

Data Science Seminar
Hosted by Department of Mathematical Sciences

- Date: Tuesday, March 17, 2020
- Time: 12:00pm - 1:00pm
- Room: WH-100E
- Speaker: Nalini Ravishanker (University of Connecticut)
- Title: Modeling Inter-event Durations in High-Frequency Time Series

Abstract

This talk will discuss statistical analysis of durations between events in high-frequency time series. While the motivating example consists of analyzing durations between events in intra-day financial returns obtained from the Trade and Quotes (TAQ) database, this framework is suitable for data from many other application domains such as engineering, m-health, etc. A rich class of multiplicative error models, including the well-known logarithmic autoregressive conditional duration (Log ACD) models, are useful for analyzing durations. Our recent research is focused on developing fast and accurate methods for fitting models to long time series of durations under least restrictive assumptions. This talk will describe the use of Godambe-Durbin martingale estimating functions, and will discuss three approaches for computationally feasible parameter estimation: solution of nonlinear estimating equations, recursive formulas for the vector-valued parameter estimates, and iterated component-wise scalar recursions. We further show how we achieve sparsity by incorporating a penalty function in this setup, and how we can study structural breaks in the duration series.

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