UCF DEPARTMENT OF ELECTRICAL ENGINEERING AND COMPUTER SCEINCE

Spring 2014 Seminar Series

Presented by the CS Division

MODEL-BASED EMBEDDED SOFTWARE TESTING AND MONITORING

WEDNESDAY MARCH 19, 2014

1:30 PM – HEC 356

In many application domains, Simulink/Stateflow serves as a platform for model-based development of the reactive embedded code, that interacts with its environment in real-time fashion. The talk will discuss a model-based approach for testing Simulink/Stateflow code, based on its automated translation to input-output extended finite automaton (I/O-EFA), followed by automated test-generation, guaranteeing user-defined code as well as requirements coverage, and also support for automated test-execution and error-localization. The offline testing of embedded code is further supplemented by its online monitoring for additional error detection and localization, and the talk will also present our approach for the same. System level measurements can be corrupted by noise, and a stochastic reasoning framework will be presented with conditions for achieving desired rates of false negatives and positives.

DR. RATNESH KUMAR

Iowa State University

Ratnesh Kumar is a Professor of Electrical & Computer Engineering at the Iowa State University. He received B.Tech. in Electrical Eng. from Indian Institute of Technology, Kanpur (IITK) in 1987, and M.S. and Ph.D. in Electrical & Computer Engineering from the Univ. of Texas, Austin (UTAustin) in 1989 and 1991, respectively. Prior to joining Iowa State, he was on the faculty of University of Kentucky, and also has held visiting positions at the University of Maryland, the Applied Research Laboratory at the Pennsylvania State University (ARL-PSU), the NASA Ames Research Center, the Idaho National Laboratory (INL), and the United Technologies Research Center (UTRC).

Ratnesh's research interest includes model-based design of embedded software, networks web-services and cyber physical systems, sensors and their networks with application to agriculture, power systems and energy harvesting. Ratnesh received Gold Medals from IIT Kanpur, MCD Fellowship and Dissertation Award from UTAustin, Fellowships from NASA-Ames, ARL-PSU and INL, and several awards from NSF, DoD, DoE, GM, Adobe. Ratnesh is a Fellow of the IEEE for contributions to discrete event system modeling, control, diagnosis and applications. He is or was an associate editor of ACM Transactions on Embedded Computing Systems, IEEE Transactions on Robotics and Automation, SIAM Journal on Control and Optimization, Journal of Discrete Event Dynamical Systems, and IEEE Control Systems Society.

http://home.eng.iastate.edu/~rkumar/