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Active Classification for POMDPs: A Kalman-Like State Estimator

Authors: Daphney-Stavroula Zois, Marco Levorato and Urbashi Mitra

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- Problem of tracking an unknown process in an uncertain environment by adaptively exploiting available heterogeneous resources
 - ▶ System state modeled by a finite-state DMC
 - ▶ System state is hidden; observed via a measurement vector
 - ▶ Conditionally Gaussian model where mean and cov. depend on the underlying state and the chosen control mode
 - ▶ Considered the joint problem of
 - ★ Determine MMSE system state estimator (past obs. and controls)
 - ★ Optimal control strategy
- Contributions
 - ▶ Derive a “Kalman type” sub-optimal filter for state estimation
 - ★ Based on innovations representation of system model
 - ★ Approximation to force recursivity
 - ▶ Derive a dynamic programming algorithm for control policy

Semi-Blind Interference Alignment Techniques for Small Cell Networks

Authors: Furkan Can Kavasoglu, Yichao Huang and Bhaskar D. Rao

UCSD

- Practical alg. for Interference Alignment (IA) in a clustered, small cell n/w
- Starting point: Blind IA algorithm (Wang, Guo and Jafar)
 - ▶ Reconfigurable Ant.: Dynamically change characteristics by changing geometry
 - ▶ Selfish Ant. Switching Vs Blind Ant. switching: Useful for Blind IA
 - ▶ No CSIT, No Tx Coop. required for IA;
 - ▶ No CSIR reqd. for ant. switching
- Contributions
 - ▶ BIA extended to handle inter-cell interference
 - ★ BIA is much more suited to small cell, clustered BS environments
 - ▶ BIA extended to Semi-BIA by using user location information (Path loss etc.)
 - ★ Extending BIA to users from higher interference BSs

Two-Part Reconstruction With Noisy-Sudocodes

Authors: Yanting Ma, Dror Baron and Deanna Needell

NCSU (Raleigh) and CMC (Claremont)

- CS-reconstruction framework
- Trade-off between runtime and reconstruction quality
- Two part reconstruction framework
 - ▶ Part 1: Fast Alg. to recover part of coefficients (Zero Coefficients)
 - ★ Sparse boolean matrices used for Part 1
 - ★ Group testing based recovery algorithms used to identify zeros
 - ▶ Part 2: Process/Recover remaining coefficients
 - ★ Can use Least squares Or regular CS recovery alg (e.g., AMP)
- Contributions
 - ▶ Extended the algorithm for noisy observations in Part 1
 - ★ Thresholding based zero-identification criteria
 - ▶ Analysis to compute MSE for the whole algorithm

Distributed Stochastic Online Learning Policies for Opportunistic Spectrum Access

Authors: Yi Gai and Bhaskar Krishnamachari
Intel, USC@LA

Time-Frequency Analysis as Probabilistic Inference

Authors: Richard E. Turner and Maneesh Sahani
Univ. of Cambridge and University College London

Adaptive Non Orthogonal MFSK

Authors: Aniruddha Das and Bhaskar D. Rao
ViaSat and UCSD

A Primal Dual Active Set Algorithm With Continuation for Compressed Sensing

Authors: Qibin Fan, Yuling Jiao, and Xiliang Lu
Wuhan Univ. China