CISE DISTINGUISHED LECTURE SERIES

The Challenges of Cyberphysical Systems

Wed, Feb 6, 2pm (Rm. 110)

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There is increasing demand for resource efficient transportation, energy, healthcare, water systems, etc., by societies across the planet. In attempting to confront these diverse challenges, the twenty-first century could well become the age of building large-scale systems that feature tight integration of computing, communication, and control technologies. We present a historical account of paths leading to the present interest in cyber-physical systems. We outline several foundational research topics that underlie this area. These include issues in data fusion, real-time communication, security, middleware, hybrid systems and proofs of correctness.

P. R. Kumar is the College of Engineering Chair in Computer Engineering at Texas A&M University. Kumar has worked on problems in game theory, adaptive control, stochastic systems, simulated annealing, neural networks, machine learning, queueing networks, manufacturing systems, scheduling, wafer fabrication plants, information theory, wireless networks, sensor networks, and cyberphysical systems. He received the Donald P. Eckman Award of the American Automatic Control Council, the Fred W. Ellersick Prize of the IEEE Communications Society, the IEEE Field Award for Control Systems, and the ACM SIGMOBILE Outstanding Achievement Award. He is a Fellow of IEEE, the Academy of Sciences of the Developing World, and a member of the National Academy of Engineering, USA. He received the Distinguished Alumnus Award from IIT Madras, the Alumni Achievement Award from Washington University in St. Louis, and the Daniel C. Drucker Eminent Faculty Award from the College of Engineering, University of Illinois.

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