Readme

This package contains the MATLAB implementation of the Projected Gradient Descent (PGD) algorithm for recovering (multi-dimensional) spectrally sparse signals via low rank (multi-level) Hankel matrix completion presented in the paper:

Cai, J. F., Wang, T., & Wei, K. (2017). Spectral Compressed Sensing via Projected Gradient Descent. arXiv preprint arXiv:1707.09726.

Last modified: 9-Sep-2017.

Please email tianming-wang@uiowa.edu for bug report and other suggestions.

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Use of this package is free for research purposes only.

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Main routines

fhmvmultiply: fast (multi-level) Hankel matrix vector multiplication via FFT.

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

ProjGD_1D, ProjGD_2D, ProjGD_3D: projected gradient descent algorithm for 1D, 2D, 3D signals.

Please see their own documentation for usages.

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Demo

Please check demo.m for demonstrations of usages.

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Acknowledgement

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