

Information Science and Technology Seminar Speaker Series



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Compressive Sensing Based Statistical Inference

Wednesday, September 19, 2012

3:00 - 4:00 PM

TA-3, Bldg. 1690, Room 102 (CNLS Conference Room)

Abstract: The framework of Compressive Sensing (CS) is concerned with the recovery of an unknown sparse signal from an underdetermined system of linear equations. CS builds upon the fundamental fact that many signals can be represented using only a few non-zero coefficients in a suitable basis or dictionary. In CS framework, a small collection of linear random projections of such sparse signals contains sufficient information for reliable signal recovery. CS measurement scheme is universal in the sense that the same mechanism in acquiring measurements can be used irrespective of the sparsity level of the signal or the basis in which the signal is sparse. Although most of the CS literature has focused on complete recovery of sparse signals, there are several signal processing applications where complete signal recovery is not necessary. Very often, we are interested in solving inference problems where it is only necessary to extract certain information from compressive measurements. For example, in applications such as subset selection in linear regression, and spectrum sensing in cognitive radio networks, it is sufficient to estimate only the locations of non-zero elements (or the sparsity pattern) of the sparse signal. This talk will give an overview of Compressive Sensing and will discuss the problem of performing several inference tasks directly in the compressive measurement domain without first resorting to a full-scale signal reconstruction.

Biography: Thakshila Wimalajeewa received her B.Sc. degree in Electronic and Telecommunication Engineering with First Class Honors from the University of Moratuwa, Sri Lanka in 2004, MS and PhD degrees in Electrical and Computer Engineering from the University of New Mexico, Albuquerque, NM in 2007 and 2009, respectively.

In January 2010, Dr. Wimalajeewa joined the Department of Electrical Engineering and Computer Science in Syracuse University, Syracuse, NY as a Post Doctorate Research Associate where currently she is a Research Assistant Professor. Her current research focuses on sparse signal processing with compressive sensing, resource optimization in wireless sensor networks, spectrum sensing in cognitive radio networks, and human decision making under cognitive limitations.