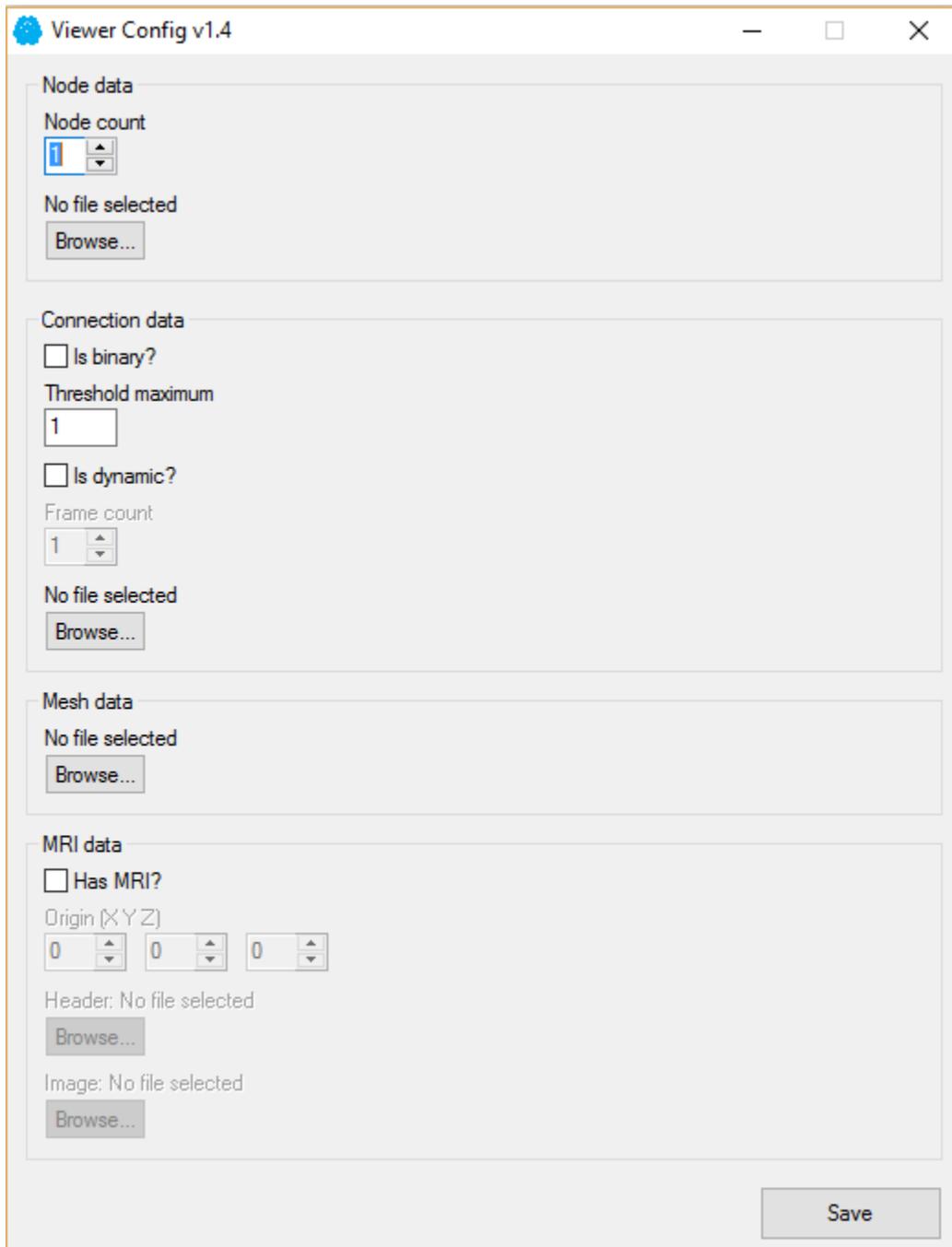


VR Brain Viewer User Manual

Loading Your Data

To get started with the VR Brain Viewer, you must first load your brain nodes into the program. To do this, start up the program named “Viewer_Config.exe”. Once the program starts, it will present you with the screen below.



The screenshot shows the "Viewer Config v1.4" application window. It is divided into four main sections, each with a "Browse..." button for file selection:

- Node data:** Includes a "Node count" spinner set to 1 and a "No file selected" status with a "Browse..." button.
- Connection data:** Includes checkboxes for "Is binary?" and "Is dynamic?", a "Threshold maximum" text box set to 1, a "Frame count" spinner set to 1, and a "No file selected" status with a "Browse..." button.
- Mesh data:** Includes a "No file selected" status with a "Browse..." button.
- MRI data:** Includes a checkbox for "Has MRI?", an "Origin (X Y Z)" section with three spinners all set to 0, a "Header: No file selected" status with a "Browse..." button, and an "Image: No file selected" status with a "Browse..." button.

