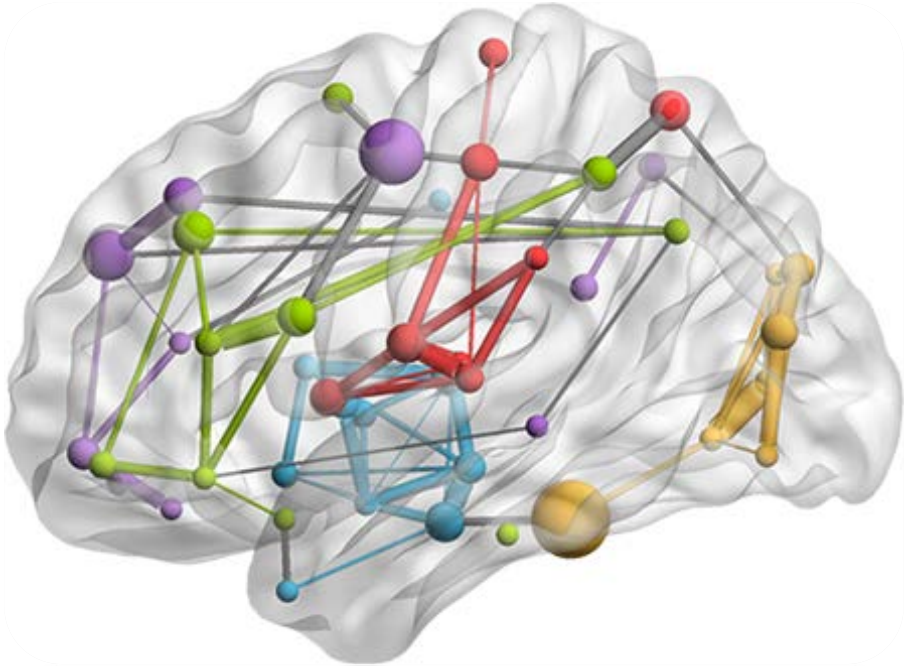


Step by Step Tutorials for BrainNet Viewer

by Mingrui Xia Ph.D.
State Key Laboratory of Cognitive Neuroscience and Learning,
Beijing Normal University
mingruixia@gmail.com

File list of this tutorials

- Net.mat
  - A resting-state functional network generated using the AAL90 template, including three variables:
    - Net – a 90 x 90 matrix, indicating the weighted brain network connectivity matrix
    - Degree – a 90 x 1 vector, indicating the nodal degree (strength) of the nodes
    - Ci – a 90 x 1 vector, indicating the community or module index of the nodes
- Practice.node
  - An example of node file
- Practice.edge
  - An example of edge file
- Practice1.mat
  - Pre-saved configuration for network drawing
- Practice2.mat
  - Pre-saved configuration for volume mapping
- zFCS
  - Normalized strength map of a voxel based brain network
- OneSample_ROI11_NC
  - A statistical map generated from one sample t test on seed-based functional connectivity
- aal.nii
  - The AAL parcellation atlas (*Tzourio-Mazoyer et al., 2002 Neuroimage*)

Contents

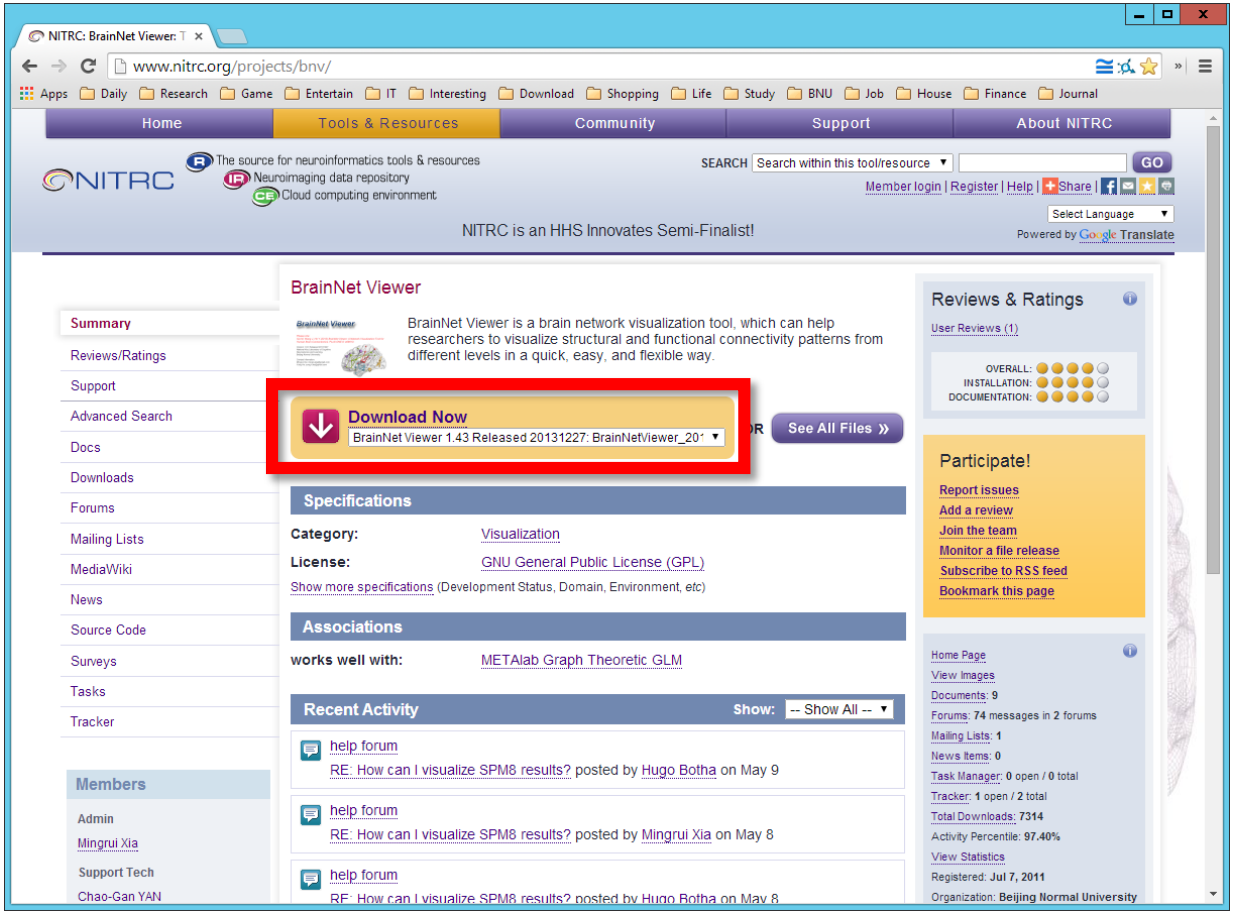
Contents

Download

Website

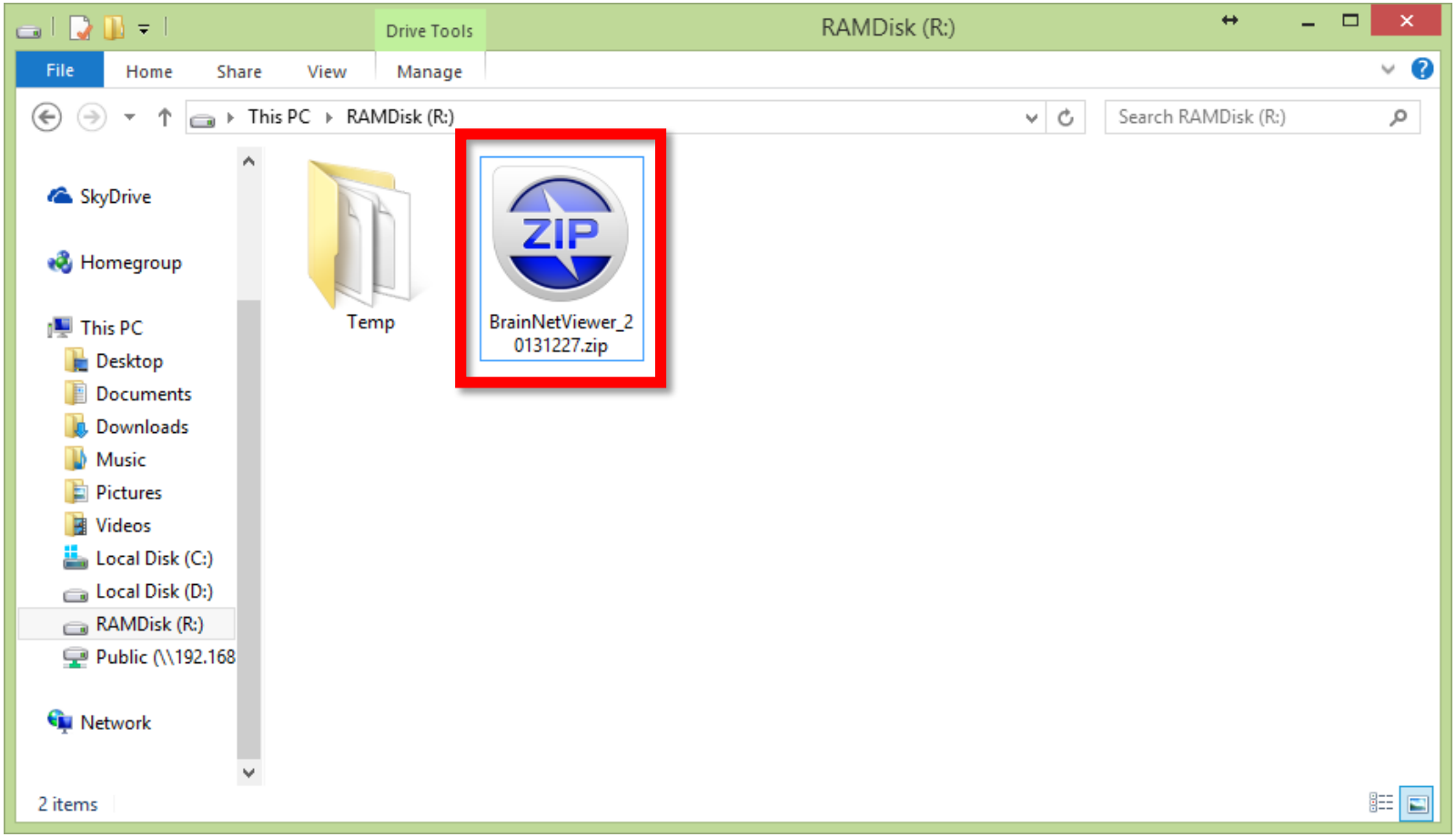
Download Site: http://www.nitrc.org/projects/bnv/

