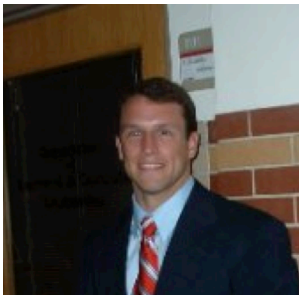
COLLEGE OF ENGINEERING

Control Seminar

Sponsored by: Bosch, Ford, and Toyota

Advanced Verification and Validation Methods for Cyber-Physical Systems



Jim Kapinski

Toyota Ann Arbor

Friday, October 6, 2017

3:30 – 4:30 pm • 1500 EECS

ABSTRACT: Cyber-physical systems (CPSs) are used in many mission critical applications, such as automobiles, aircraft, and medical devices; and the complexity of these systems is growing rapidly. New analysis techniques are available to increase confidence in the reliability of CPSs, but most methods rely on the availability of formal system requirements, which can be challenging to develop for complex applications. This talk presents promising recent developments in verification and validation for CPS, including formal methods and automated testing techniques, and addresses ongoing challenges related to the development of formal requirements.

BIO: Jim received his Ph.D. in Electrical and Computer Engineering from Carnegie Mellon University in 2005 and was a postdoctoral researcher at CMU from 2007 to 2008. He went on to found and lead Fixed-Point Consulting, serving clients in the defense, aerospace, and automotive industries. Since 2012 he has been with the Model-Based Development group at the Toyota Technical Center. His work at Toyota focuses on advanced research into verification techniques for embedded software for powertrain control systems. Jim's research interests include verification techniques for embedded control system designs and analysis of hybrid dynamical systems.