

Functional Neuroimaging visualization over surfaces (BRainbow)

This software system (BRainbow) visualizes functional neuroimages over surfaces extracted from anatomical images. BRainbow is able to display (always in 3D) topographic maps (ERP maps obtained with any montage) , surface fields (calculated tomographies over surfaces), NIRs (Near InfraRed spectroscopy) maps, connectivity maps as well as fiber tracking information from diffusion MRI. The system can load and display also MRI studies (anatomical) in conjunction with the functional data. Additional surfaces and different geometric objects can be displayed too.

The system was developed for the Windows platform and is a multiple document interface (MDI) application able to work with several studies simultaneously. Functional data can be loaded in NEURONIC formats as well as ASCII files.

Several scale types, color palettes and plot modes are available for improving image interpretation. It is possible also to carry out spatial and temporal movies in AVI format of the functional data.

BRainbow supports three different mapping modes: color, isocontour and a combination of them (from left to right). The system's implementation is based on the OpenGL standard allowing rotation, zooming and panning in real time

When the individual MRI is not available for extracting the surface for a given subject (right), BRainbow can use an average surface (left) for displaying 3D topographic maps.

BRainbow can visualize also NIRs (Near InfraRed spectroscopy) images (left) as well as

electrical/magnetical tomography calculated over cortex surface (right). BRainbow is able to load and visualize surfaces in SRX format, the output surface proprietary format of iMagic system. With iMagic it is possible to extract surfaces from anatomical MRI for its use in BRainbow.

In BRainbow is possible to display simultaneously several surfaces at once as well as orthogonal planes (axial, coronal and sagittal) from MRI studies. When dealing with multiple surfaces different colors and transparency settings can be applied in order to improve visualization. Another feature included in Brainbow allows to set geometric objects (cubes, spheres, cones, pipes and arrows) for signaling specific spots in the 3D image.

Fiber tracking information extracted from diffusion MRI studies can be displayed also in BRainbow. Different BRainbow controls (colors and transparency for surfaces and colors, colors and size for fiber bundles as well as visibility) can be used for composing the final image as shown in the right figure.

Connectivity graphs are another information type that can be displayed in BRainbow. The connectivity links can be scaled in a similar way to the functional information (topographies and tomographies).

Fuente:

<http://www.neuronicsa.com/modulos/producto/brainbow.htm>