



THE UNIVERSITY OF
CHICAGO

Department of Statistics

MASTER'S THESIS PRESENTATION

ZIQI LIU

Department of Statistics
The University of Chicago

Bayesian Support Vector Regression for Hyperparameter Tuning

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Jones 204, 5747 S. Ellis Avenue

ABSTRACT

Support vector regression (SVR) is a powerful tool to predict financial time series. Cross validation (CV) is widely used in hyperparameter tuning for a variety of machine learning methods, including SVR. Despite the good performance, the running speed of cross validation is unsatisfactory. Instead, a Bayesian approach to SVR is introduced and implemented. We do simulations on GARCH(1, 1) model and various real world financial time series (Indices, Equities, Futures) to compare the performance of the Bayesian SVR. It is shown that BSVR can be used as an alternative approach for hyperparameter tuning instead of CV, with similar prediction performance but lower computation costs. Hence, BSVR can be used as a replacement for cross validation for a faster hyperparameter tuning process.