A "Save" button is located at the bottom right of the window.

Loading the Node File

There are two fields that must be completed in order to load your node data into the VR viewer. First, enter in the number of nodes within your data set in the field marked “Node Count”. Next, hit the “browse” button to select the file containing your node data. This file must be an AAL plain text file to be compatible with the software.

Loading Connection Data

The first prompt regarding connection data asks whether the data is in a binary format or not. If your connection data is only either connected or not connected and represented by a 0 or 1 in your file, then select the “Is Binary” setting. Otherwise, select the maximum value that a connection will have within your data set. If your data is dynamic, and has many files that represent the same structure over time, select the “Is Dynamic” option. Then enter the number of files in the data set in the “Frame Count” field. In order for a dynamic data set to work with this program, the data must be in a folder, with each file named in sequential order with no file extension (see image below for an example). Click “browse” and select this folder. If your data is not dynamic, simply select the file containing your connections.

Name	Date modified	Type	Size
 1	1/4/2018 7:42 PM	File	95 KB
 2	1/4/2018 7:42 PM	File	95 KB
 3	1/4/2018 7:42 PM	File	95 KB
 4	1/4/2018 7:42 PM	File	95 KB
 5	1/4/2018 7:42 PM	File	96 KB
 6	1/4/2018 7:42 PM	File	95 KB
 7	1/4/2018 7:42 PM	File	96 KB
 8	1/4/2018 7:42 PM	File	96 KB
 9	1/4/2018 7:42 PM	File	96 KB
 10	1/4/2018 7:42 PM	File	96 KB
 11	1/4/2018 7:42 PM	File	96 KB
 12	1/4/2018 7:42 PM	File	96 KB
 13	1/4/2018 7:42 PM	File	96 KB
 14	1/4/2018 7:42 PM	File	96 KB
 15	1/4/2018 7:42 PM	File	97 KB
 16	1/4/2018 7:42 PM	File	97 KB
 17	1/4/2018 7:42 PM	File	97 KB
 18	1/4/2018 7:42 PM	File	97 KB
 19	1/4/2018 7:42 PM	File	97 KB
 20	1/4/2018 7:42 PM	File	97 KB
 21	1/4/2018 7:42 PM	File	97 KB
 22	1/4/2018 7:42 PM	File	97 KB
 23	1/4/2018 7:42 PM	File	97 KB
 24	1/4/2018 7:42 PM	File	97 KB

Loading Mesh Data

Select the mesh file by clicking “Browse” underneath the “Mesh data” heading. Mesh data should be in NV format.

Loading MRI Data

If the node data has an accompanying MRI, check "Has MRI?" For the best experience, it is recommended that the MRI be stripped of the skull image surrounding it. This can be done in MRI viewing programs such as MRICro. Additionally, these programs can be used to find the origin of an MRI image; the X, Y, and Z coordinates should be entered into the three fields labelled "Origin". Then using two "Browse" buttons at the bottom of the "MRI Data" section, select the MRI data.

Viewing and interacting with the Data

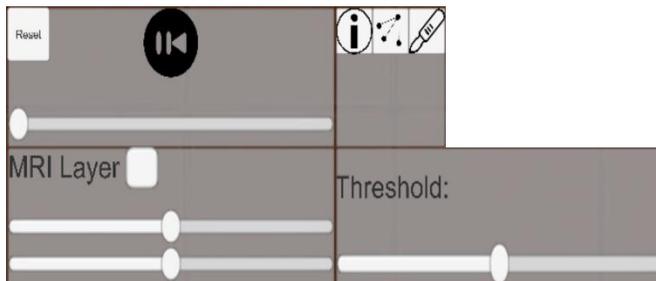
To use the VR Viewer, you must have an Oculus CV1 and a pair of Oculus Touch Controllers. The Oculus runtime should be installed on your PC. After the Oculus has been set up, start "BrainViewer.exe" to launch the viewer. When you start the program, you should see the brain model in front of you, standing atop a table. If you do not see this, consult the **Loading Your Data** portion of this manual.

Moving the Brain Visualization

Using your left hand, you can reach out and touch the brain. Once your hand is within the brain model use the grip button on the Oculus Touch Controller to grab the visualization. While the grip button is held down, you can rotate and move your hand and the brain will follow along with it.

Using the Analysis Tools

On your right-hand side, there are a series of panels which control the analysis tools provided in the viewer. Depending on the type of data loaded in, the panels may look different but generally it will look something like the image below. You can aim at any of the buttons/sliders by using the right-hand trigger on the Oculus Touch Controller. You can press the buttons, or drag the sliders by holding the A button on the right-hand controller.

