Resource Summary Report

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FMRLAB

RRID:SCR_005164
Type: Tool

Proper Citation

FMRLAB (RRID:SCR_005164)

Resource Information

URL: http://sccn.ucsd.edu/fmrlab/index.html

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Description: A Matlab toolbox for fMRI data analysis using Independent Component Analysis (ICA). It provides an integrated environment to manage, process and analyze fMRI data in a single framework so that users can complete the analysis without switching between software. In addition, it provides an interactive Matlab graphic user interface (GUI). All the necessary processes to apply ICA to fMRI data and review its results can be run from the graphic interface. The FMRLAB processing flow is straightforward. Custom analyses can be performed with Matlab scripts using the FMRLAB functions and data structure. Since fMRI data analysis is a complex enterprise, including digital image processing, statistical analysis and data visualization, an integrated framework combining processing elements is desired eagerly by users in the neuroimaging community. Recently, large number of software tools for data analysis and visualization have been developed for this purpose. However, most of these tools use model-based statistical methods which assume that the users know the hemodynamic response (HR) for their paradigm in advance and can specify a reasonable HR model. Often, however, accurate or reasonable response HR models are unavailable. An alternative data-driven method, infomax ICA (McKeown et al., 1998), does not require that an a priori HR model, instead deriving HRs of spatially independent components of the entire data set from the higher-order statistics of the data themselves. FMRLAB is a toolbox running under Matlab containing necessary components for data-driven fMRI data analysis using the highly reliable infomax ICA algorithm (Bell & Sejnowski, 1995), normalized (Amari, 1999), extended (Lee, Girolami and Sejnowski, 1999) and automated by Makeig et al. FMRLAB has been developed under Matlab 6.1 running on Red Hat Linux. FMRLAB Features * Graphic user interface * Flexible data importing * Interactive data plotting * Computationally efficient * Defined FMRI data structure * Independent component browser * Smooth, transparent component exporting and spatial normalization process * Interface with other software for further analysis or visualization. * SPM-style

component plots (MIP, 2-D slice overlay and 3-D)

Abbreviations: FMRLAB

Resource Type: software resource, software application, data processing software

Keywords: fmri, fmr lab, anatomy, brain mapping, data analysis, independent component analysis, neuroimaging, image processing, statistical analysis, data visualization, matlab

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Resource Name: FMRLAB

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Alternate IDs: nif-0000-00077

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Ratings and Alerts

No rating or validation information has been found for FMRLAB.

No alerts have been found for FMRLAB.

Data and Source Information

Source: SciCrunch Registry

Usage and Citation Metrics

We found 3 mentions in open access literature.

Listed below are recent publications. The full list is available at NIF.

Xu K, et al. (2020) Dynamic brain connectivity attuned to the complexity of relative clause sentences revealed by a single-trial analysis. NeuroImage, 217, 116920.

Foucher JR, et al. (2018) Multi-parametric quantitative MRI reveals three different white matter subtypes. PloS one, 13(6), e0196297.

Soares JM, et al. (2016) A Hitchhiker's Guide to Functional Magnetic Resonance Imaging. Frontiers in neuroscience, 10, 515.