

Presents the Spring 2012 EECS Seminar Series

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**“Sparsity-Cognizant Algorithms with Applications to Communications,  
Signal Processing, and the Smart Grid”**

Wednesday, February 29, 2012 3:00 p.m. HEC 450

**ABSTRACT**

Sparsity plays an instrumental role in a plethora of scientific fields, including statistical inference for variable selection in linear regression, parsimonious signal representations, and solving under-determined systems of linear equations - what has led to the ground-breaking result of compressive sampling at sub-Nyquist rates. By the same token, an increasingly wide range of applications has risen the need to develop sparsity-cognizant algorithms for problems, where the data adhere to models going beyond the classical linear regression.

In this talk I will demonstrate how exciting ideas of sparse signal reconstruction can be leveraged to develop algorithms to deal with: (a) sparse overcomplete representations for identification of power line outages; and (b) sparse total least-squares for fully-perturbed linear systems of equations. The vision is to devise tools exploiting the 'right' form of sparsity for the 'right' application domain in communication systems, sensor array signal processing, and the emerging challenges associated with the smart grid.

**BIOGRAPHY**

Hao Zhu is a final-year Ph.D. candidate with the Department of Electrical and Computer Engineering at the University of Minnesota (UMN). She received her B.Sc. degree from Tsinghua University, China, in 2006, and M.Sc. degree from UMN in 2009, both in Electrical Engineering. She worked as a Summer Research Intern at NEC Labs America, Princeton, in 2011. Her research interests lie in compressive sampling, power system monitoring, smart grid, social network analysis, distributed signal processing, and wireless communications. She received the two-year UMN Graduate School Fellowship in 2006, and the UMN Doctoral Dissertation Fellowship in recognition of her doctoral thesis research.