

Brainnetome Atlas Viewer: A Visualization Tool for Brainnetome Atlas

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1 Introduction

Brainnetome atlas based on connectional architecture is an anatomical reference for brain researches [1]. This atlas provides not only the refined parcellations of human brain but also the connectivity pattern, included both the functional connectivity and the structural connectivity, of a specific brain region. Given a wealth of information by Brainnetome atlas, it is important to develop an easy-to-use and efficient toolkit for two and/or three dimensional visualization of the specific brain region and the connectivity information simultaneously. Here, we developed a MATLAB toolkit, called Brainnetome Atlas Viewer, with a Graphical User Interface (GUI), to provide a flexible visualization platform for Brainnetome atlas.

3 Example

For demonstrating the function of Brainnetome atlas Viewer, we took the parcellated left frontal pole as an example [2]. The initial interface was showed in Fig 2. We selected the left medial frontal pole(LFPm) as the specific region to show the connectivity pattern in two & three dimensions (Fig 3 and Fig 4). The PM of the LFPm was showed in Fig 5.

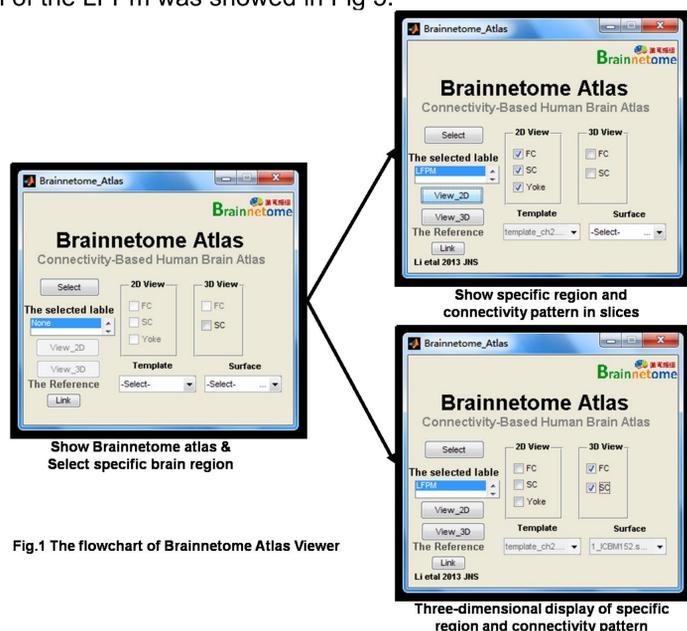


Fig.1 The flowchart of Brainnetome Atlas Viewer

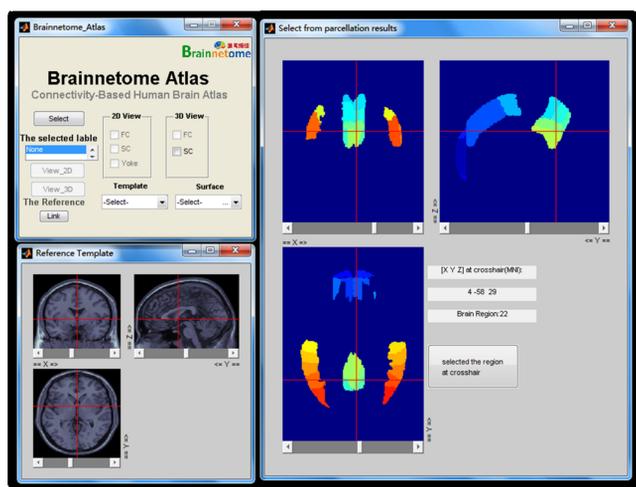


Fig.2 The initial interface of Brainnetome Atlas Viewer

4 Conclusion

Brainnetome atlas could help researchers to describe the locations of the activation and connectivity in the human brain more accurately. Here, we have developed Brainnetome Atlas Viewer as free software for visualizing the brainnetome atlas. The toolkit could demonstrate the brainnetome atlas in an easy-to-use way, which will be made freely available for download via <http://atlas.brainnetome.org>.

2 Basic Environment & Function

- Software Environment: only the core version of MATLAB 7.6.0.
- Basic Function:
 - An easy-to-use interface (Fig 1), including the options for visualization of the atlas.
 - Showing the whole atlas (maximum probabilistic map, MPM).
 - Providing the probabilistic map (PM) for each region.
 - Demonstrating functional/structural connectivity in two/three dimension.
 - Linking to the published papers about the specific region if any.

