fMRI-Sparse toolbox for Matlab

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The ASSURANCE project is about developing new state-of-the-art algorithms for sparsity-aware distributed models, mainly for Machine Learning in fMRI data decomposition/analysis and in telecommunications.

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There are several currently running code and data development side-projects linked with the main ASSURANCE project. These are some of the resources I have personally developed and can publish here as-is (read the licensing info included).

 fMRI-Sparse toolbox is a minimalistic collection of low-level data handling (matrix) functions for fMRI processing, block-based & event-based test pattern series, as well as "realistic" simulated fMRI data series for algorithm benchmarking, template scripts for various fMRI decomposition methods (GLM, PCA, ICA, BP, KSVD, ...), analysis of components & activation maps, etc. Since the toolbox can be used as a benchmarking suite, several data generators are included for creating fully-identifiable fMRI-like data series.

The main implementation platform is Matlab , currently using toolboxes from versions 8.0+ (releases R2012b and above), e.g. the Basis Pursuit algorithms from Wavelet Toolbox. However, with some small conversions in the source codes, the main functions should be fully runnable with other Matlab-compatible platforms like
Octave (GNU)
. Also, there are some external codes and toolboxes required to run some methods (e.g. fastICA), which too can be substituted by other similar packages if necessary.

Please note that these resources are under continuous development and updates (beta versions), so some features may not yet be fully implemented or stable.

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