

COLLEGE OF ENGINEERING

Control Seminar



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Robustness in Data-Driven Control Design



PETER SEILER

Associate Professor
University of Michigan
Department of Electrical Engineering
and Computer Science

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3:30 – 4:30 pm 1500 EECS

ABSTRACT: Reinforcement learning (RL) is a technique to directly design control policies using data collected from the system. This talk will discuss the robustness of controllers trained using such data-driven methods. To motivate the discussion, the talk will first summarize our recent work on (model-based) control designs for flexible aircraft. The control design, analysis, and flight tests rely mainly on classical techniques that use both time and frequency domain viewpoints. The remainder of the talk will focus on model-free RL design methods. Simple examples will be used to illustrate the robustness issues that can arise. Typical data-driven approaches emphasize the time-domain viewpoint and it will be argued that frequency domain tools can provide valuable insight.

BIO: Dr. Seiler is an Associate Professor in Electrical Engineering and Computer Science at the University of Michigan. His research emphasizes robust control theory with applications to wind energy, uninhabited aerial systems, and flexible aircraft. Dr Seiler previously worked at the Honeywell Research Labs from 2004-2008 on various aerospace and automotive projects. This included work on the redundancy management system for the Boeing 787 and sensor fusion algorithms for automotive active safety systems. Dr. Seiler is the recipient of the O. Hugo Schuck Award in 2003 and an NSF CAREER award in 2013.