Abstract

This paper aims to exploit the temporal correlation that exists between the various stock market variables employing concepts of adaptive filters and signal modelling in order to predict future trends and prices, using two statistical processes. Linear regression algorithm (Gradient Descent) has been used for real time prediction. The Finite Impulse Response (FIR) adaptive filter is an iterative process that minimizes the mean square error. An extrapolation of Prony's Normal Equation has been used to predict values using the least square
estimation. This models cross-section regression, i.e. the relationship between variables at a particular point in time. The analysis has been performed on stocks listed on NASDAQ and the mean square error was compared. This study reveals that the DSP techniques are adequate for modeling the variation in stock prices.

References

- Mojaddady, Nabi and Khadivi, Stock Market Prediction using Twin Gaussian Process Regression Modeling, Department of Computer Engineering, Amirkabir University of Technology, Tehran, Iran
- Tiong, Ngo, Lee, Forex Trading Prediction using Linear Regression Line, Artificial Neural Network and Dynamic Time Warping Algorithms, 4th International Conference on Computing and Informatics, ICOCI, August 2013
- To establish notation for future use, we'll use x (i) to denote the "input" variables Andrew Ng, CS229 Lecture notes, pp 2-22

Index Terms

Computer Science  
Signal Processing
Keywords

Stock Market Prediction  Dsp  Statistical Signal Processing  Regression Models
Prony's Algorithm