A MARBILab – G1 Report

G1
Sapienza University of Rome
Department of Physics
Piazzale Aldo Moro, 5
00185 Rome. IT
Phone: +39 06 49913928 +39 06 51501527
Fax: +39 06 49913928 +39 06 51501528
http://lab-g1.phys.uniroma1.it

from MNI vector / mask to labels of fsl atlases

Daniele Mascali

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Version 1.0

Introduction

The function takes in input a ROI or a vector of coordinate (both in the MNI space) and returns labels from different fsl atlases.
Script is located in the folder:
Z:\script\mni2atlas\mni2atlas.m

Problem Statement

It can be useful to fast detect which anatomical region is in a MNI vector or of which anatomical region a MNI roi is composed.

Previous Options

You can identify a vector position using fsl atlas tool or you can use the "where am I " function of afni.
On the contrary, at the best of my knowledge, it is not possible to find the anatomical composition of a roi.

Solution

A MATLAB function loads almost all fsl atlases and use them to perform anatomical identification on vector/roi.
For VECTOR input labels are returned in probability values (same results of fsl atlas tool).
For roi input the probability value reported for a label represents the frequency of that label in the roi for a given threshold of fsl atlas probability map.

Benefit 1

Fast way to identify a MNI region in MATLAB. If an output is specified the function saves labels in an array of structure that can be used in a second time.

Benefit 2

It allows to identify of which anatomical structure a roi is composed.

Usage

mni2atlas(VECTOR/ROI) the first input can be a MNI vector or a ROI in the MNI space. Depending on the input the script switch between two different work modality. With no other input the script will seek labels among all accessible fsl atlases.

mni2atlas(VECTOR/ROI,ATLAS_SELECTOR) allow to choose between the following atales:

1) Juelich Histological Atlas

2)Harvard-Oxford Cortical Structural Atlas

3)Harvard-Oxford Subcortical Structural Atlas

4) JHU ICBM-DTI-81 White Matter labels

5) JHU White Matter tractography Atlas

6) Oxford Thalamic Connectivity Atlas

7) Cerebellar Atlas in MNI152 after FLIRT

8) Cerebellar Atlas in MNI152 after FNIRT

ATLAS_SELECTOR must be a raw vector (e.g. [1,3,6]). Default value is [1:1:8].

[ATLAS]=mni2atlas(VECTOR/ROI,...) the script returns the structure ATLAS whit the following fields: .name (of the atlas), .labels (a cell vector). No stout will be print.

mni2atlas(VECTOR) prints on screen labels found for the mni VECTOR position.

mni2atlas(ROI) prints on screen labels found for the input ROI. ROI can be a preloaded (with load_nii) volume or the path of a nifti volume.

See help for better information and advanced options.

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