Princeton University

Department of Electrical Engineering

Information Sciences and Systems (ISS) Seminar

Speaker: Pramod Viswanath,
University of Illinois, Urbana-Champaign

Date: Monday, May 21, 2007

Time 4:30 pm ~ Room J323 ~ EQuad

Title: Distributed Compression with Quadratic Distortion Constraints

Abstract:
In a classical network compression scenario, distributed encoders make analog observations that have to be separately compressed and communicated over rate-constrained links to a single decoder that aims to reconstruct the original observations subject to quadratic distortion constraints. Focusing on two encoders, we show that a natural compression architecture that separates the digital and analog parts of the problem is optimal for all rate-distortion pairs; this resolves a three decades long open problem. With more than two encoders, we show the optimality under a `natural' tree-structure condition on the second-order statistics of the observations.

Bio:
Pramod Viswanath received the PhD degree in EECS from the University of California at Berkeley in 2000. He was a member of technical staff at Flarion Technologies until August 2001 before joining the ECE department at the University of Illinois, Urbana-Champaign. He is a recipient of the Eliahu Jury Award from the EECS department of UC Berkeley (2000), the Bernard Friedman Award from the Mathematics department of UC Berkeley (2000), and the NSF CAREER Award (2003). He is an associate editor of the IEEE Transactions on Information Theory for the period 2006-2008.