Journal Watch

IEEE Transactions on Signal Processing, Vol 61, No. 11 (Jun 2013).

Sanjeev G.
SPC Lab,
Dept. of ECE, IISc.

22 May 2010

Optimal Wireless Communications With Imperfect Channel State Information

Y. Hu and A. Ribeiro
University of Pennsylvania

- Problem : Maximizing the ergodic throughput s.t. average power constraints with imperfect CSIT
- Point-to-point block fading channels, multiuser downlink OFDM, multiuser uplink random access channels
- Joint optimization of power allocations and back-off functions is non-convex, with infinitely many variables
- Propose a dual problem which is finite dimensional and convex
- Iterative algorithms are proposed

Analysis of Sum-Weight-Like Algorithms for Averaging in Wireless Sensor Networks

F. Iutzeler, P. Ciblat, and W. Hachem
Institut Mines-Telecom, Telecom ParisTech

- Problem : Average of the initial measurements of the sensors in a ad-hoc wireless network
- Existing methods : Random Gossip, and Sum-Weight algorithms
- Exploit the broadcast nature of the wireless channels, without feedback
- Contributions :
  - Convergence speed analysis of sum-weight class (sum-weight-like algorithms)
  - Necc. and suff. conditions for convergence
  - A new algorithm that outperforms existing ones

Variational Bayesian Algorithm for Quantized Compressed Sensing

Zai Yang, Lihua Xie, and Cishen Zhang
School of Electrical and Electronic Engineering, NTU Singapore, and
Engineering and Industrial Sciences, Swinburne University of Technology, Australia

- Problem : Performance study of VMP under Bayesian framework with quantized observations
- Prior works (which include modifications on BPDN) have several disadvantages
- Quantization errors are modeled as uniform r.v.s, and a three layer prior is used for sparsity
- Both multibit and 1-bit quantization are studied

Identifying Infection Sources and Regions in Large Networks

W. Luo, W. P. Tay, and M. Leng
Nanyang Technological University

- Problem : Estimation of infected sources and their "infection regions"
- Given information : susceptible infection model, infected nodes and their connections
- For a tree network with two infection sources $\Rightarrow \mathcal{O}(n^2)$
- For a general graph with $k_{\max}$ infection sources, an estimation procedure is given and performance study is done through simulations
- Testing the proposed estimators on real data (SARS outbreak, cascading power outage)

On Projection Matrix Optimization for Compressive Sensing Systems

G. Li, Z. Zhu, D. Yang, L. Chang, and H. Bai
Zhejiang University of Technology, China, and Colorado School of Mines

Transmit Optimization With Improper Gaussian Signaling for Interference Channels

Y. Zeng, C. M. Yetis, E. Gunawan, Y. L. Guan, and R. Zhang
Nanyang Technological University, Mevlana University, and National University of Singapore