

Friday, June 17th, 2016 | 2:00PM – 3:00PM | EIT 3142



Dr. Shankar Sastry is the Dean of the College of Engineering and Roy W. Carlson Professor of Engineering at the University of California, Berkeley. A distinguished academic and leader in engineering, he obtained his PhD at Berkeley where he has been a faculty member since 1982. He is a world authority in nonlinear control and cyber-physical systems. He has served on the US Air Force Scientific Advisory Board as well as the Defense Science Board. He is a member of the US National Academy of Engineering, the American Academy of Arts and Sciences, and a fellow of the Institute of Electrical and Electronics Engineers.

WATERLOO
ENGINEERING

Invited by the ECE Department
Reception to follow at 3:00PM
on the EIT patio

Free Admission - Limited Seating

Societal Scale Cyber Physical Systems

The scope of the research agenda of Cyber Physical Systems (CPS) has expanded to include the Internet of Things (IoT), Mechanism and Incentive Design, Resilience and Cyber Security, and data analytics for Big Data arising from CPS Systems. Much work has been done in recent years on the evolution of ‘Action Webs’; moreover, closing the loop around IoT networked sensors. These networked control systems are fast-becoming the next generation societal-scale. Societal Scale CPS systems need to offer new data oriented service models, be robust, fault tolerant, and able to operate through cyber-attacks. Thus, the agenda of Societal Scale CPS Systems very much expands on IoT. Additionally, the advent of Societal Scale CPS Systems is causing the emergence of new models for monetization for the offering of new data oriented services. In this lecture, the rudiments of a theory of resilient societal CPS systems will be discussed, including the modeling of utility based privacy and security. Further, the discussion will also focus on the provision of economic incentives to private entities which own individual action webs to address issues of “under investment in the common good”. More technically, this is a mechanism design procedure for helping bridge the gap between the non-cooperative Nash equilibrium of multiple players and the societal optimum strategy.

The lecture is based on Dr. Sastry’s joint work with several researchers and past and ongoing students.