

DEPARTMENT OF MECHANICAL ENGINEERING

WILLIAM MAXWELL REED SEMINAR SERIES

“Design and Verification of Learning-enabled Control Systems”

Hasan Poonawala, Ph.D.

Postdoctoral Fellow, University of Texas, Austin

Abstract: Robotic systems must operate autonomously in environments that are partially known, by relying on complex sensor measurements for control and decision making. A common approach for dealing with this scenario is to design controllers from previously collected sensor data using black-box tools from machine learning. The interaction of dynamics and machine learning errors can lead to suboptimal or even unsafe behavior, such as crashes of autonomous mobile robots. In this talk, I will describe methods to design and analyze controllers obtained using machine learning. These methods yield closed-loop systems with provable safety and performance guarantees. I will also demonstrate applications of the methods in mobile robot navigation and neural-signal-based control of assistive devices.

Bio: Hasan Poonawala is a postdoctoral fellow in the Institute for Computational Engineering and Sciences, at the University of Texas at Austin. He earned a bachelor’s degree in Mechanical Engineering from the National Institute of Technology, Karnataka, a master’s degree in Mechanical Engineering from the University of Michigan, and a Ph.D. in Electrical Engineering from the University of Texas at Dallas. His recent research focuses on the analysis of feedback loops that contain classifiers and neural networks, and methods to train them using measures of control performance. His doctoral work focused on designing formation and connectivity controllers for multi-robot teams using nonlinear control and algebraic graph theory.

Date: Monday, Feb. 26
Place: CB 118

Time: 3PM
Contact: Dr. Alexandre Martin 257-4462

Meet the speaker and have refreshments
Attendance open to all interested persons