Contact: mingruixia@gmail.com



Download

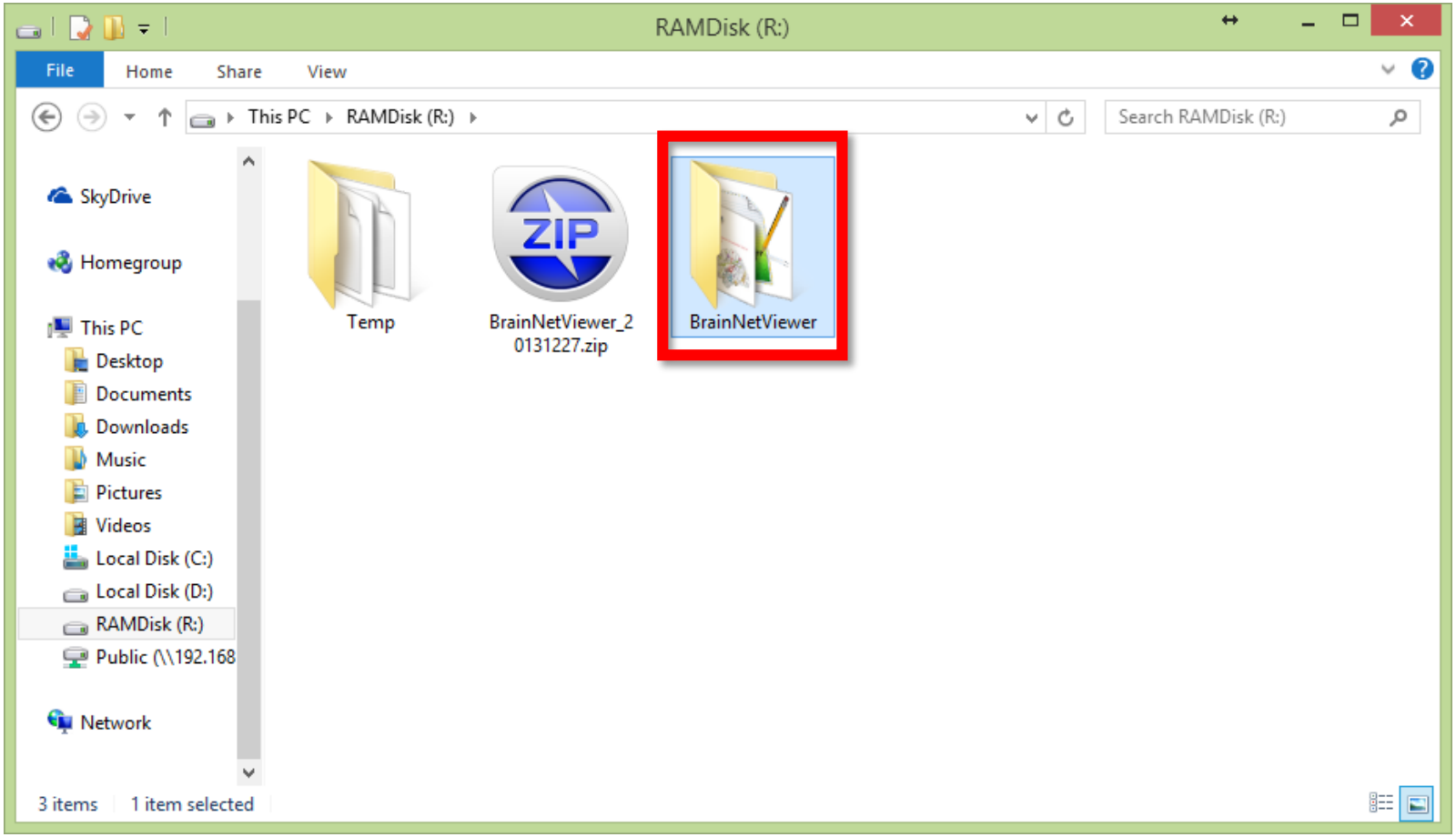
A zip file



Contents

Installation

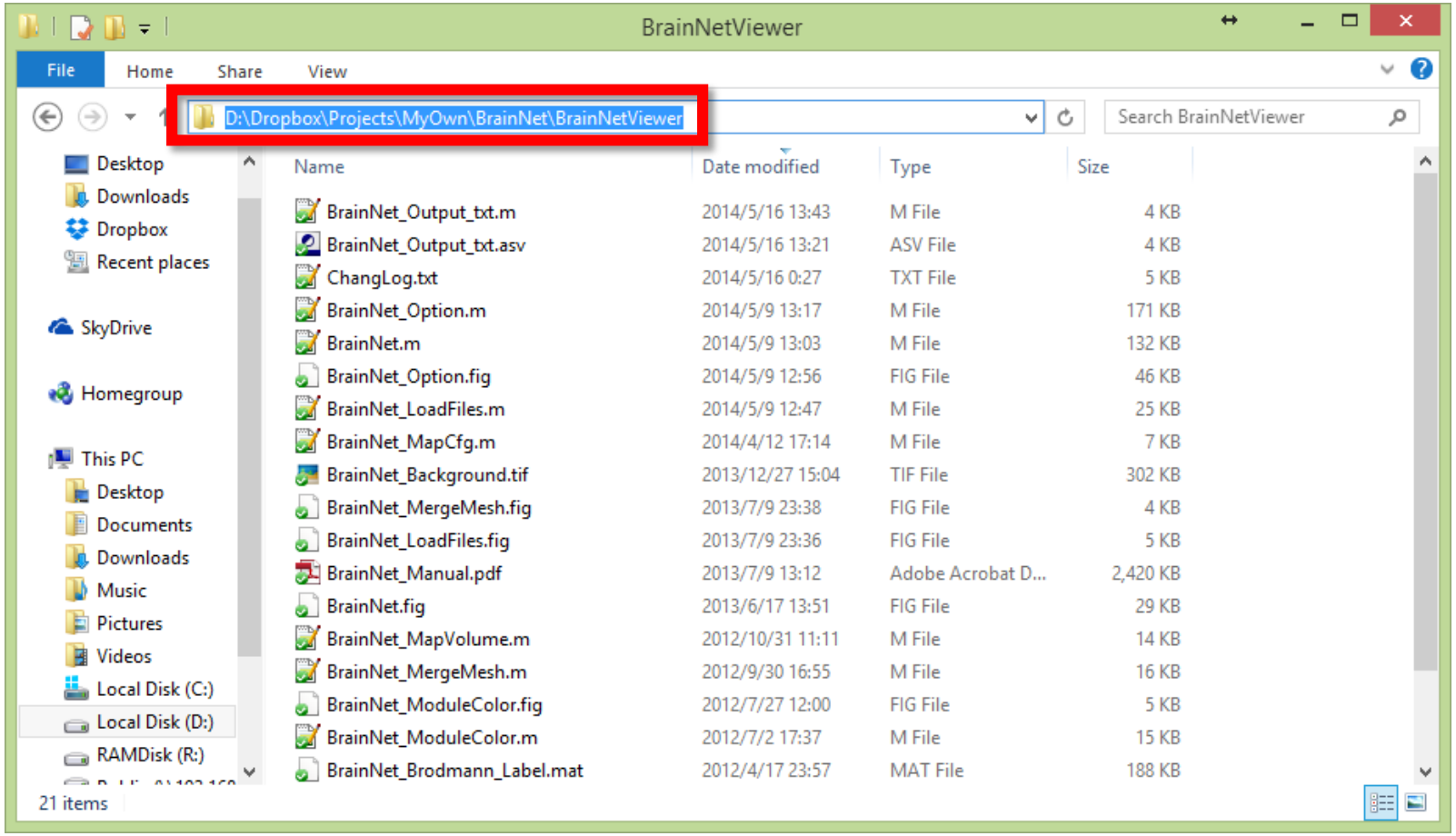
Unzip



Installation

Move to folder

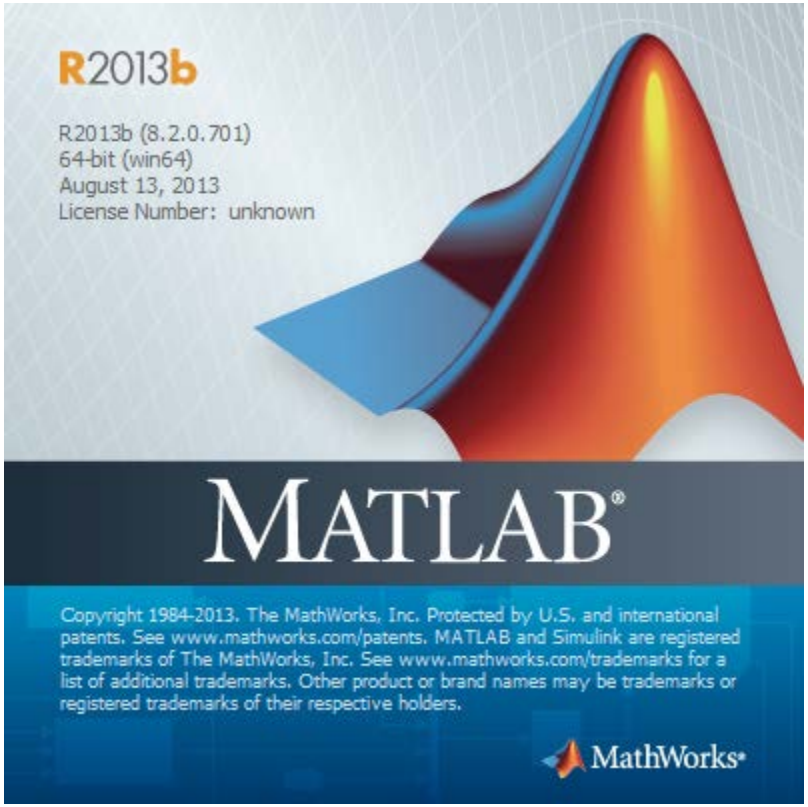
Note: any folder without blank or non-Latin letters in directory



