EVENT ABSTRACT

« **Back to Event**

Mindboggle 2 interface: online visualization of extracted brain features with XTK

Arno Klein[1*], Nolan Nichols[2] and Daniel Haehn[3]

[1] Columbia University, United States
[2] Washington University, United States
[3] Children's Hospital Boston, United States

Abstract Info

Abstract

Export Citation ▼

The Authors in

Frontiers ▼

Google ▼

Google Scholar ▼

PubMed ▼

Related Article

in Frontiers

Google Scholar

PubMed

The Mindboggle project (http://www.mindboggle.info) automates anatomical brain labeling, feature extraction and identification, and shape analysis of brain regions and features. This generates a lot of data, which presents a challenge for visualization and comparison across brains. In the past, it would have been untenable to present rich, three-dimensional data interactively and online within a web browser, but recent developments in WebGL libraries have made it possible. XTK (http://www.goxtk.org) is the first WebGL library geared towards 3D medical imaging data. We demonstrate a web interface to the Mindboggle data, database, and software with interactive visualizations of manually and automatically labeled brain regions and hierarchical features using XTK. We also demonstrate depth, curvature, and other map visualizations that provide an intuitive means of displaying the distribution of shape indices on our features and labeled regions that would otherwise be lost in an aggregate measure in a table. This display can provide insight into local contributions to, for example, morphometric measures ("the superior posterior portion of the angular gyrus has greater Gaussian curvature in group 2..."). The data consist of surface mesh patches and curves in visualization toolkit format (http://www.vtk.org), and are read from the Mindboggle database as JSON-encapsulated XTK objects. These objects are "WebGL-ready," meaning that they can be immediately visualized without further processing or file parsing.

We intend for the Mindboggle interface to provide an example of the benefits of using a web browser as a platform for visualizing data (ease of development, maintenance, and deployment), and of interactivity conferred by XTK (greater freedom to explore and present data). Moreover, both the Mindboggle and XTK projects are available as freely available open source software with sample data and are driven by an active research and development community.

Back to top ▲