Cornell University
School of Electrical and Computer Engineering

Information
Systems
Networks
Seminar

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"A Class of Restless Bandit Problems: Indexability and Optimality of Whittle Index"

Date: 4pm, Tuesday September 14th.
Venue: Rhodes Hall, 380.

The long-standing multi-armed bandit problem (MAB), propounded in early 1930's, was solved by Gittins almost 40 years later in 1970's when he established the simple index structure of the optimal policy. In 1988, Whittle generalized MAB to the so-called restless multi-armed bandit problem (RMAB) to take into account system dynamics that cannot be directly controlled. Gittins index policy is no longer optimal, and RMAB has been shown to be PSPACE-hard in general.

In this talk, we present a brief history of bandit problems and some of our recent results on a special class of RMAB. We show that this class of RMAB is indexable, and Whittle index policy achieves optimality with a simple semi-universal structure. This class of RMAB is particularly relevant to cognitive radio, user/server scheduling, and optimal activation in multi-agent systems.

Refreshments will be served 15 prior to the start of the talk

Short Bio: http://www.ece.ucdavis.edu/~qzhao/
Qing Zhao received the Ph.D. degree in Electrical Engineering in 2001 from Cornell University, Ithaca, NY. In August 2004, she joined the Department of Electrical and Computer Engineering at UC Davis where she is currently an Associate Professor. Her research interests are in the general area of dynamic systems and communication networks. She received the 2000 Young Author Best Paper Award from IEEE Signal Processing Society and the 2008 Outstanding Junior Faculty Award from the UC Davis College of Engineering.