

## Department Seminar (September 22, 2023)

### Learning from Multiple Multivariate Time-Series

Autoregressive models are among the most popular ones for analyzing temporally dependent data. However, little is known about learning from multiple time-series trajectories, especially when it comes to multi-dimensional and non-stationary data. We study this problem and propose a joint estimation method for learning transition matrices of multiple vector autoregressive models that are unknown linear combinations of some unknown basis matrices. The setting is technically challenging due to high dimensionality of the parameter space as well as the compound nature of the uncertainty. Still, our theoretical analysis shows that the proposed joint estimator has an optimal sample-complexity and excels individual learning methods. Furthermore, applications to data-driven stabilization of dynamical systems through exogenously designed input experiments will be discussed.

### Seminar Details

**Date:** Friday, September 22  
**Time:** 11:00 am to 11:50 am  
**Location:** Florance Hall 100  
**Tea-time:** Join us for refreshments at Heroy 139 at 10:15 am



### Speaker Details

**Name:** Mohamad Kazem Shirani Faradonbeh

**Affiliation:** Southern Methodist University

**Biography:** Mohamad Kazem Shirani Faradonbeh obtained his PhD in Statistics from the University of Michigan in 2017, and his BSc in Electrical Engineering from Sharif University of Technology in 2012. He was a postdoctoral researcher with the University of Florida during 2017-2020, and a fellow with the Simons Institute at the University of California – Berkeley in 2020. During 2020-2023, he was an assistant professor of data science with the Department of Statistics and with the Institute for AI at the University of Georgia.