
Electrical & Computer Engineering
S E M I N A R
Louisiana State University

Robust Verification of Hybrid Systems

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Abstract—Cyber-physical systems (CPSs) consist of complex systems that combine control, computation and communication to achieve sophisticated functionalities as in autonomous driving in driverless cars and automated load balancing in smart grids. The safety criticality of these systems demands strong guarantees about their correct functioning. In this talk, we will present some of our work on formal verification techniques for cyber-physical systems analysis using the framework of hybrid systems. Hybrid systems capture an important feature of CPSs, namely, mixed discrete-continuous behaviors that arise due to the interaction of complex digital control software (discrete elements) with physical systems (continuous elements). We will focus on certain robustness properties of these systems, and present scalable techniques based on abstraction-refinement for their analyses.

Bio—Pavithra Prabhakar is an associate professor in the Department of Computer Science and Peggy and Gary Edwards Chair in Engineering at the Kansas State University. She obtained her doctorate in Computer Science and a masters in Applied Mathematics from the University of Illinois at Urbana-Champaign, followed by a CMI postdoctoral fellowship at the California Institute of Technology and a faculty position at the IMDEA Software Institute in Spain. Her main research interest is in formal analysis of cyber-physical systems with emphasis on both foundational and practical aspects related to automated and scalable techniques for verification and synthesis of hybrid systems. She is the recipient of a Marie Curie Career Integration Grant from the EU, a National Science Foundation CAREER Award and an Office of Naval Research Young Investigator Award.

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Where: Room 3316E Patrick F. Taylor Hall

Info: <https://www.lsu.edu/eng/ece/seminar>

