

THE DEPARTMENT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE, ECE DIVISION
Presents the Spring 2014 EECS Seminar Series



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University of Illinois at Urbana-Champaign

**“Circuits, Brains, and Crowds: Reliable Inference in Systems
with Unreliable Components”**
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ABSTRACT

When considering information processing systems like circuits, brains, or crowdsourcing systems, components such as logic gates, synapses, or people may be noisy. In this talk, I present three vignettes of work on using coding-theoretic ideas to achieve reliable performance of such systems in the face of unreliable parts. In particular, I discuss how to build memories that can store information reliably forever despite being constructed from noisy registers and gates; associative memory models of biological brains that can reliably retrieve information despite having noisy synapses and facing noisy queries; and crowdsourcing microtask platforms that can reliably perform fine-grained classification despite unreliable and unskilled workers.

BIOGRAPHY

Lav R. Varshney is an assistant professor in the Department of Electrical and Computer Engineering, a research assistant professor in the Coordinated Science Laboratory, and a research affiliate in the Beckman Institute, all at the University of Illinois at Urbana-Champaign. He received the B. S. degree with honors in electrical and computer engineering (magna cum laude) from Cornell University in 2004. He received the S. M., E. E., and Ph. D. degrees in electrical engineering and computer science from the Massachusetts Institute of Technology in 2006, 2008, and 2010, respectively. He received the J.-A. Kong Award Honorable Mention for Electrical Engineering doctoral thesis, the E. A. Guillemin Thesis Award for Outstanding Electrical Engineering S.M. Thesis, a best paper award at the 2012 SRII Global Conference, the Capocelli Prize at the 2006 Data Compression Conference, the Best Student Paper Award at the 2003 IEEE Radar Conference, and was a winner of the IEEE 2004 Student History Paper Contest. He was also recognized by IBM for his work on computational creativity, on crowdsourcing, and on business analytics.