Correct-by-construction synthesis for autonomous robots
Hadas Kress-Gazit
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Monday, October 7th, 2019
114 Gates Hall, Ithaca, NY
11:30 am – Networking & Lunch
12:00 – 12:45 pm – Presentation with Live Stream:
https://cornell.zoom.us/j/776293354
12:45 – 1:00 pm – Q&A

Abstract:

In this talk, Associate Professor Kress-Gazit will describe recent approaches to automating robot design and programming from high-level specifications. These types of techniques - "synthesis for robotics" - enable novice users to describe at a high-level what a robot should do or accomplish. Synthesis algorithms then either automatically create a correct-by-construction system, or provide feedback to the user regarding what cannot be done. Professor Kress-Gazit will describe different specification formalisms, offline and online synthesis algorithms and the types of feedback they can provide. She will show how we have used synthesis techniques in a variety of domains including modular robots, swarms and human-robot interaction.

Bio:

Hadas Kress-Gazit is an Associate Professor at the Sibley School of Mechanical and Aerospace Engineering at Cornell University. She received her Ph.D. in Electrical and Systems Engineering from the University of Pennsylvania in 2008 and has been at Cornell since 2009. Her research focuses on formal methods for robotics and automation and more specifically on creating verifiable robot controllers for complex high-level tasks using logic, verification, synthesis, hybrid systems theory and computational linguistics. She received an NSF CAREER award in
2010, a DARPA Young Faculty Award in 2012 and the Fiona Ip Li ’78 and Donald Li ’75 Excellence in teaching award in 2013.

Background on the Cornell Initiative for Digital Agriculture:

An interdisciplinary group of Cornell University faculty began meeting in early 2017 to formulate an Initiative for Digital Agriculture (DA), believing that Cornell is uniquely equipped to lead in this emerging arena that will benefit the public for generations. We define DA to mean the application of computational and information technologies coupled with nanotechnology, biology, systems engineering and economics to both the research and operational sides of agriculture and food production. With approximately 100 faculty from 5 Cornell colleges participating, we are collaborating with external stakeholders to shape and implement a research agenda for DA that will build a pipeline of discovery and innovations for the next 10+ years. Please contact Tim Vanini at tv37@cornell.edu with any questions.