The R-fMRI Maps Project

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Deconstructed, parsed, and diagnosed.
A hypothalamic exploratory functional MRI-guided disease model might deconstruct traditional symptom-based categories. Patients with a range of symptoms are found to be in several distinct categories of disease etiology and management factors.

Symptom-based categories

- Major depressive disorder
- Subthreshold depression
- Manic episodes
- Obsessive-compulsive disorder

Insel and Cuthbert 2015. Science

Biotypes in Depression

Drysdale et al., 2016. Nat Med

The R-fMRI Maps Project

已共享4770名被试数据,包括:
1. Amplitude of low frequency fluctuations (ALFF)
2. Fractional ALFF (fALFF)
3. Regional Homogeneity (ReHo)
4. Voxel-mirrored homotopic connectivity (VMHC)
5. Degree Centrality (DC)
6. 功能连接矩阵
   a. Automated Anatomical Labeling (AAL) atlas
   b. Harvard-Oxford atlas
   c. Craddock’s clustering 200 ROIs
   d. Zalesky’s random parcellations
   e. Dosenbach’s 160 functional ROIs

此外,也共享灰质(GM)、白质(WM)和脑脊液(CSF)密度与体积图像.

Outline

- Data Preparation
- Standardized Preprocessing
- Quality Control
- Data Upload

1. Data Preparation
2. Standardized Preprocessing
3. Quality Control
4. Data Upload
Data Organization

ProcessingDemoData.zip

**FunRaw**
- Sub_001
- Sub_002
- Sub_003

**T1Raw**
- Sub_001
- Sub_002
- Sub_003

Functional DICOM data
Structural DICOM data

http://rfmri.org/DemoData

Data Organization

ProcessingDemoData.zip

**FunImg**
- Sub_001
- Sub_002
- Sub_003

**T1Img**
- Sub_001
- Sub_002
- Sub_003

Functional NIfTI data (.nii.gz., .nii or .img)
Structural NIfTI data (.nii.gz., .nii or .img)

Data preparation

Arrange each subject’s fMRI DICOM images in one directory, and then put them in “FunRaw” directory under the working directory.

Subject 1’s DICOM files FunRaw directory, please name as this

Subject 1’s directory

Working directory

Data preparation

Arrange each subject’s T1 DICOM images in one directory, and then put them in “T1Raw” directory under the working directory.

Subject 1’s DICOM files T1Raw directory, please name as this

Subject 1’s directory

Working directory
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Resting State fMRI Data Processing

Template Parameters

Preprocessing and R-fMRI measures Calculation

This step could improve the accuracy in coregistration, segmentation and normalization, especially when images had a bad initial orientation. Also can take as a QC step.
Display the mean image after realignment. (Could take this step as a QC procedure.)

QC scores and comments are stored at (WorkDir)/QC

Motion artifact  Ghost  Chemical shift artifacts

Aliasing artifacts  Spikes (single peak in k-space)  Zipper

Metal / decoration or hair gel

Ghost  Inhomogeneity

Bad coverage  Not good coverage

Courtesy of Dr. Rui-Wang Huang
Quality Control

Outline

• Data Preparation
• Standardized Preprocessing
• Quality Control
• Data Upload
Data Upload

1. FTP: lab.rfmri.org; username: ftpupload; password: FTPUpload. E.g., FileZilla

2. 网盘

3. QQ 邮箱超大附件

Send an email to rfmrilab@gmail.com to let us know, together with the phenotypic table.

Further Help

http://rfmri.org/Course

The R-fMRI Journal Club

Official Account: RFMRILab

DPABI特训营与DPABISurf加强营

第六届DPABI/DPARSF特训营
暨DPABISurf加强营通知
中国·北京 2019.10.26～10.28

定期举办，请关注http://rfmri.org
深度特训与数据分析

DPABISurf工作站

DPABi计算工作站

The R-fMRI Lab

静息态功能磁共振成像数据分析

从SPM到深度特训平台，为数百万次的深度特训提供了表观高通量的表观高通量深度特训，及深充满的深度特训。深度特训将对深度特训的结果进行深度特训。

静息态功能磁共振成像深度数据分析

DPABISurf工作站

DPABi计算工作站

The R-fMRI Lab

深度特训与数据分析

DPABISurf工作站

DPABi计算工作站

The R-fMRI Lab

DPABISurf并行计算:

每天完成20个被试的皮层计算!!!

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