PRINCETON UNIVERSITY
OPERATIONS RESEARCH & FINANCIAL ENGINEERING SEMINAR

Statistical Inference for Non-parametric Models in High Dimensions: Statistical and Computational Aspects

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Abstract

High-dimensional statistical inference problems, where the number of features exceeds the number of samples have recently received a significant amount of attention and research. Most of the past research on the theory and methodology for high-dimensional inference problems has involved assuming the data follows a parametric model. However for many applications, the assumption that the response has a known parametric form may be too restrictive. My talk consists of two parts, both addressing statistical and computational aspects of high-dimensional non-parametric problems. Firstly, I provide an analysis of sparse additive models, a non-parametric generalization of sparse linear models. In particular, I present a polynomial-time algorithm for estimating sparse additive models that achieves minimax optimal rates in mean-squared error. The second problem provides analysis of the early stopping strategy applied to non-parametric regression models. My analysis yields a computable data-dependent stopping rule that has minimax optimal statistical mean-squared error rate. Both projects I present are based on joint work with Professors Martin Wainwright and Bin Yu.

Wednesday, February 8, 2012
Sherrerd Hall, Room 101
4:30 PM