IEEE Signal Processing Society Distinguished Lecture

Bayesian Methods for Sparse Signal Recovery

By

Prof. Bhaskar D. Rao
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DATE:   Wednesday September 10, 2014
TIME:   Noon – 1:30PM (Pizza and soft drink will be served at 11:30AM)
PLACE: Room 5084, SITE Building/University of Ottawa, 800 King Edward Avenue, Ottawa, K1N 6N5
Admission: Free. Registration by E-mail contacting:
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Abstract

Compressive sensing (CS) as an approach for data acquisition has recently received much attention. In CS, the signal recovery problem from the observed data requires the solution of a sparse vector from an underdetermined system of equations. The underlying sparse signal recovery problem is quite general with many applications and is the focus of this talk. The main emphasis will be on Bayesian approaches for sparse signal recovery. We will examine sparse priors such as the super-Gaussian and student-t priors and appropriate MAP estimation methods. In particular, re-weighted l2 and re-weighted l1 methods developed to solve the optimization problem will be discussed. The talk will also examine a hierarchical Bayesian framework and then study in detail an empirical Bayesian method, the Sparse Bayesian Learning (SBL) method. If time permits, we will also discuss Bayesian methods for sparse recovery problems with structure; Intra-vector correlation in the context of the block sparse model and inter-vector correlation in the context of the multiple measurement vector problem.

Speaker’s Bio

Bhaskar D. Rao received the B.Tech. degree in electronics and electrical communication engineering from the Indian Institute of Technology, Kharagpur, India, in 1979 and the M.S. and Ph.D. degrees from the University of Southern California, Los Angeles, in 1981 and 1983, respectively. Since 1983, he has been with the University of California at San Diego, La Jolla, where he is currently a Professor in the Electrical and Computer Engineering department. He is the holder of the Ericsson endowed chair in Wireless Access Networks and was the Director of the Center for Wireless Communications (2008-2011). Prof. Rao’s interests are in the areas of digital signal processing, estimation theory, and optimization theory, with applications to digital communications, speech signal processing, and biomedical signal processing.


Prof. Rao has been a member of the Statistical Signal and Array Processing technical committee, the Signal Processing Theory and Methods technical committee, the Communications technical committee of the IEEE Signal Processing Society and is currently a member of the Machine learning for Signal Processing technical committee. He has also served on the editorial board of the EURASIP Signal Processing Journal and also as a technical member for several IEEE conferences.