ECE Seminar

K. V. S. Hari

Professor
Department of Electrical and Computer Engineering
Indian Institute of Science, Bangalore, India

Tues. Oct. 22, 2019 @ 2 PM
8 St. Mary's Street, PHO 339
Faculty Host: Janusz Konrad
Light refreshments will be available
outside of 339 at 1:45 PM

FUSION FRAMEWORK FOR GREEDY PURSUIT ALGORITHMS IN SPARSE SIGNAL PROCESSING

Abstract: The talk will address the problem of solving an underdetermined system of linear equations where the unknown vector is assumed to be sparse. A brief overview of popular greedy pursuit algorithms, for solving the sparse recovery problem, like Orthogonal Matching Pursuit (OMP), Subspace Pursuit (SP) will be presented. It has been observed that the performance of these greedy pursuit algorithms depends on the nature of the elements of the sparse vector. Motivated by this, a fusion framework is proposed, which employs multiple sparse reconstruction algorithms to improve the performance. Examples of such fusion algorithms are FACS, COMMACS. Further, an iterative framework (IFSRA), to improve the performance of any arbitrary sparse reconstruction algorithm using subspace properties will be presented. A theoretical analysis, based on the RIP properties of the measurement matrix, of the proposed schemes and conditions for performance improvement will be presented, supported by numerical simulations.

Bio: K. V. S. Hari is a Professor in the ECE Department, Indian Institute of Science, Bangalore. He holds a PhD degree (Systems Science) from UC San Diego and has been a visiting faculty at Stanford University and an Affiliate Professor at KTH - Royal Institute of Technology, Stockholm. His research interests are in signal processing with applications to 5G wireless communications, radar systems, indoor positioning, autonomous vehicles, neuroscience and affordable MRI systems. He is a co-author of the IEEE 802.16 standard on wireless channel models. He was an Editor of EURASIP's Signal Processing (2006-16) and is currently the Chief Editor (Electrical Sciences) of Sadhana, the journal of the Indian Academy of Sciences published by Springer. He is a Fellow of the Indian National Academy of Engineering, a Fellow of IEEE and a member of the Board of Governors, IEEE Signal Processing Society.

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