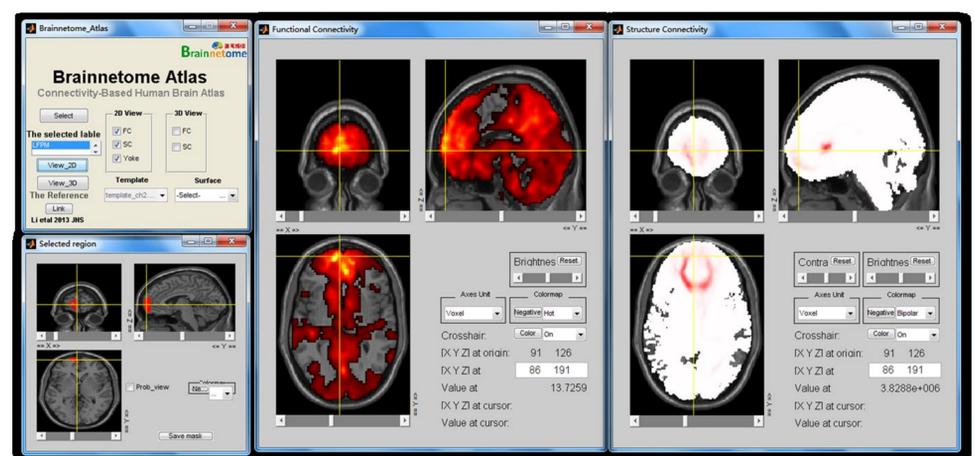


Fig.3 Showing the left medial frontal pole and the corresponding connectivity pattern in two dimensions

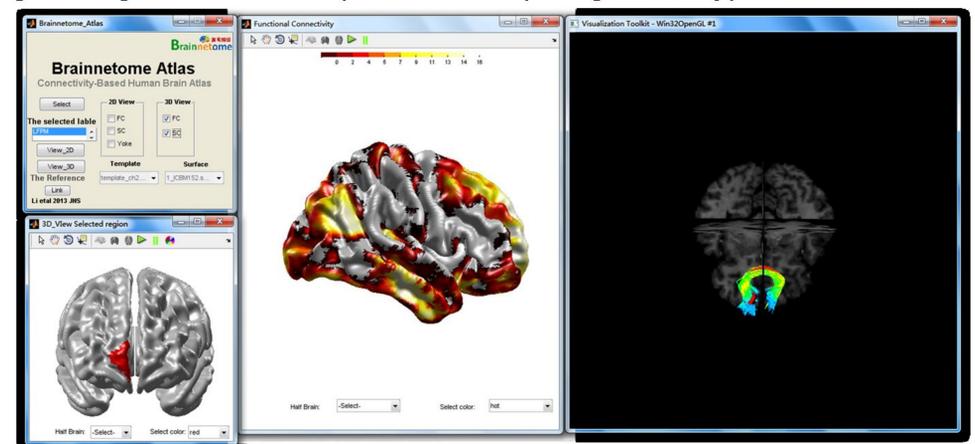


Fig.4 Showing the left medial frontal pole and the corresponding connectivity pattern in three dimensions

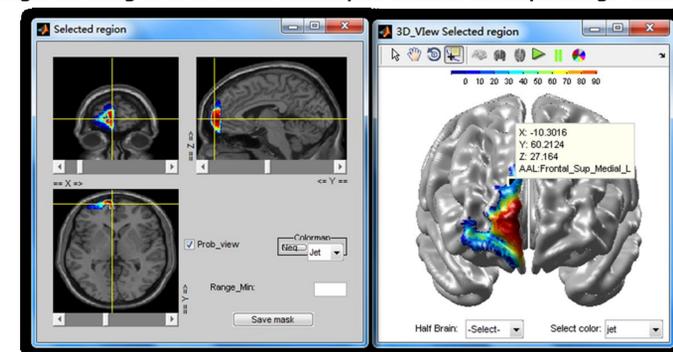


Fig.5 Showing the probabilistic map of left medial frontal pole



<http://atlas.brainnetome.org>

5 References

1. Jiang, T. (2013). Brainnetome: a new-ome to understand the brain and its disorders. *NeuroImage*, 80, 263-272.
2. Liu, H et al. (2013). Connectivity-Based Parcellation of the Human Frontal Pole with Diffusion Tensor Imaging. *The Journal of Neuroscience*, 33(16): 6782-6790.