

Data Science Seminar

Hosted by the Department of Mathematics and Statistics

- Date: Tuesday, December 3, 2024
- Time: 12:00pm - 1:00pm
- Room: Whitney Hall 100E
- Speaker: Dr. Yingxue Zhang (School of Computing at Binghamton University)
- Title: Leveraging Unlabeled Data in Offline Reinforcement Learning.

Abstract

With advancements in sensing and communication technologies, spatial-temporal big data has become integral to urban life, enabling solutions for challenges in smart cities, public safety, and human behavior analysis. A critical issue lies in enhancing diverse human decision-making processes within urban environments, spanning applications such as ride-sharing vehicle dispatch, public transportation management, and autonomous driving. Offline reinforcement learning (RL) offers a promising approach to learning and optimizing urban strategies (or policies) by leveraging pre-collected human-generated spatial-temporal urban data. However, standard offline RL faces two major challenges: (1) data scarcity and data heterogeneity, and (2) distributional shift. This talk will explore strategies for addressing these two challenges in a multi-task urban setting through innovative data-sharing methods across tasks. These techniques involve extracting latent representations of human behaviors, sharing data among tasks, and proposing more robust offline RL algorithms. Such methods enable effective data augmentation for each task, paving the way for improved decision-making processes in urban environments.

Biography of the speaker: Dr. Yingxue Zhang is an Assistant Professor in the Computer Science Department at Binghamton University. She received her PhD in Data Science from Worcester Polytechnic Institute in 2022. Her research interests include: 1) human behavior analysis and decision-making analysis with deep learning approaches (e.g., reinforcement learning and imitation learning), and (2) spatial-temporal data mining with novel AI techniques for urban computing and smart cities.

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Last update: **2024/11/18 19:46**

