Journal Watch:

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- **Accurate Localization of a Rigid Body Using Multiple Sensors and Landmarks**

  Authors: Shanjie Chen, K. C. Ho

- Given the distance measurements and the relative sensor positions, obtain the rotation matrix and the translation vector.
- DAC Approach (Preliminary Step + Refinement)
- Closed form solution for preliminary update. Correction terms (additive for translation, multiplicative for rotation) solved during refinement step.
- For stationary rigid body localization, improved solutions were obtained. For moving rigid body localization, closed form solutions are obtained for rotation matrix, translation vector, angular and translation velocities.
- Performance of the proposed methods approach CRLB under Gaussian noise over the small error region.

- **Improving M-SBL for Joint Sparse Recovery Using a Subspace Penalty**

  Authors: Jong Chul Ye, Jong Min Kim, Yoram Bresler

- To show the relationship between M-SBL and subspace-based hybrid greedy algorithms (like CS-MUSIC, SA-MUSIC) (Heuristically proved by Wipf et al).
- New Interpretation of the M-SBL Penalty: M-SBL penalty term interpreted as sum of two non-convex rank surrogates which can be considered as a non-separable approximation of ℓ_0 norm
- Subspace-Penalized Sparse Learning (SPL)
  - M-SBL penalty replaced by a Schatten p-quasi norm rank surrogate
  - Implemented using an alternating minimization method.
  - As p $\rightarrow$ 0, the global minimizer is equivalent to the global minimizer of the ℓ_0 MMV cost function
  - SPL updates similar to those of M-SBL except for the parameter updates which contributes to the performance improvement of SPL over M-SBL

- **Optimal Parameter Estimation Under Controlled Communication Over Sensor Networks**

  Authors: Duo Han, Keyou You, Lihua Xie,
  Junfeng Wu, Ling Shi

- Scenario
  - Sensors collect the measurements and should transmit the measurements to the estimator optimally
  - Optimality Criteria: Transmission Rate and Estimation Quality
- Design a stochastic scheduling policy for the transmission rate constrained problem with two new design parameters. Optimization problem formulation wrt the design parameters to find the optimal trade off balance.
- Sensor generates a Bernoulli random variable with the probability of success depending on the design parameters to determine whether to transmit the measurement to the sensor or not. ML estimators obtained based on the information set at the estimator side.
- Design the parameters in the policy to obtain an optimal trade off between the transmission rate and the estimator performance. Estimator's CRLB and lower, upper bounds on the average transmission rates used to design the parameters.
- Parameter Estimation under constrained transmission rate with priori knowledge. MAP Estimator derived.

- **Discrete Signal Processing on Graphs: Sampling Theory**

  Authors: Siheng Chen, Rohan Varma,
  Alikaksei Sandryhaila, Jelena Kovacevic

- Contributions
  - Signal Processing on Graphs extends classical discrete signal processing to signals (modeled as graph signals) with a complex, irregular structure (modeled as a graph)
  - A novel framework for sampling a graph signal
  - A novel approach for sampling a graph by preserving the first-order differences in the original graph signal
  - A novel approach for designing a sampling operator on graphs
- $DSP_G \, G = (\nu, A)$
  - Graph Shift - Adjacency Matrix
  - Graph Signal - Map on the graph nodes that assigns a signal coefficient to a node
  - Graph Fourier Transform - Eigen basis of the graph shift
  - Sampling Theory for Graph Signals
    - Concept of bandwidth for a graph signal
    - Theorem for perfect recovery of sampled graph signals (Conditions on the sampling and interpolation operators)
    - Theorem to prove that sampled graph coefficients form a new graph signal
  - Applications: Semisupervised learning (Sampling Online Blogs and Classification for Handwritten Digits)

Other Interesting Papers

- ℓ_1-Constrained Normalized LMS Algorithms for Adaptive Beamforming
- Binary Compressive Sensing Via Analog Fountain Coding
- Hardware Impairments Aware Transceiver for Full-Duplex Massive MIMO Relaying
- Reduced Interference Sparse Time-Frequency Distributions for Compressed Observations
- Bayesian Estimation in the Presence of Deterministic Nuisance ParametersPart I: Performance Bounds
- Bayesian Estimation in the Presence of Deterministic Nuisance ParametersPart II: Performance Bounds