Non-convex shrinkage/thresholding of group sparse signals

Group-Sparse Signal Denoising: Non-Convex Regularization, Convex Optimization
Po-Yu Chen and Ivan Selesnick
IEEE Transactions on Signal Processing, vol.62, no.13, pp. 3464-3478, July 1, 2014.
Preprint: http://arxiv.org/abs/1308.5038
Web: http://eeweb.poly.edu/iselesni/ncogs/

Software version: 5

This algorithm performs group-sparse thresholding. The algorithm is intended for denoising signals that posses a group sparse structure. The approach is based on overlapping group sparsity (OGS). Although the regularizer is non-convex, it is constrained such that the total cost function is convex. The comparison to convex-regularized OGS demonstrates the improvement obtained by non-convex regularization.

Matlab programs for non-convex OGS

- ogs1.m: OGS for 1D signals
- ogs2.m: OGS for 2D signals
- ogs3.m: OGS for 3D signals

Examples in Matlab

- Example 1 Signal denoising using 1D OGS
- Example 2 Speech enhancement using 2D OGS in time-frequency (spectrogram) domain.
- Example 3 Denoising group-sparse 3D data

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