Department of Applied and Computational Mathematics and Statistics Colloquium

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A Composite Likelihood-based Approach for Change-point Detection in Spatiotemporal Process

This paper develops a unified, accurate and computationally efficient method for change-point inference in non-stationary spatiotemporal processes. By modeling a non-stationary spatiotemporal process as a piecewise stationary spatiotemporal process, we consider simultaneous estimation of the number and locations of change-points, and model parameters in each segment. A composite likelihood-based criterion is developed for parameters estimation under the minimum description length principle. Asymptotic theory including consistency and distribution of the estimators are derived under mild conditions. A computationally efficient pruned dynamic programming algorithm is developed for the challenging criterion optimization problem. Simulation studies and an application to U.S. precipitation data are provided to demonstrate the effectiveness and practicality of the proposed method.

Fri., September 28, 2018
4:15 PM – 5:15 PM
127 Hayes-Healy Center
Colloquium Tea 3:45 PM to 4:15 PM 101A Crowley Commons Room