Supplementary material

Web page http://www.3dbar.org/wiki/barServiceSupplement contains the most recent versions of supplementary materials for the article:

3D Brain Atlas Reconstructor service - online repository of three-dimensional models of brain structures

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ABSTRACT

Brain atlases are important tools of neuroscience. Traditionally prepared in paper book format, more and more commonly they take digital form which extends their utility. To simplify work with different atlases, to lay the ground for developing universal tools which could abstract from the origin of the atlas, efforts are being made to provide common interfaces to these atlases. 3D Brain Atlas Reconstructor service (3dBARs) described here is a repository of digital representations of different brain atlases in CAF format which we recently proposed and a repository of 3D models of brain structures. A graphical front-end is provided for creating and viewing the reconstructed models as well as the underlying 2D atlas data. An application programming interface (API) facilitates programmatic access to the service contents from other websites. From a typical user's point of view, 3dBARs offers an accessible way to mine publicly available atlasing data with a convenient browser based interface, without the need to install extra software. For a developer of services related to brain atlases, 3dBARs supplies mechanisms for enhancing functionality of other software. The policy of the service is to accept new datasets as delivered by interested parties and we work with the researchers who obtain original data to make them available to the neuroscience community at large. The functionality offered by the 3dBARs situates it at the core of present and future general atlasing services tying it strongly to the global atlasing neuroinformatics infrastructure.

Following supplementary materials are available:

1. Documentation of the Application Programming Interface (API)
2. Tutorials:
   - How to access the Custom Reconstruction Wizard?
   - How to use labeled volumes available at 3dBAR on-line service website?
   - Using atlas data with a result of a realistic neural network simulation.
   - Recommended software.
3. Screencasts:
   - The complete playlist:
   - Selecting an atlas,
   - Displaying atlas details,
   - Switching the atlas,
   - Browsing atlas slides,
   - 3D model preview,
   - Browsing reconstructed models,
   - Requesting a custom reconstruction,
   - Using the user panel,
   - Other features of 3D model preview,

♦ Requesting a composite custom reconstruction.
4. Troubleshooting

Reproducing results from the article

| **Figure 3** | **Figure 4** | **Figure 5** |
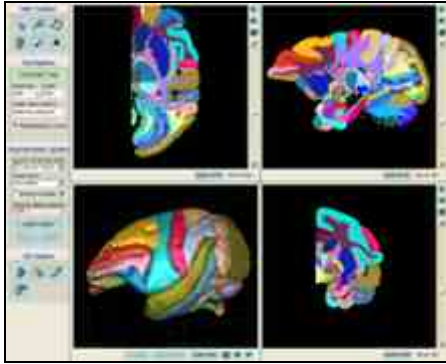
Reproducing Figure 3:
Labeled volume of Macaque's brain (Bowden et. al. 2003) loaded into ITK-SNAP (Yushkevich et. al. (2006).

Reproducing Figure 4:
Models of structures from the Allen Mouse Brain Reference Atlas (http://mouse.brain-map.org/):

- brain stem,
- cerebellum,
- cerebral nuclei,
- cerebral cortex.

The output from the Custom Reconstruction Wizard according to settings from Figure 5:

- VRML scene,
- PNG image,
- reconstruction job tracking page.