CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY

Name(s)

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Project Number

S1208

Project Title

An Algorithm for Predicting Future Stock Market Fluctuations by Volatility and Arccosine Analysis

Abstract

Objectives/Goals

The objective of this research project is to determine the most accurate techniques in predicting short-term stock market fluctuations by identifying recurring patterns in the stock market.

Methods/Materials

After observing and recording patterns to predict price changes, an algorithm for computing volatility as a means of determining the risk factor of buying a stock must be created. The same must be done for the reward. Finally, a pattern must be established for predicting an uptrend and a downtrend, which is common and recurring among the great majority of heavily, traded stocks. Stocks were bought and sold based on these patterns and the gain per transaction was recorded.

Results

After 10 Weeks and 500 transactions, I returned 54% on my original investment. That is an average of .108% per transactions. This was a 10-week simulation (with 50 trading days and a maximum of 10 transactions per day). My portfolio placed first in the entire state of California because of the technical analysis techniques I used. Meanwhile, the stocks in my control group lost a total of 3% on the same amount of transactions. My second trial reaffirmed the results of my first trial.

Conclusions/Discussion

The technique that returned the most on my original investment was Parabolic (SAR) Analysis, a commonly used and applied technique. On average, the pattern materializes 5 to 6 times a day in a single stock. However 7 out of 8 times, according to my algorithm, the possible risk is greater than the reward. The next highest performer was my own modified theory, the Fibonacci Cap Sequence. Rounding out the top three was the Elliot Wave Analysis. The most commonly occurring pattern is the arccosine pattern. Even though the Parabolic SAR is the most profitable pattern, it does not occur as often as the arccosine pattern.

The Fibonacci Cap Sequence was the second most profitable pattern. In a close third was the Elliot Wave pattern. The best analyses for short-term investments are the Parabolic SAR, Fibonacci Cap Sequence, Elliot Wave Pattern and the Arccosine Pattern.

Summary Statement

Determining which type of short-term analysis is most accurate in predicting short term Stock Market fluctuations?

Help Received

Dr. Taylor helped with software development