



The University of Chicago  
Department of Statistics

Master's Seminar

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**Boosting and Bagging of Neural Networks  
with Applications to Financial Time Series**

**Tuesday, August 1, 2006 at 9:00 AM  
110 Eckhart Hall, 5734 S. University Avenue**

**ABSTRACT**

Boosting and bagging are two techniques for improving the performance of learning algorithms. Both techniques have been successfully used in machine learning to improve the performance of classification algorithms such as decision trees. There have been a number of studies on the advantages of decision trees relative to neural networks for specific data sets and it has been shown that boosting works as well or better for neural networks than for decision trees. (Schwenk and Bengio, 2000).

In this paper, we focus on the use of feedforward back propagation neural networks for time series classification problems. We apply boosting and bagging with neural networks as base classifiers, as well as support vector machines and logistic regression models, to binary prediction problems with financial time series data. For boosting, we use a modified boosting algorithm that does not require a weak learner as the base classifier.

We evaluate our model on several stocks and indices using a trading strategy. A comparison of our results suggests that our boosting and bagging techniques greatly outperform support vector machines and logistic regression models for this problem.