

A School of Engineering Seminar

Applied High-Performance Adaptive Control



SF STATE

Nolan Tsuchiya

University of California,
Los Angeles

(Mechanical Engineering
faculty candidate)

January 30, 2015
Friday

1:10-2:00pm

SCI 256

***Refreshments
will be served –
come join us!***

Synopsis:

Numerous advanced control methods have been developed to augment the performance of control systems beyond that of a classical linear time-invariant (LTI) controller. Each advanced controller generally has a specific control objective that it aims to improve. The particular advanced controller presented in this seminar uses a receding-horizon adaptive control structure to target and reject complex disturbances that contain both broadband and time-varying components. Rejecting such disturbances is regarded as a challenging problem, however the experimental results presented in this talk illustrate the effectiveness of this method as a superior regulator. Furthermore, the controller is capable of operating in a multi-input-multi-output (MIMO) configuration, which allows effective operation on systems with severely coupled channels. Finally, the structure of the controller allows the user to incorporate frequency-weighting into the design, which effectively enables the control command to target a specific frequency band within the spectrum. This weighting is used to drastically improve the robustness of the controller with respect to stability, without sacrificing disturbance rejection performance.

Speaker Bio:

Nolan Tsuchiya is a PhD candidate in the Department of Mechanical and Aerospace Engineering at the University of California Los Angeles. He received his Bachelor of Science degree from UC Berkeley in 2006 and he worked in industry as a Control Systems Engineer for several years before returning to graduate school with the intention of teaching at the university level. While working as an engineer in industry, he became a licensed professional engineer (PE) in the state of California. Since returning to graduate school at UCLA in 2010, he earned his Masters of Science degree, served as a TA for both Dynamic Systems and Feedback Control courses, and he is also a part-time faculty member at Cal Poly Pomona, where he teaches Feedback Control Systems..

For inquiries, please contact Ed Cheng at ascheng@sfsu.edu