Installation

Start Matlab

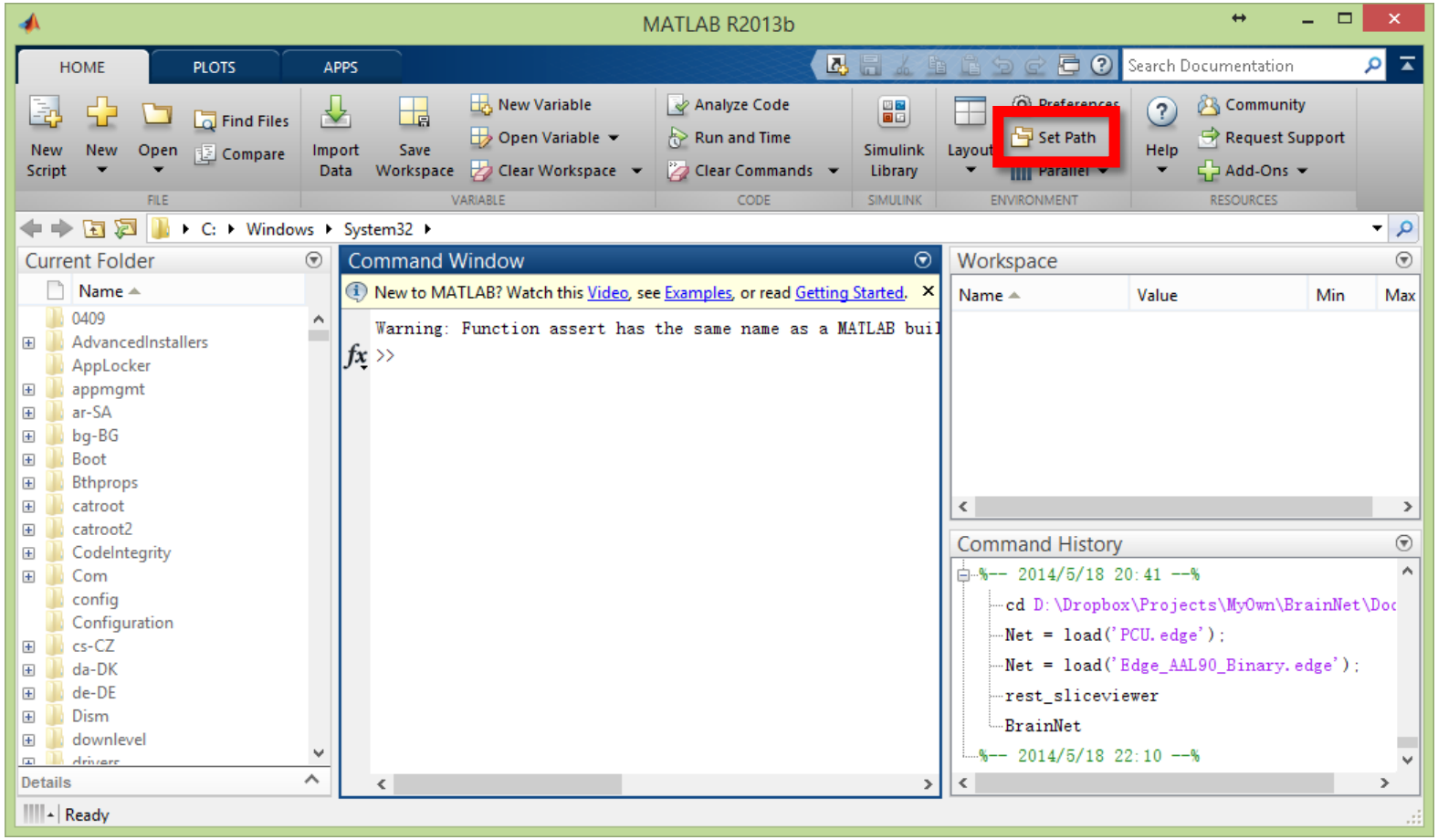
Note: Matlab version >= R2009a



Installation

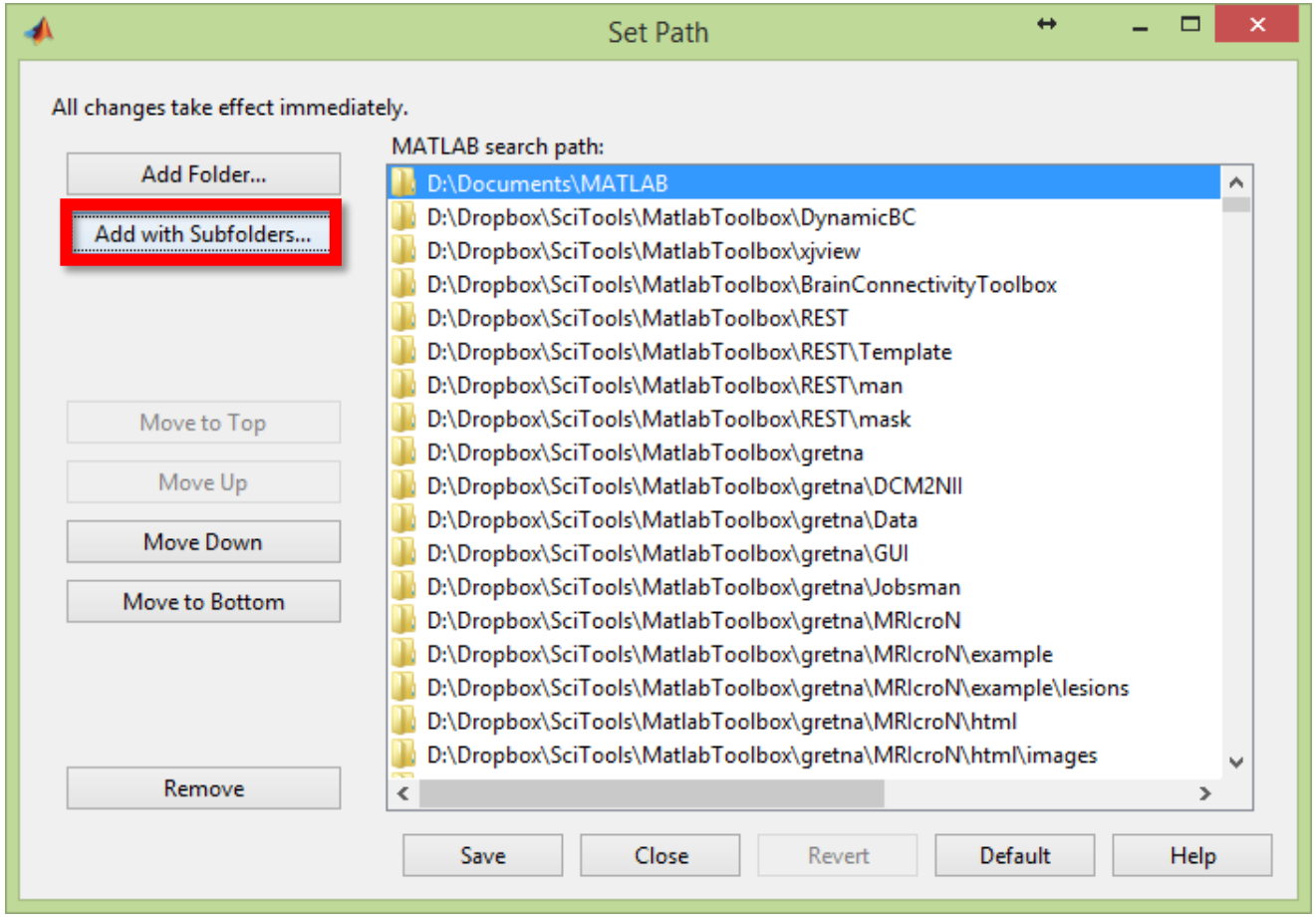
Set path in Matlab

Note: in lower version of Matlab: File -> Set Path



Installation

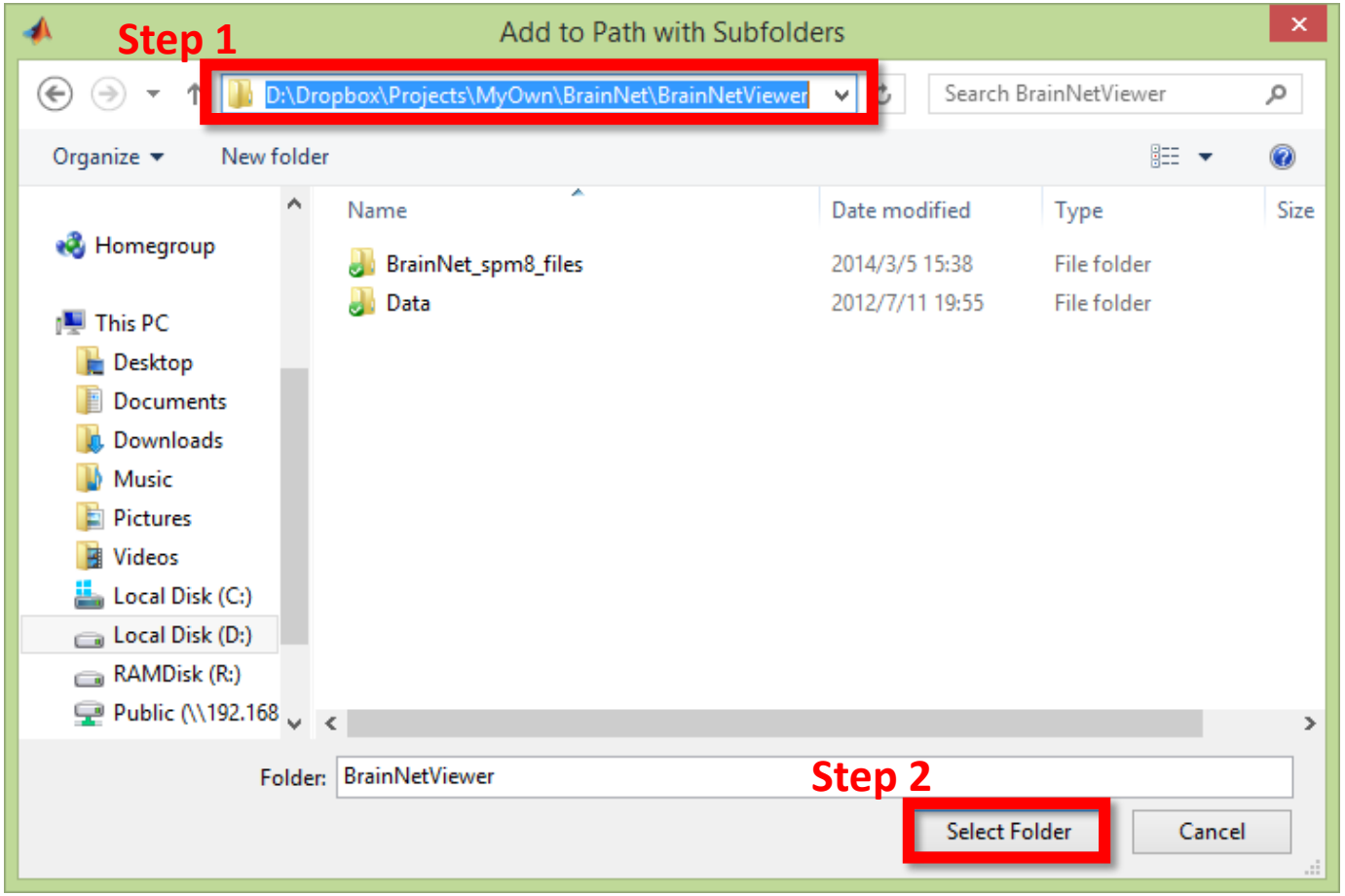
