Helen Barton Lecture Series in Computational Mathematics

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Friday, October 27, 2017

Refreshments: 3:30 p.m. in Petty 116

Talk: 4:00 p.m. in Petty 150

"Inference with High-Dimensional Controls and Parameters of Interest"

Abstract: In this work we propose and analyze procedures to construct confidence regions for p (infinite dimensional) parameters of interest after model selection for general moment condition models where p is potentially larger than the sample size n. This allows us to cover settings with functional response data where each of the p > n parameters of interest is a function. The procedure is based on the construction of generalized score functions which are new moment functions with an additional orthogonality condition. The proposed uniform confidence bands for all parameters relies on uniform central limit theorems for high-dimensional vectors (and not on Donsker arguments as we allow for p > n). The construction of the bands are based on a multiplier bootstrap procedure which is computationally efficient as it only involves resampling the estimated score functions (and does not require resolving the high-dimensional optimization problems). We formally apply the general theory to inference on regression coefficient process in the distribution regression model with a logistic link, where two implementations are analyzed in detail. Simulations and an application to real data are provided to help illustrate the applicability of the results.

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