

Dear all,

All are cordially invited to attend the following talk, which will be over Skype.

Title: Adapt to Learn: An Adaptive Control view of Reinforcement Learning

Speaker: Prof. Girish Chowdhary, Assistant Professor, UIUC

Date: October 23, 2018 (Tuesday)

Time: 4:00 pm

Venue: Classroom No. 115

Abstract:

Adaptive control has long been the staple for control engineers when models are poor or expensive-to-obtain. More recently, reinforcement learning has been gaining popularity in solving problems that are typically difficult to solve through traditional control techniques. RL algorithms promise to learn joint perception-planning-control policies directly from data. However, despite their successes, RL algorithms still cannot guarantee safety and stability for engineered systems, and haven't yet replicated the ability of animals to transfer knowledge between progressively harder tasks. In this talk, I will sketch my group's pursuit towards developing learning-based controllers for autonomous systems. Starting from model reference adaptive control with concurrent learning and Gaussian Processes (Gps), I will outline our journey to reinforcement learning with GP Q-learning. I will then discuss our recent work on adversarial deep reinforcement learning, and finally arrive at a reimagining of reinforcement learning from the perspective of adaptation for policy transfer.

Speaker Bio:

Girish Chowdhary is an assistant professor at the University of Illinois at Urbana-Champaign with the Coordinated Science Laboratory, and the director of the Distributed Autonomous Systems laboratory at UIUC. At UIUC, Girish is affiliated with Agricultural and Biological Engineering, Aerospace Engineering, Computer Science, and Electrical Engineering. He holds a PhD (2010) from Georgia Institute of Technology in Aerospace Engineering. He was a postdoc at the Laboratory for Information and Decision Systems (LIDS) of the Massachusetts Institute of Technology (2011-2013), and an assistant professor at Oklahoma State University's Mechanical and Aerospace Engineering department

(2013-2016). He also worked with the German Aerospace Center's (DLR's) Institute of Flight Systems for around three years (2003-2006). Girish's ongoing research interest is in theoretical insights and practical algorithms for adaptive autonomy, with a particular focus on field-robotics. He has authored over 90 peer reviewed publications in various areas of adaptive control, robotics, and autonomy. On the practical side, Girish has led the development and flight-testing of over 10 research UAS platform. UAS autopilots based on Girish's work have been designed and flight-tested on six UASs, including by independent international institutions. Girish is an investigator on NSF, AFOSR, NASA, ARPA-E, and DOE grants. He is the winner of the Air Force Young Investigator Award, the Aerospace Guidance and Controls Systems Committee Dave Ward Memorial award, and several best paper awards. He is the co-founder of EarthSense Inc., working to make ultralight outdoor robotics a reality.