Set path in Matlab



Installation

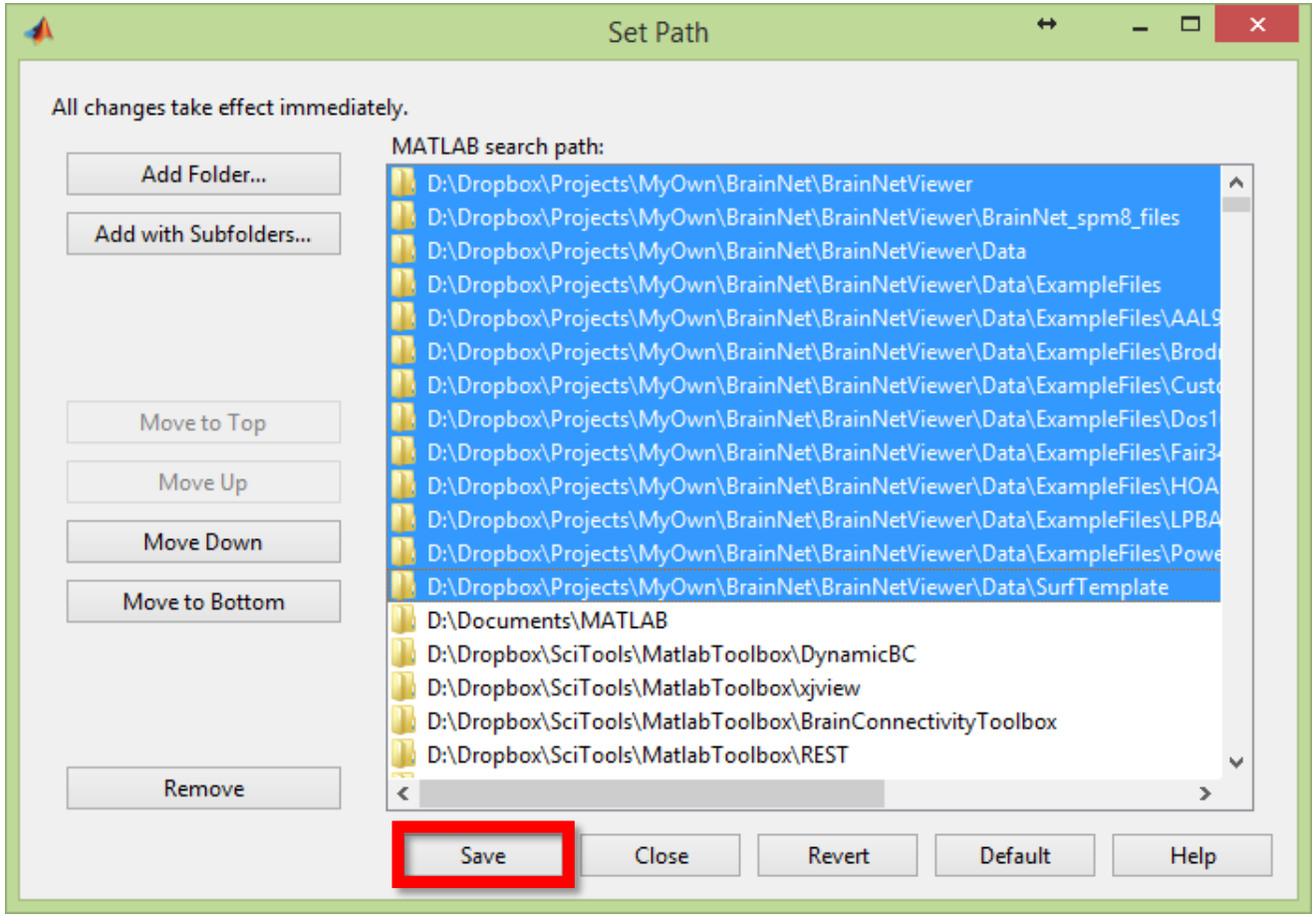
Set path in Matlab

Note: locate the folder where your BrainNet Viewer is in



Installation

Set path in Matlab

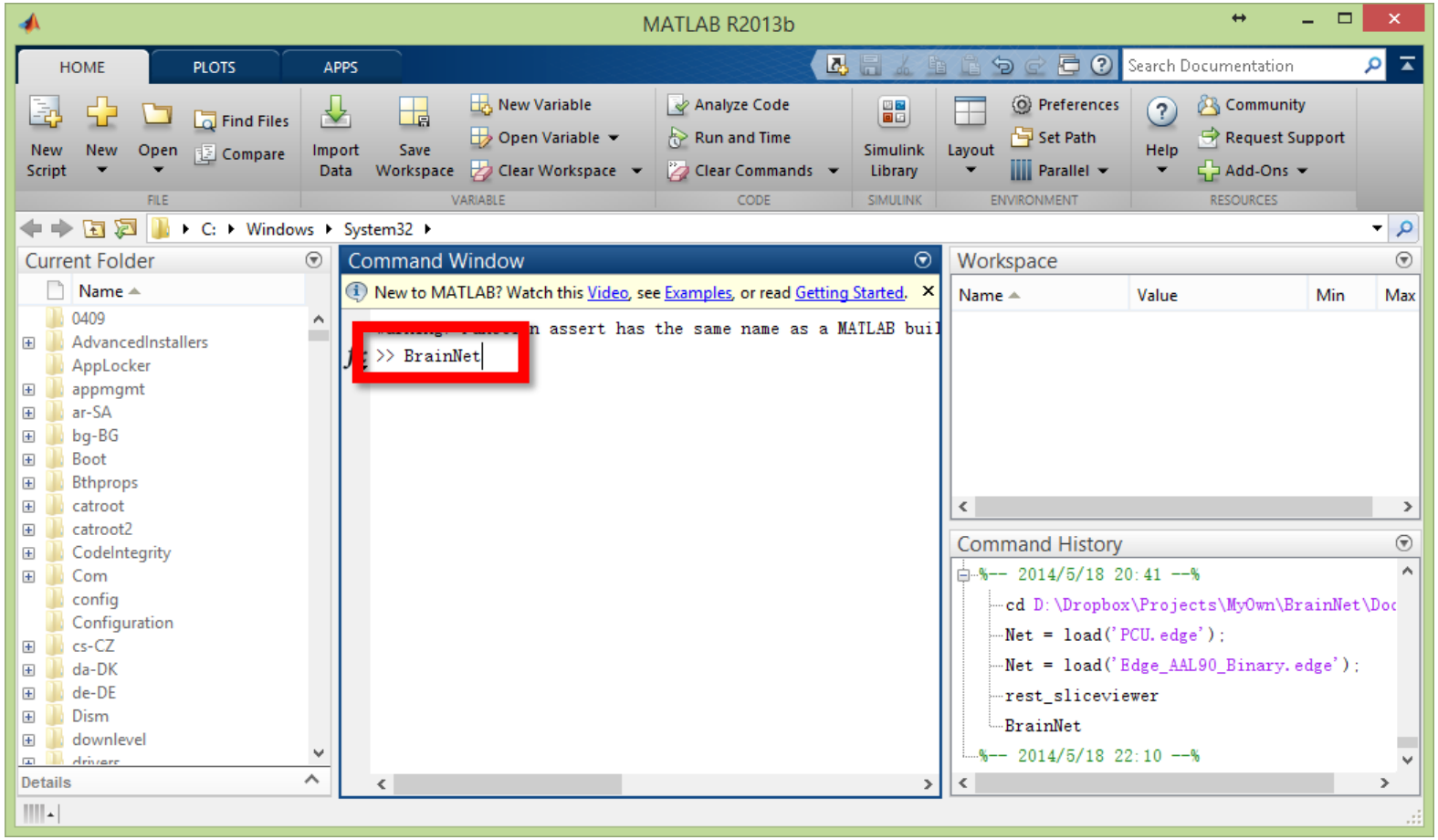


Contents

Start BrainNet Viewer

