RUTGERS–NEW BRUNSWICK
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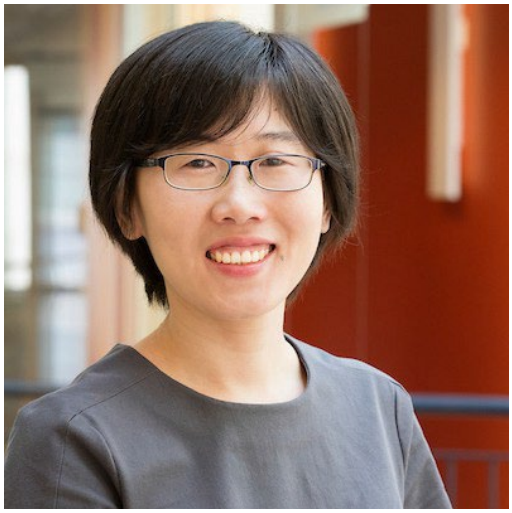
Department of Statistics

Department of Statistics Seminar Series



Yuejie Chi
Department of Statistics and Data Science
Yale University

The Blessing of Heterogeneity in Federated Reinforcement Learning

Wednesday, October 14th, 2026
12:10-1:30 PM
Hill Center - 116
Light refreshments will be served in Hill Center 452 at 11:40am

Abstract:

Reinforcement learning (RL), concerning decision making in uncertain environments, lies at the heart of modern artificial intelligence. Due to the high dimensionality, training of RL agents typically requires a significant amount of computation and data to achieve desirable performance. However, data collection can be extremely time-consuming with limited access in real-world applications, especially when performed by a single agent. On the other hand, it is plausible to leverage multiple agents to collect data simultaneously, under the premise that they can learn a global policy collaboratively without the need of sharing local data in a federated manner. This talk addresses the fundamental statistical and communication trade-offs in the algorithmic designs of federated RL algorithms, highlighting the unexpected blessings of data and task heterogeneities across the agents.

Bio:

Dr. Yuejie Chi is the Charles C. and Dorothea S. Dilley Professor of Statistics and Data Science at Yale University, with a secondary appointment in Computer Science, and a member of Yale Institute for Foundations of Data Science. She received her Ph.D. and M.A. from Princeton University, and B. Eng. (Hon.) from Tsinghua University, all in Electrical Engineering. Her research interests lie in the theoretical and algorithmic foundations of data science, generative AI, reinforcement learning, and signal processing, motivated by applications in scientific and engineering domains. Among others, Dr. Chi received the Presidential Early Career Award for Scientists and Engineers (PECASE), SIAM Activity Group on Imaging Science Best Paper Prize, IEEE Signal Processing Society Young Author Best Paper Award, and the inaugural IEEE Signal Processing Society Early Career Technical Achievement Award for contributions to high-dimensional structured signal processing. She is an IEEE Fellow (Class of 2023) for contributions to statistical signal processing with low-dimensional structures.