Department of Statistics

MASTER'S THESIS PRESENTATION

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Application of Support Vector Machine in Financial Time Series Forecasting

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ABSTRACT

This paper is concerned with the application of a machine learning technique, support vector machine (SVM), in financial time series forecasting. We empirically examine the performance of the SVM regression model over some period of five real stock market indices: the Dow Jones Industrial average (DJI), the S&P 500 Index (S&P), the Nasdaq Stock Market (NASDAQ) the Deutscher Aktienindex (German stock index) (DAX), and the Cotation Assistée en Continu (French stock index) (CAC). Moreover, the variability in performance with respect to the free parameters in the SVM regression is investigated in this study. Our study shows that the SVM regression model is superior to the three-layer artificial neural network (ANN) model, in terms of the following metrics: normalized mean square error (NMSE), mean absolute error (MAE), and weighted directional symmetry (WDS), which exhibits a quantifiable advantage over the ANN benchmark. Therefore, SVM is proved to have great potential to be applied to financial time series forecasting.

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