

**Title:** Coding for Constrained Communication Systems

**Speaker:** Mehul Motani

**Time and location:** Thursday, March 23 at 11:00 a.m. ECE202

**Abstract:**

We motivate the study of codes for constrained communication systems. Constrained codes are useful for applications such as power line communications, low cost authentication systems, and joint energy and information transfer. We analyze the performance of various subblock code constraints, in which each codeword is partitioned into smaller subblocks and each subblock is constrained in a particular manner. In particular, we are interested in the following: (i) channel capacity and error exponents for discrete memoryless channels for these subblock constrained codes, (ii) Code sizes and asymptotic rates of these subblock constrained codes, and (iii) Practical subblock constrained codes via concatenation.

**Bio:**

Mehul Motani received the B.E. degree from Cooper Union, New York, NY, the M.S. degree from Syracuse University, Syracuse, NY, and the Ph.D. degree from Cornell University, Ithaca, NY, all in Electrical and Computer Engineering.

Dr. Motani is currently an Associate Professor in the Electrical and Computer Engineering Department at the National University of Singapore (NUS) and a Visiting Research Collaborator at Princeton University. Previously, he was a Visiting Fellow at Princeton University. He was also a Research Scientist at the Institute for Infocomm Research in Singapore, for three years, and a Systems Engineer at Lockheed Martin in Syracuse, NY for over four years. His research interests are broadly in the area of wireless networks. Recently he has been working on research problems which sit at the boundary of information theory, networking, and communications, with applications to mobile computing, underwater communications, sustainable development and societal networks.

Dr. Motani was the recipient of the Intel Foundation Fellowship for his Ph.D. research, the NUS Annual Teaching Excellence Award, the NUS Faculty of Engineering Innovative Teaching Award, and the NUS Faculty of Engineering Teaching Honours List Award. He is a senior member of the IEEE and has served as the Secretary of the IEEE Information Theory Society Board of Governors. He has served as an Associate Editor for both the IEEE Transactions on Information Theory and the IEEE Transactions on Communications.