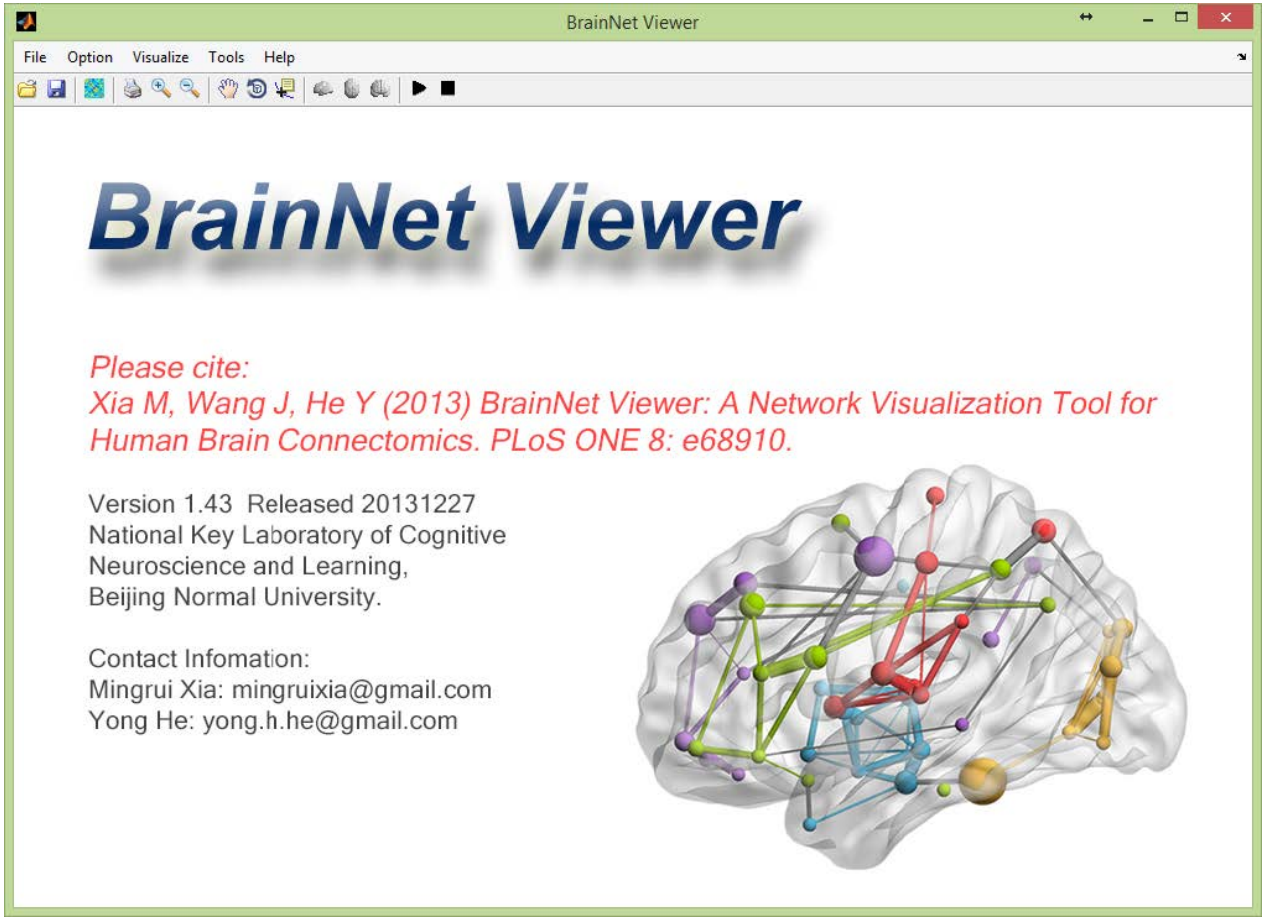
Type command

Note: type BrainNet in Command Window



Start BrainNet Viewer

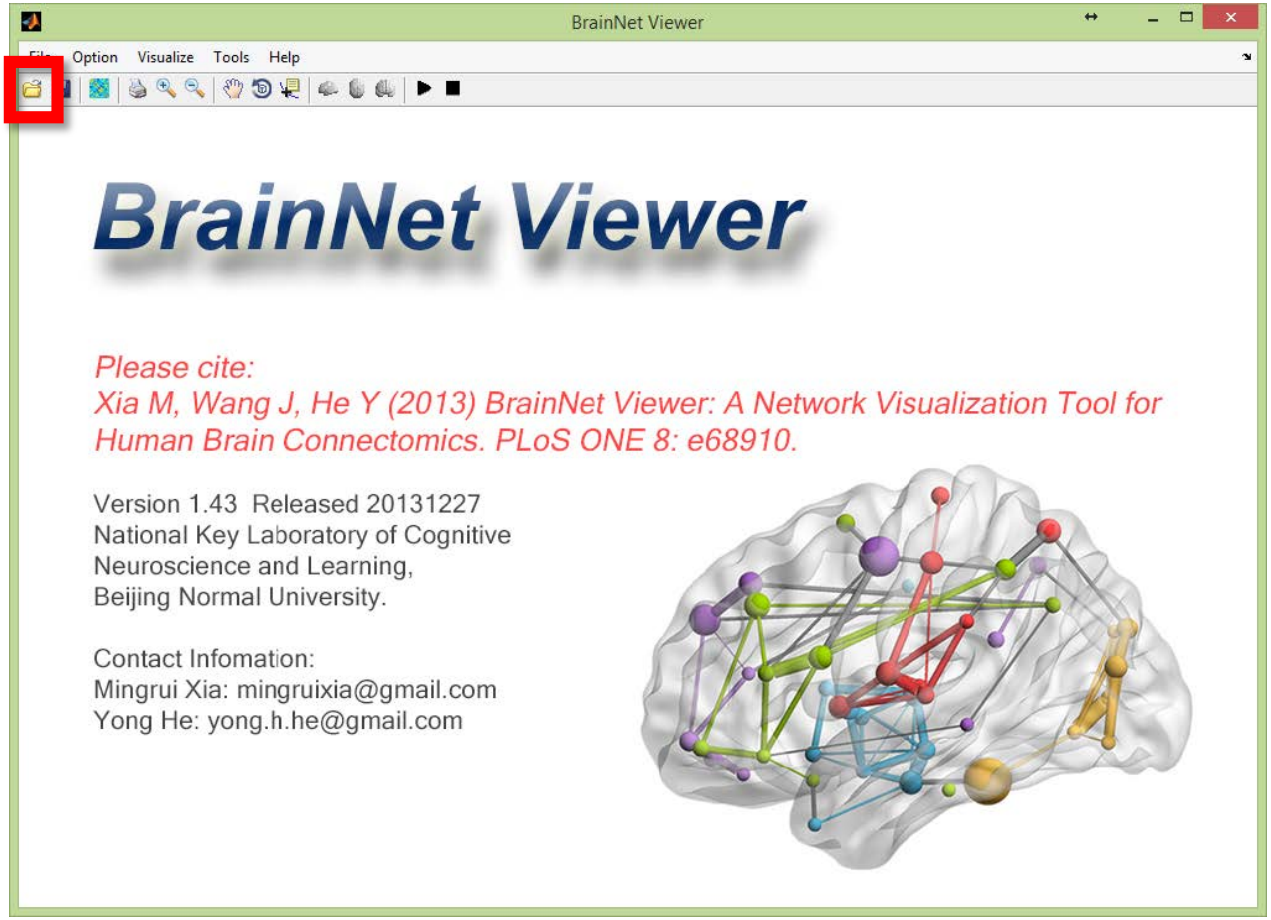
Main window of BrainNet Viewer



Contents

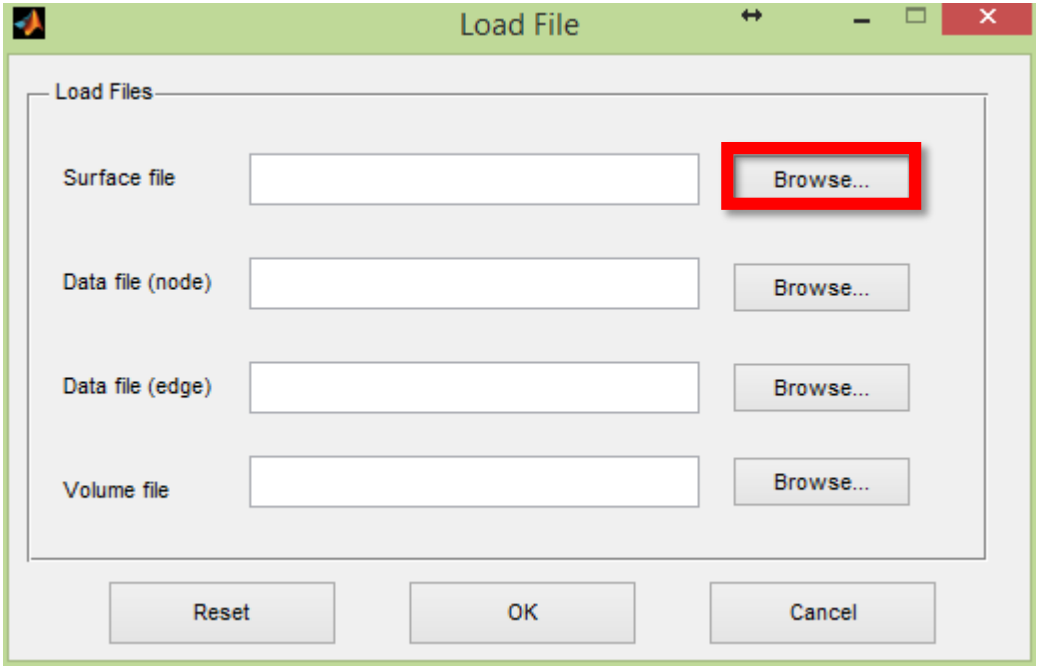
Example 1: Visualize brain surface

Load file



