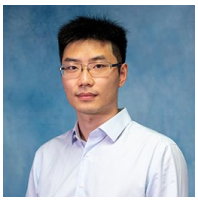
Artificial Intelligence Initiative (Aii)

https://ai.ucf.edu/



Invited Speaker

Dr. Qi Zhang, University of South Carolina

"Structuring Cooperative Teams for Multi-Agent Reinforcement Learning"

Thursday, August 22 • 11:00AM • HEC 101A • Zoom

Abstract:
Cooperative artificial intelligence equips a team of autonomous agents with the capability of planning and learning to maximize their joint utility, which finds a wide range of applications. Current solutions to cooperative AI, instantiated as cooperative multi-agent reinforcement learning frameworks, are still more computation-, data-, and communication-hungry than what practice can often afford. This talk presents a series of theories and methods for cooperative multi-agent teams to achieve efficiency in computation, data, and communication by discovering, engineering, and exploiting structures inherent in the problem. This talk presents a series of algorithmic innovations, focusing on the team structures exhibited in the form of 1) grounded communication where cooperative agents communicate their actions through context-aware Bayesian networks, 2) agent-wise homogeneity where policy parameter sharing is theoretically justified for the first time, and 3) Euclidean symmetries such as 3D rotations and translations. Each of the algorithmic innovations enjoys provable guarantees (e.g., first-order convergence to near-optimal joint policies) and achieves state-of-the-art empirical performance on simulation-based benchmarks. Then, the talk presents a future research vision that extends the theories and methods to electrical and computer engineering applications and with human teammates.

Bio:
Qi Zhang is an Assistant Professor in the Department of Computer Science and Engineering (CSE) and a core faculty member of the Artificial Intelligence (AI) Institute at the University of South Carolina. He earned his PhD from the CSE Division at the University of Michigan in 2020 and his BE in Electrical Engineering from Shanghai Jiao Tong University in 2015. His research interests lie in the theory and applications of cooperative AI. His research work earned him the David J. Kuck Dissertation Prize presented by Michigan CSE and an NSF CAREER Award.