CENTER FOR COMPUTATION & TECHNOLOGY
Interdisciplinary | Innovative | Inventive

LOUISIANA STATE UNIVERSITY

Search

Events

Current Events
Lectures ▼
Events Archive ▼

CCT Distinguished Lecture

Sense and Response Systems

K. Mani Chandy, California Institute of Technology

Simon Ramo Professor

Coates Hall 145
April 23, 2010 - 03:00 pm

Abstract:
Sense and response systems respond to critical events in the environment. Examples of such systems include those that detect incipient earthquakes and respond by controlling elevators; systems that detect nuclear radiation or chemical hazards and respond by neutralizing the hazards and warning populations; the electric smart grid that detects fluctuations in solar or wind energy sources and responds by controlling battery or other energy storage; and medical systems that detect potential problems with patients --- especially the aged --- and respond with appropriate help. This talk describes these problems in some detail and shows the commonality of design tools and analytic techniques across a variety of very different applications. The disciplines used in these systems include statistics, machine learning, data mining; controls and optimization; distributed computing, particularly in the "cloud"; communication networks that connect novel sensors and actuators with computing engines; and high-performance computing and simulation. The talk discusses how each of these disciplines are brought to bear on solving these sense and response problems using a common systematic framework cutting across multiple disciplines. This commonality suggests that the time has come to explore new academic disciplines that incorporate key elements of other disciplines to solve critical problems. The talk ends with a discussion of open research problems in this area.

Speaker's Bio:
Dr. Chandy works on sense and response systems. He has published three books and several papers on distributed computing, verification of concurrent programs, parallel programming languages and performance models of computing and communication systems. His latest book on Event Processing was published by McGraw Hill in 2009. Software developed by Dr. Chandy and colleagues on computer performance modeling and event processing is being used in industry. He has served as a consultant to a number of companies including IBM and Bell Labs. Dr. Chandy has worked for Honeywell and IBM. From 1970 to 1989, he was in the Computer Science Department of the University of Texas at Austin, serving as chair in 1978-79 and 1983-85. He has been at the California Institute of Technology since 1987, two years as a Sherman Fairchild Fellow, and then as a professor in Computer Science. He is now the Simon Ramo Professor and Associate Chair of the Division of Engineering and Applied Science at Caltech. Dr. Chandy has a Ph.D. from the Massachusetts Institute of Technology and a Bachelors from the Indian Institute of Technology, Madras.

Refreshments will be served.
This lecture has a reception.