

Data Science Seminar

Hosted by Department of Mathematical Sciences

- Date: Tuesday, May 10, 2022
- Time: 12:00pm - 1:00pm
- Room: ZOOM
- Speaker: Dr. Yao Zheng (University of Connecticut)
- Title: Tensor methods for high-dimensional time series modeling

Abstract

Driven by the demand for big data analytics, high-dimensional time series analysis has become one of the fastest-growing areas in recent years. It concerns the exploration, modeling, and forecasting of a large number of variables observed over time. Its needs can be found in many fields, ranging from economics and finance to biology and health sciences. However, the high dimensionality and the massive scale of the datasets pose new statistical and computational challenges. Meanwhile, tensor decomposition is a powerful dimensionality reduction tool that has gained much interest in modern machine learning applications. However, its potential in high-dimensional time series modeling has still been largely untapped. In this talk, I will present two of our recent works on high-dimensional time series modeling via tensor methods. Specifically, I will discuss the use of Tucker decomposition in (1) high-dimensional vector autoregressive modeling and (2) tensor-valued autoregressive time series modeling. The focus of this talk will be more on the motivations, model formulations, interpretations and empirical examples, while the estimation methods, algorithms, and theoretical properties will also be introduced briefly.

Biography of the speaker: Dr. Zheng is an Assistant Professor in the Department of Statistics at the University of Connecticut. Her main areas of expertise include time series analysis, econometrics, and statistical learning. Much of her recent work has been devoted to the development of statistical methods, theory, and algorithms for high-dimensional time series modeling. Her research has been published in leading statistical and econometric journals such as *Biometrika*, *Journal of the American Statistical Association*, *Journal of the Royal Statistical Society: Series B*, and *Journal of Econometrics*.

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