



ANNOUNCES A
COLLOQUIUM

Dr. Hongzhe Li

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will speak on

Variable Selection for Varying-Coefficient Models for Genomic Applications

Time: 3:00 – 4:00 PM

Date: Friday, October 3, 2008

Place: Tuttleman Learning Center 203AB

Abstract

Nonparametric varying-coefficient models are commonly used for analysis of data measured repeatedly over time, including longitudinal and functional responses data. While many procedures have been developed for estimating the varying-coefficients, the problem of variable selection for such models has not been addressed. In this article, we present a regularized estimation procedure for variable selection that combines basis function approximations and the smoothly clipped absolute deviation (SCAD) penalty.

The proposed procedure simultaneously selects significant variables with time-varying effects and estimates the nonzero smooth coefficient functions. Under suitable conditions, we have established the theoretical properties of our procedure, including consistency in variable selection and the oracle property in estimation. Here the oracle property means that the asymptotic distribution of an estimated coefficient function is the same as that when it is known *a priori* which variables are in the model. The method is illustrated with simulations and a microarray time-course gene expression data set to identify the transcription factors related to the yeast cell cycle process.

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