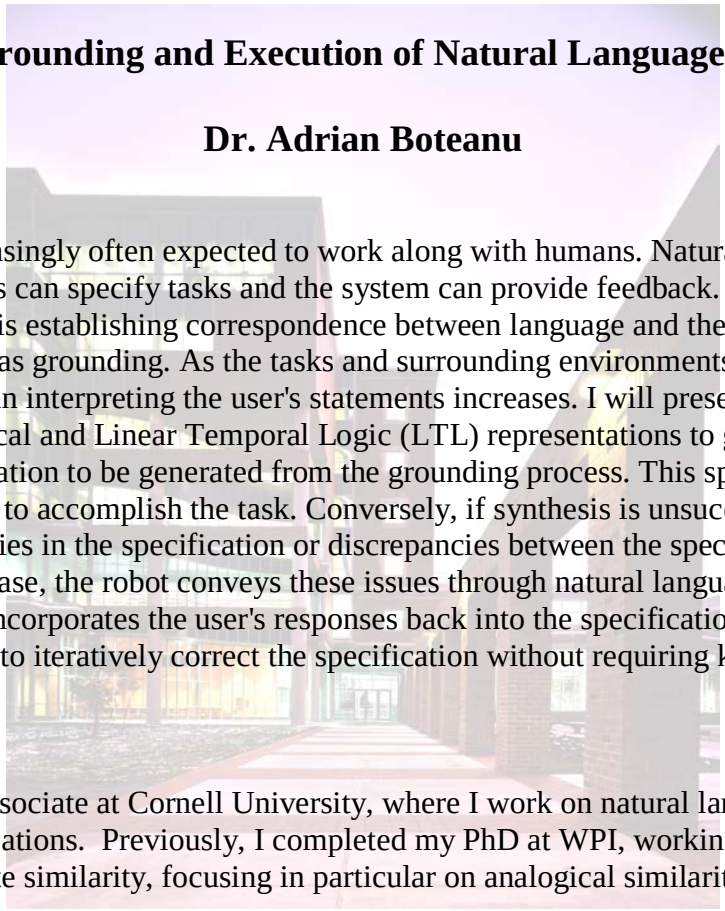
University of Rochester
Department of Electrical and Computer Engineering Seminar Series

Wednesday, November 16th
12:00PM – 1:00PM
Computer Studies Building (CSB) 209

Verifiable Grounding and Execution of Natural Language Instructions

Dr. Adrian Boteanu



Abstract: Robots are increasingly often expected to work along with humans. Natural language enables bi-directional interaction: users can specify tasks and the system can provide feedback. A significant challenge in verbal situated interactions is establishing correspondence between language and their physical meaning such as actions and objects, known as grounding. As the tasks and surrounding environments increase in complexity, the potential for ambiguity in interpreting the user's statements increases. I will present a grounding model which combines both physical and Linear Temporal Logic (LTL) representations to ground instructions. It allows for a formal specification to be generated from the grounding process. This specification is synthesized into a controller guaranteed to accomplish the task. Conversely, if synthesis is unsuccessful, it reveals problems such as logical inconsistencies in the specification or discrepancies between the specification and the physical environment. In this latter case, the robot conveys these issues through natural language by referencing the physical environment and incorporates the user's responses back into the specification. This robot-driven interaction enables the user to iteratively correct the specification without requiring knowledge of the underlying representation.

Bio: I am a Postdoctoral Associate at Cornell University, where I work on natural language understanding and feedback for robotics applications. Previously, I completed my PhD at WPI, working on using semantic context graphs as a frame to evaluate similarity, focusing in particular on analogical similarity.

Pizza and soda provided