

EE Department Seminar

December 30, 2010, Thursday, 15:00
Refreshments will be served at 14:30
Yorgo I Stefanopoulos Meeting Lounge (KB 217)

Tracking with Sleepy Sensors

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We examine the problem of tracking objects (targets) in an energy efficient manner using a sensor network. For energy efficiency, the sensors in the network are allowed to enter a sleep state wherein they can save energy but not observe the targets. Our goal is to find sleeping/scheduling policies that yield the best tradeoff between tracking error and energy efficiency. We study a number of different formulations of this problem, starting with simple models for object movement and sensing and ending with more complicated and realistic models. While optimal solutions to these problems are in general intractable, we show that we can find good sleeping/scheduling policies that approach computable lower bounds on optimal performance.

Venu Veeravalli received the Ph.D. degree in Electrical Engineering from the University of Illinois at Urbana-Champaign in 1992. He is currently a Professor in the department of Electrical and Computer Engineering, and a Research Professor in the Coordinated Science Laboratory at the University of Illinois at Urbana-Champaign. He was on the faculty of the School of ECE at Cornell University before he joined Illinois in 2000. He served as a program director for communications research at the U.S. National Science Foundation in Arlington, VA during 2003-2005. His research interests include wireless communications, distributed sensor systems and networks, detection and estimation theory, and information theory. He is a Fellow of the IEEE, and a recipient of the IEEE Browder J. Thompson Best Paper Award and the U.S. Presidential Early Career Award for Scientists and Engineers (PECASE).