Readme

Version 1.1, 15-March-2017.

This package contains the MATLAB implementation of the IHT and FIHT algorithms for (multi-dimensional) spectrally sparse signals presented in the paper:

Cai, J. F., Wang, T., & Wei, K. (2016). Fast and Provable Algorithms for Spectrally Sparse Signal Reconstruction via Low-Rank Hankel Matrix Completion. arXiv preprint arXiv:1606.01567.

This implementation has been tested with MATLAB 8.3.0.532 (R2014a) on a MacBook.

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Use of this package is free for research purposes only.

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Main routines

generate_signal: generates simulated (multi-dimensional) spectrally sparse signals, w or w/o separations between the frequencies, w or w/o damping.

IHT_1D, IHT_2D, IHT_3D: iterative hard thresholding algorithm for 1D, 2D, 3D signals.

FIHT_1D, FIHT_2D, FIHT_3D: fast iterative hard thresholding algorithm for 1D, 2D, 3D signals.

Please see their own documentation for usages and examples.

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Demo

Please check demo.m for demonstrations of usages.

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Acknowledgement

We need the PROPACK package for fast SVD calculations and we obtained it from http://svt.stanford.edu/code/. After decompression, users could run install_mex.m in the PROPACK folder to install this package.