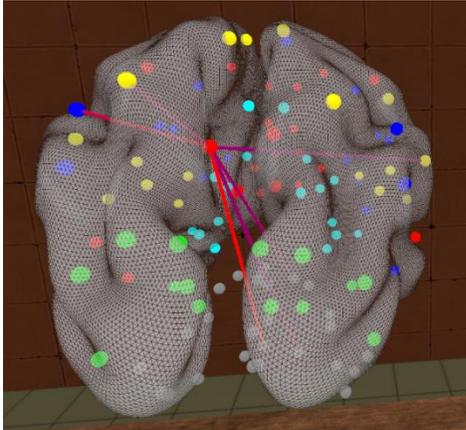


Information Tool

This tool is selected clicking this button: . It shows the name of the node you have pointed at (using the right-hand trigger).

Isolation Tool

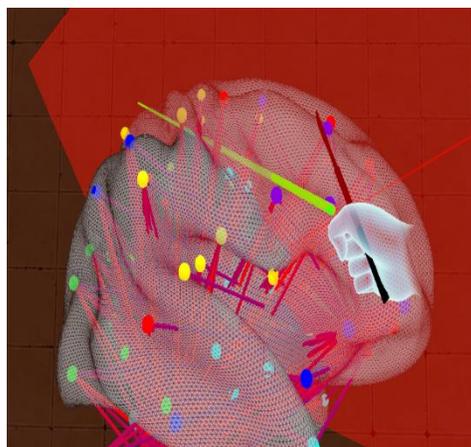
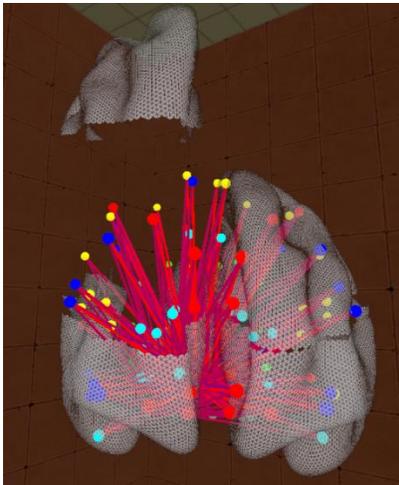
This tool is selected by clicking this button: . It will isolate the node you have pointed at, only showing connections to and from that node. Additionally, a table will appear that shows which nodes the selected node is connected to, and the strength of that connection. (see images below)



Connection Name:	Connection Strength:
SPG.R59	0.5990459
IPL.R61	0.7794522
SMG.L62	0.5356852
CRBL3.L94	0.6891712
CRBL9.L104	0.6556664
Vermis12108	0.5468985
Vermis3109	0.5317324
Vermis8113	0.5129859
Vermis9114	1
SPG.R59	0.5990459

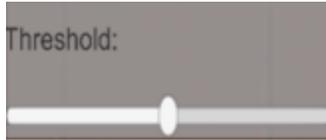
Slicing Tool

This tool is selected by grabbing the scalpel on the right-hand side of the table using the grab button on the right Oculus Touch Controller. Holding the scalpel, you can draw out a cutting plane by holding the right-hand trigger. Once you release the trigger it will slice the brain along the plane you have drawn. You can move the brain mesh slices by grabbing them with your right hand and dragging them away. (see images below)



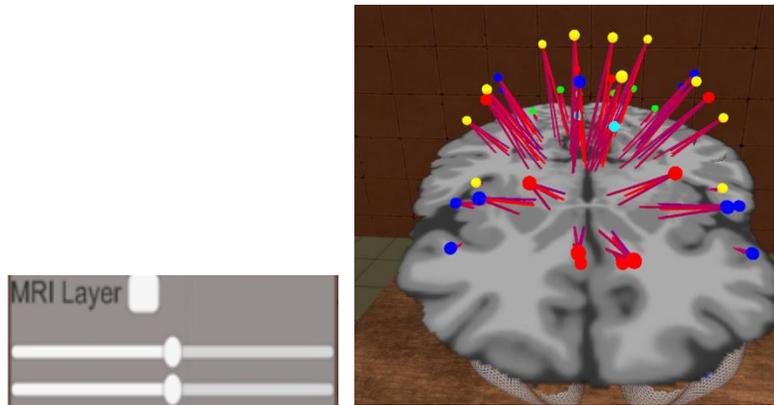
Threshold Tool

This slider controls which connections are shown in a non-binary network. For example, when the slider is at 0.5 only connections with a strength of 0.5 or higher will be displayed. The strongest connections are displayed in red, while weaker ones are displayed in blue.



MRI Tool

The checkbox on the panel controls whether to display the MRI layers. The sliders control which layer of the MRI is shown on the corresponding axis.



Credits

VR Visualization Program – Amr Moussa, Guorong Wu

Configuration Program – Andy Farkas