



THE UNIVERSITY OF
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Department of Statistics

MASTER'S THESIS PRESENTATION

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Financial Time Series Prediction Using Support Vector Regression

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ABSTRACT

Support vector machine (SVM) is used for solving classification problems in applied financial time-series forecasting. It is a machine learning algorithm using a risk function consisting of both empirical error and regularized term with use of the kernel functions and the sparsity of the solution. Then I take a step further to use ϵ -support vector regression (SVR) in financial time series prediction. In this paper, I investigate the predictability of SVR by forecasting the weekly movement amount of NIKKEI 225 index in related with S&P 500 index and Japanese Yen to US dollar exchange rate. I compare SVR performance with those of cubic spline and Elastic-net via rooted mean squared error. Also I compare differences between SVR with different kernels. It solidly shows that SVR outperforms the other regression methods. Further, I propose a local support vector regression (LSVR) model to the dataset. It shows LSVR performs slightly better than the other models.