Low-rank plus sparse (L+S) reconstruction of undersampled dynamic MRI data

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The Matlab programs in this package implement the L+S reconstruction for undersampled dynamic MRI described in the paper:

Otazo R, Candes E, Sodickson DK. Low-rank and sparse matrix decomposition for accelerated dynamic MRI with separation of background and dynamic components. Submitted to Magnetic Resonance in Medicine (original version: June 2013, revised version: September 2013).

Examples with Cartesian and golden-angle radial data sets are included.

Core functions

lps_ist   L+S reconstruction using iterative soft-thresholding of singular values of L and entries of TS, where T is any invertible sparsifying transform

lps_tv   L+S reconstruction using iterative soft-thresholding of singular values of L and minimization of temporal total variation of the entries of S

Examples

example1_cardiac_perf   L+S reconstruction of undersampled Cartesian cardiac perfusion MRI using temporal FFT as sparsifying transform for S

example2_cardiac_cine   L+S reconstruction of undersampled Cartesian cardiac cine MRI using temporal FFT as sparsifying transform for S

example3_abdomen_dce   L+S reconstruction of golden-angle radial abdominal DCE-MRI using temporal TV as sparsifying transform for S