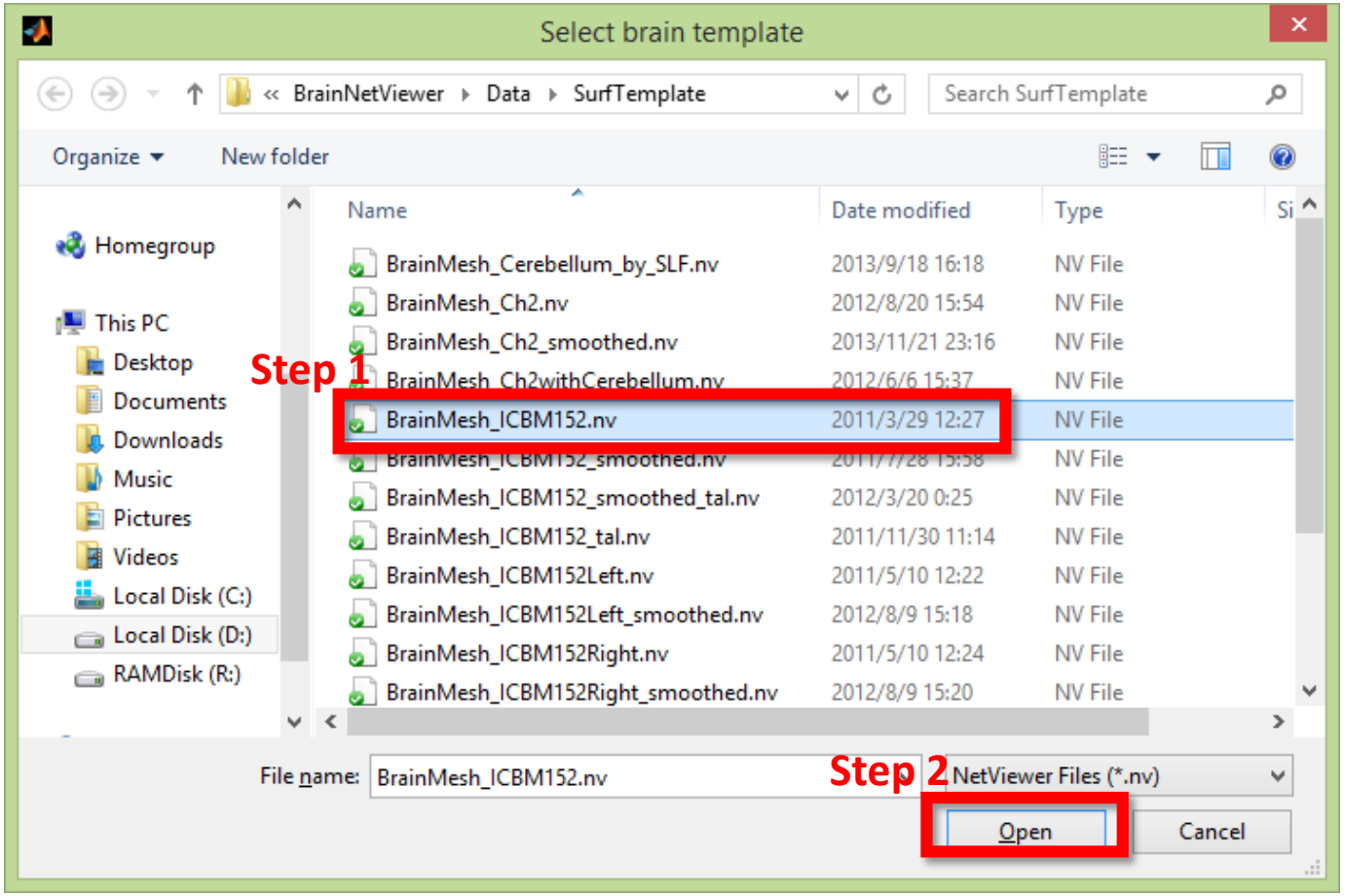
Example 1: Visualize brain surface

Load file



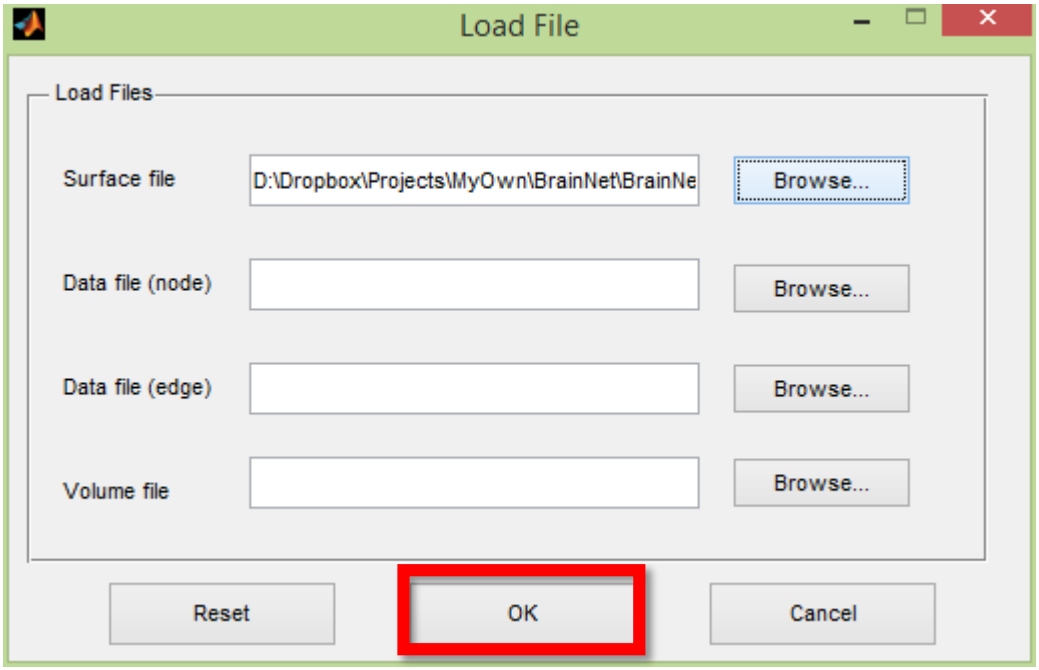
Example 1: Visualize brain surface

Load file



Example 1: Visualize brain surface

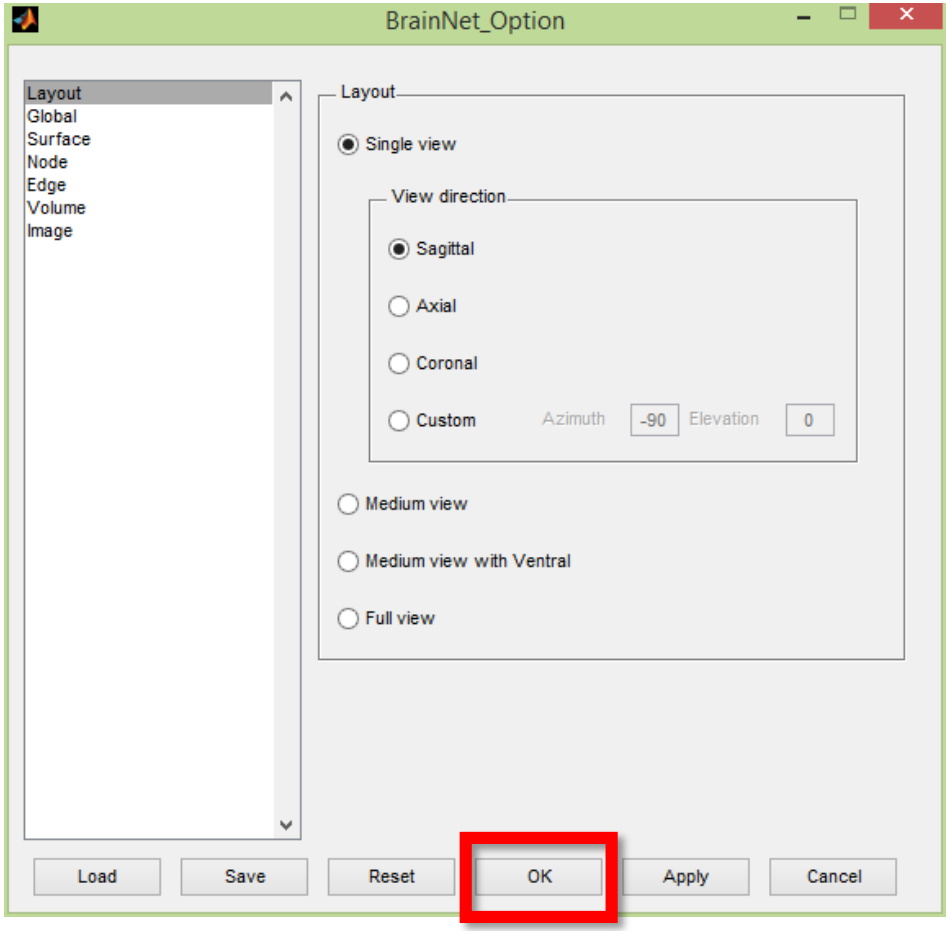
Load file



Example 1: Visualize brain surface

