THE UNIVERSITY OF GEORGIA

DEPARTMENT OF STATISTICS

FRANKLIN COLLEGE OF ARTS AND SCIENCES

The University of Georgia
Department of Statistics

Colloquium Series

Lixing Zhu
Chair Professor of Statistics
Department of Mathematics
Hong Kong Baptist University
Hong Kong

"Consistent model selection and estimation in a general single-index Model with "large p and small n""

For a general single-index model that does not assume an additive structure of unknown regression function and error with the dimension of predictor vector larger than the sample size, the consistency of predictor selection and estimation has not yet been investigated in the literature. In this paper, we investigate this issue by the following methods. First we formulate the index in the sufficient dimension reduction framework motivated by the derivative of the conditional distribution of the response given the linear convex combination of the predictor vector and then suggest a LASSO-type direction estimation (DLASSO). When the dimension of the predictor vector can even be at the rate of exponential of the sample size, the consistency holds under an almost necessary and sufficient condition on the correlation between the predictors. The new method has no requirement, other than independence from the predictors, for the distribution of the error. This property results in the new method to be robust against outliers in the response values. After bringing the ultra-high dimension, by the DLASSO, to a value smaller than the sample size, the conventional consistency of the index estimation is provided. The importance of the condition for the consistency and the robustness are examined by a simulation study and a real data analysis.

Wednesday, July 13th, 2011

3:30 PM at 306 Statistics Building

Refreshments will be immediately after the talk in The Cohen Room, room 230, Statistics Building

For more information,
please contact:
stat@uga.edu

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Department of Statistics
101 Cedar Street
Athens, GA 30602

Phone: 706-542-5232
Fax: 706-542-3391
www.stat.uga.edu