

## COMPUTER SCIENCE RESEARCH SEMINAR

Knowledge-based Robot Sequential Decision-Making under Uncertainty

**Shiqi Zhang, Assistant Professor**  
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**Friday, September 7 at noon in room R15, Engineering Building**

**Abstract:** Robots need sequential decision-making (SDM) capabilities so as to complete tasks that require more than one action. Robot SDM is difficult for reasons such as imperfect perception, unreliable action outcomes, and incomplete domain knowledge. This talk will cover a few ways of incorporating declarative knowledge representation and reasoning (KRR) into robot decision-making paradigms such as probabilistic planning and reinforcement learning. The contextual knowledge typically comes from humans, and tends to be sparse but potentially effective. The algorithms are mainly demonstrated using tasks of mobile service robots, such as human guidance, object delivery, and dialog systems.

**Bio:** Dr. Shiqi Zhang is an assistant professor at the Department of Computer Science, SUNY Binghamton, starting in Fall 2018. He received his Ph.D. (2013) in Computer Science from Texas Tech University. Before that, he received his MS (2008) and BS (2006) from Harbin Institute of Technology in China. From 2016 to 2018, he was an assistant professor with Cleveland State University. From 2014 to 2016, he was a Postdoctoral Fellow at the University of Texas at Austin. His research lies in the intersection of artificial intelligence and robotics. He is particularly interested in developing reasoning and sequential decision-making algorithms to help robots achieve long-term autonomy in human-inhabited, collaborative environments.

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**Refreshments will be provided!**