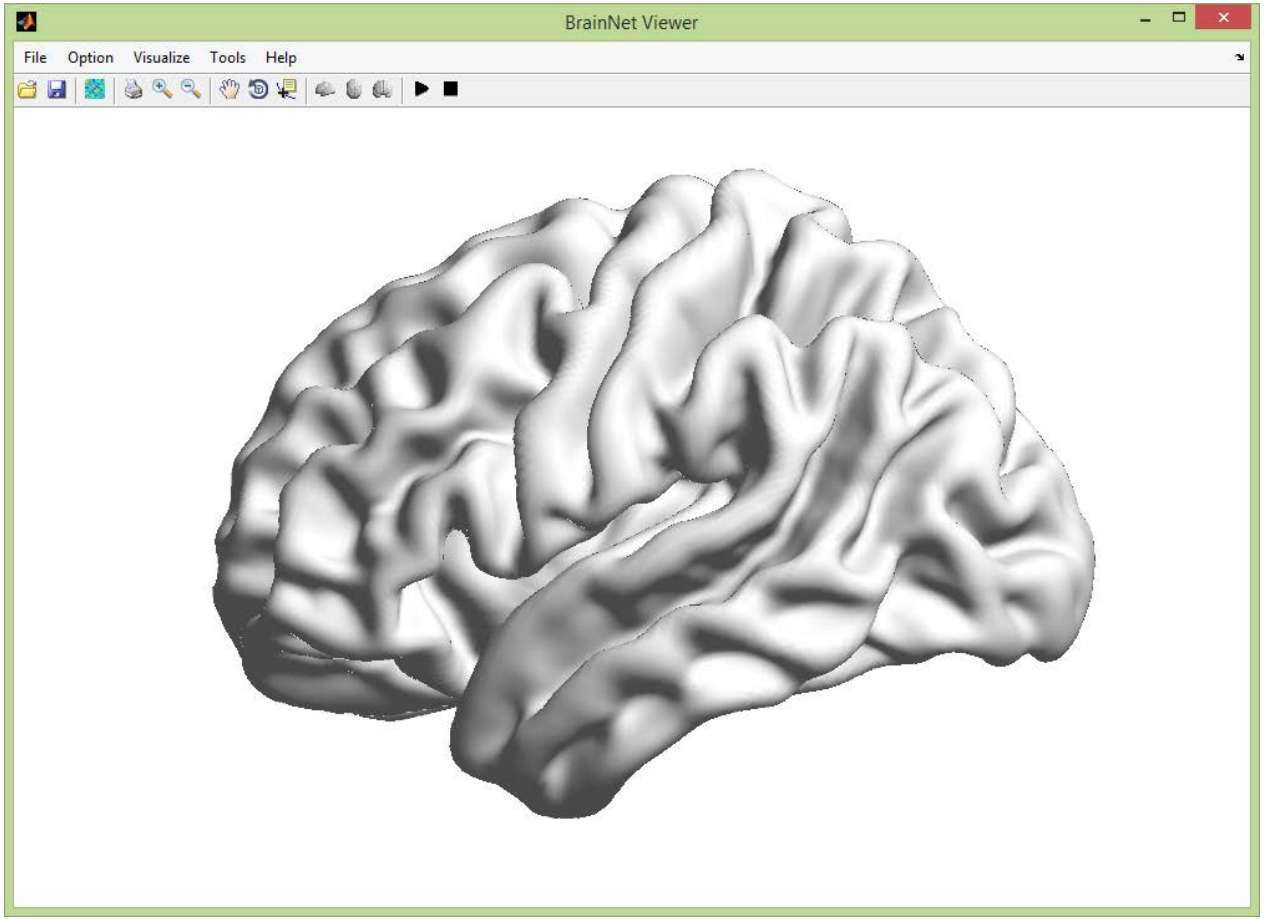
Configuration

Note: take default for example



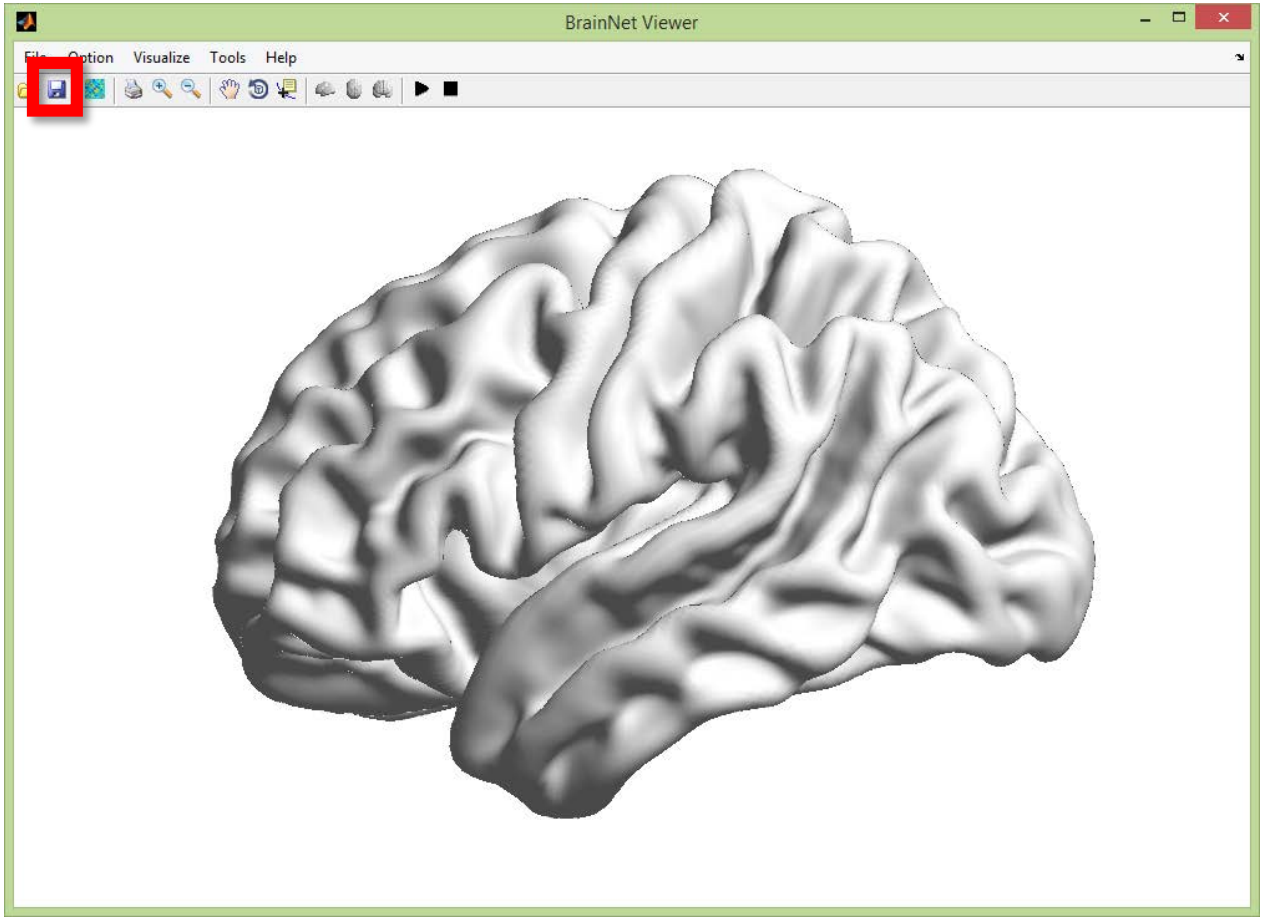
Example 1: Visualize brain surface

Figure drawing



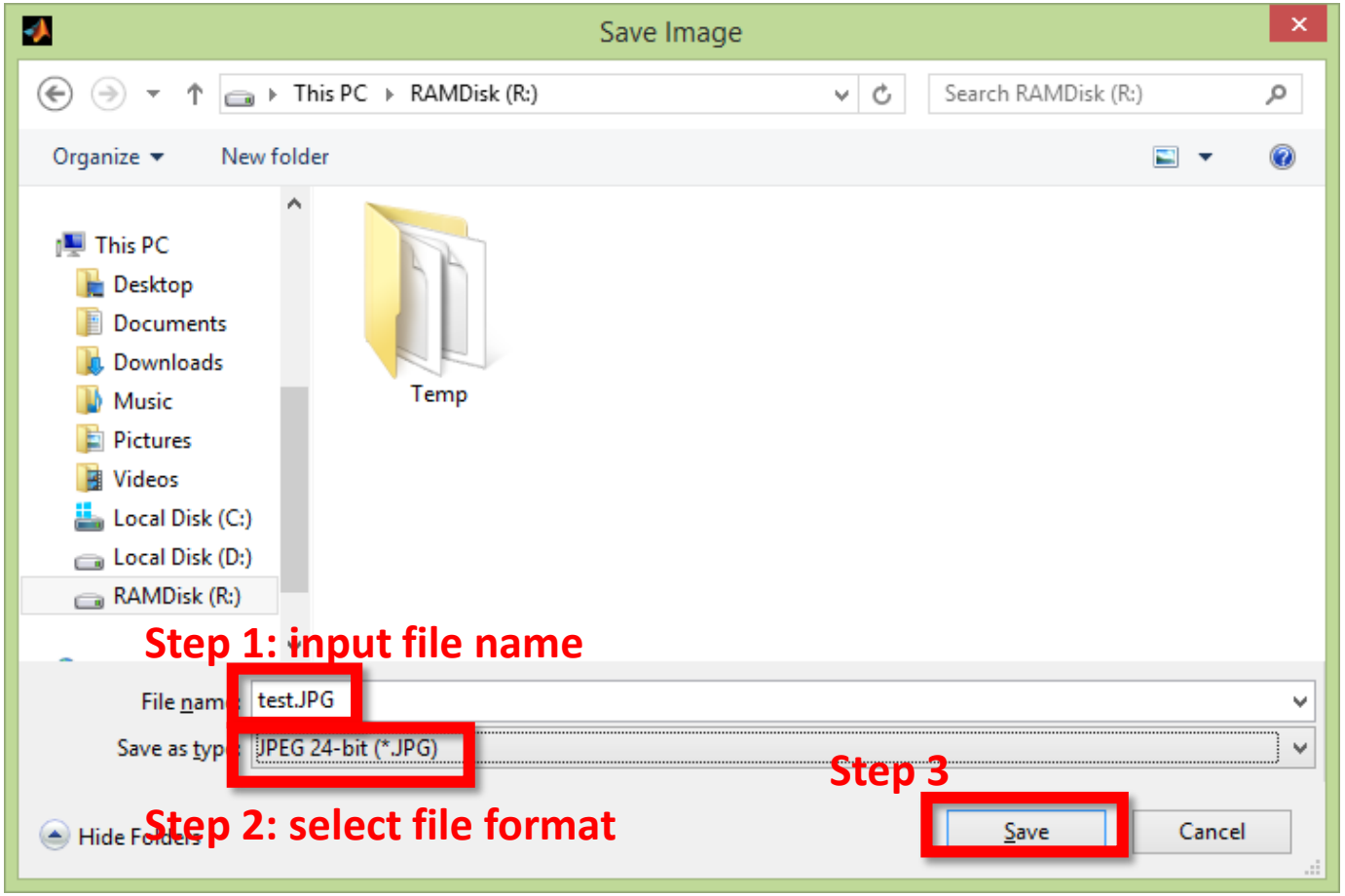
Example 1: Visualize brain surface

Save image



