

The Department of Electrical and Computer Engineering presents:

A DISTINGUISHED SEMINAR

PROFESSOR BHASKAR RAO



SCALE MIXTURE MODELING OF PRIORS FOR SPARSE SIGNAL RECOVERY

ABSTRACT

This talk will discuss Bayesian approaches to solving the sparse signal recovery problem. In particular, methods based on priors that admit a scale mixture representation will be discussed with emphasis on Gaussian scale mixture modeling. In the context of MAP estimation, iterative reweighted approaches will be developed. The scale mixture modeling naturally leads a hierarchical framework and empirical Bayesian methods motivated by this hierarchy will be highlighted. The pros and cons of the two approaches, MAP versus Empirical Bayes, will be a subject of discussion.

BIOGRAPHY

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 Distinguished 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.

Professor Rao was elected fellow of IEEE in 2000 for his contributions to the statistical analysis of subspace algorithms for harmonic retrieval. His work has received several paper awards; 2013 best paper award at the Fall 2013, IEEE Vehicular Technology Conference for the paper "Multicell Random Beamforming with CDF-based Scheduling: Exact Rate and Scaling Laws," by Yichao Huang and Bhaskar D Rao, 2012 Signal Processing Society (SPS) best paper award for the paper "An Empirical Bayesian Strategy for Solving the Simultaneous Sparse Approximation Problem," by David P. Wipf and Bhaskar D. Rao published in IEEE Transaction on Signal Processing, Volume: 55, No. 7, July 2007, 2008 Stephen O. Rice Prize paper award in the field of communication systems for the paper "Network Duality for Multiuser MIMO Beamforming Networks and Applications," by B. Song, R. L. Cruz and B. D. Rao that appeared in the IEEE Transactions on Communications, Vol. 55, No. 3, March 2007, pp. 618-630. (<http://www.comsoc.org/awards/rice.html>), among others. Prof. Rao is also the recipient of the 2016 IEEE Signal Processing Society Technical Achievement Award.

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