 50 company stock profiles and then forecast tested on the second set of 50 company stock profiles.

Example Case #4: Uses the same group of 100 companies from Example Case #3 but the companies are shuffled so that it uses different training and test sets.

Test Case Discussion

Example Case #5: Combines the 98 companies from the first two example cases and the 100 companies from the second two example cases – for a total of 198 companies. The time span of data is 10 years – between 2005 and 2015. The Neural Networks are trained on the first 99 company stock profiles and then forecast tested on the second set of 99 company stock profiles.

Example Case #6: Uses the same group of 198 companies from Test Case #5 but the companies are shuffled so that it uses different training and forecast test sets.

Rolling Forecast Test: Takes the Super Nets generated from “training” over 100 stocks (separate case from the listed test cases) and forecast tests their performance with another 100 test companies over successive years – 2005 through 2014.

The intent is to demonstrate the Super Nets’ ability, as a team, to successfully pick winning stocks, for all consecutive time periods. In other words – can the Super Nets successfully pick winning stocks several years in a row?