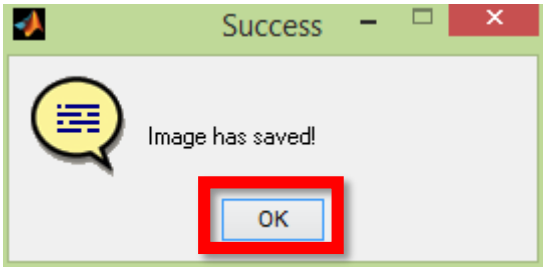
Example 1: Visualize brain surface

Save image



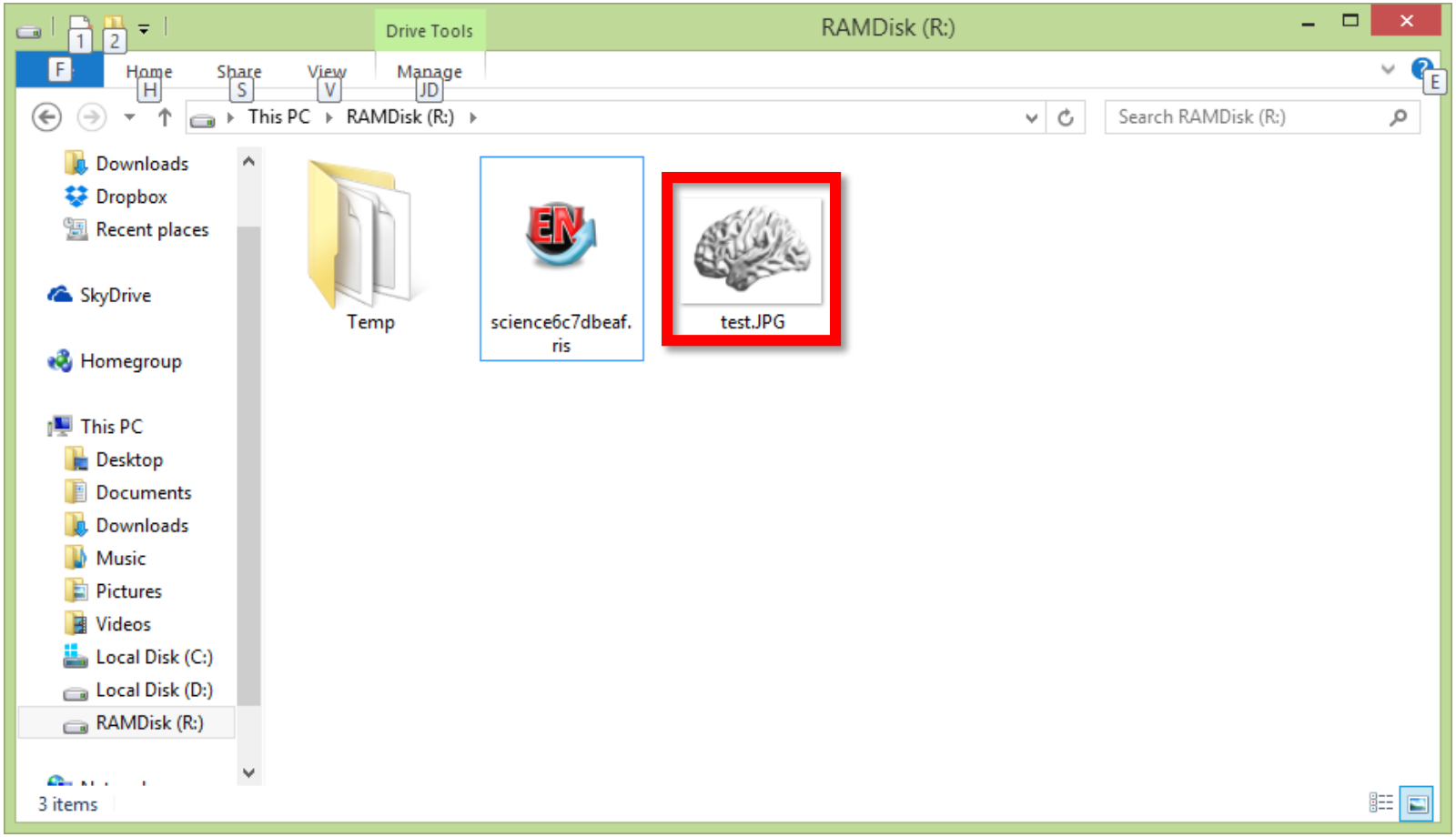
Example 1: Visualize brain surface

Save image



Example 1: Visualize brain surface

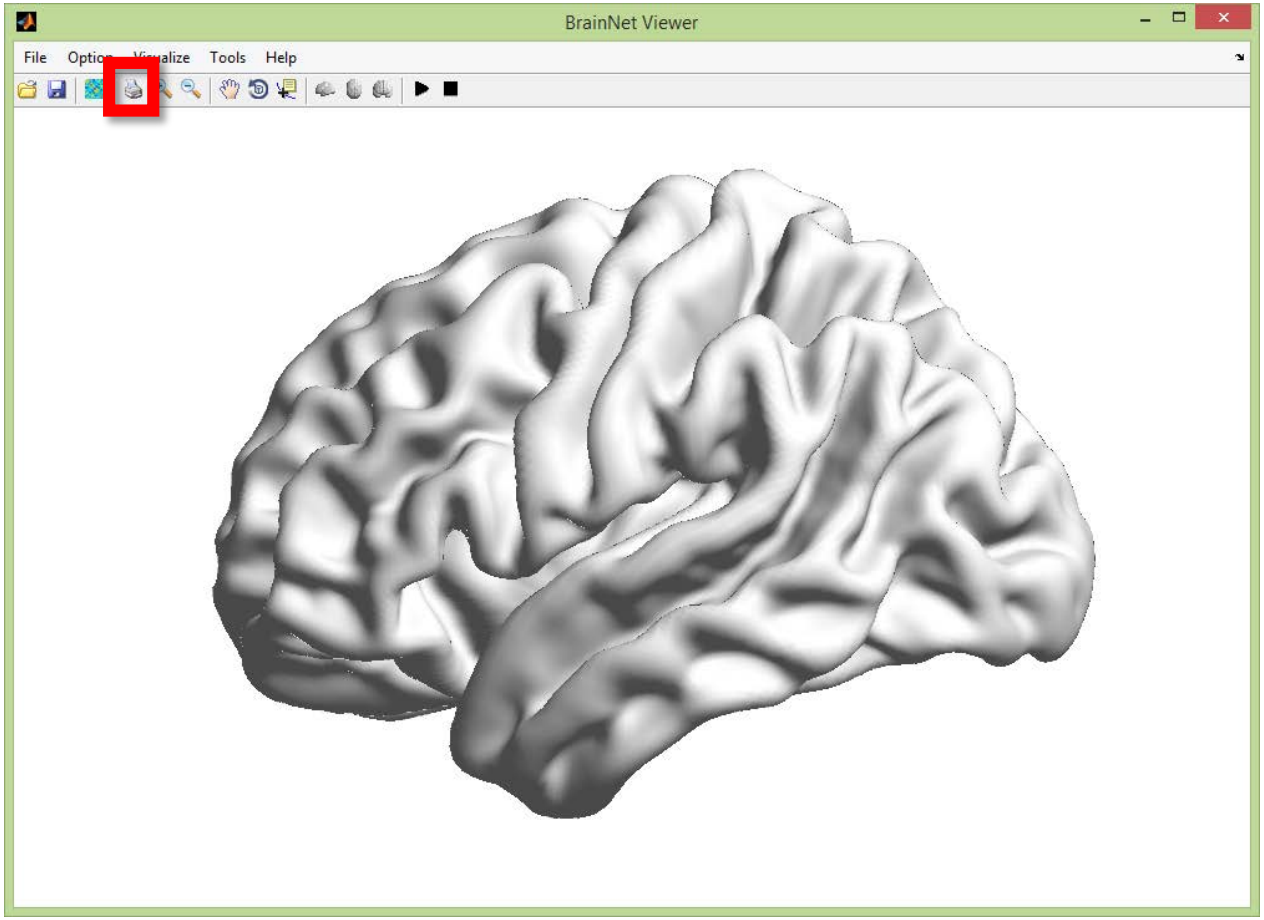
Saved image



Contents

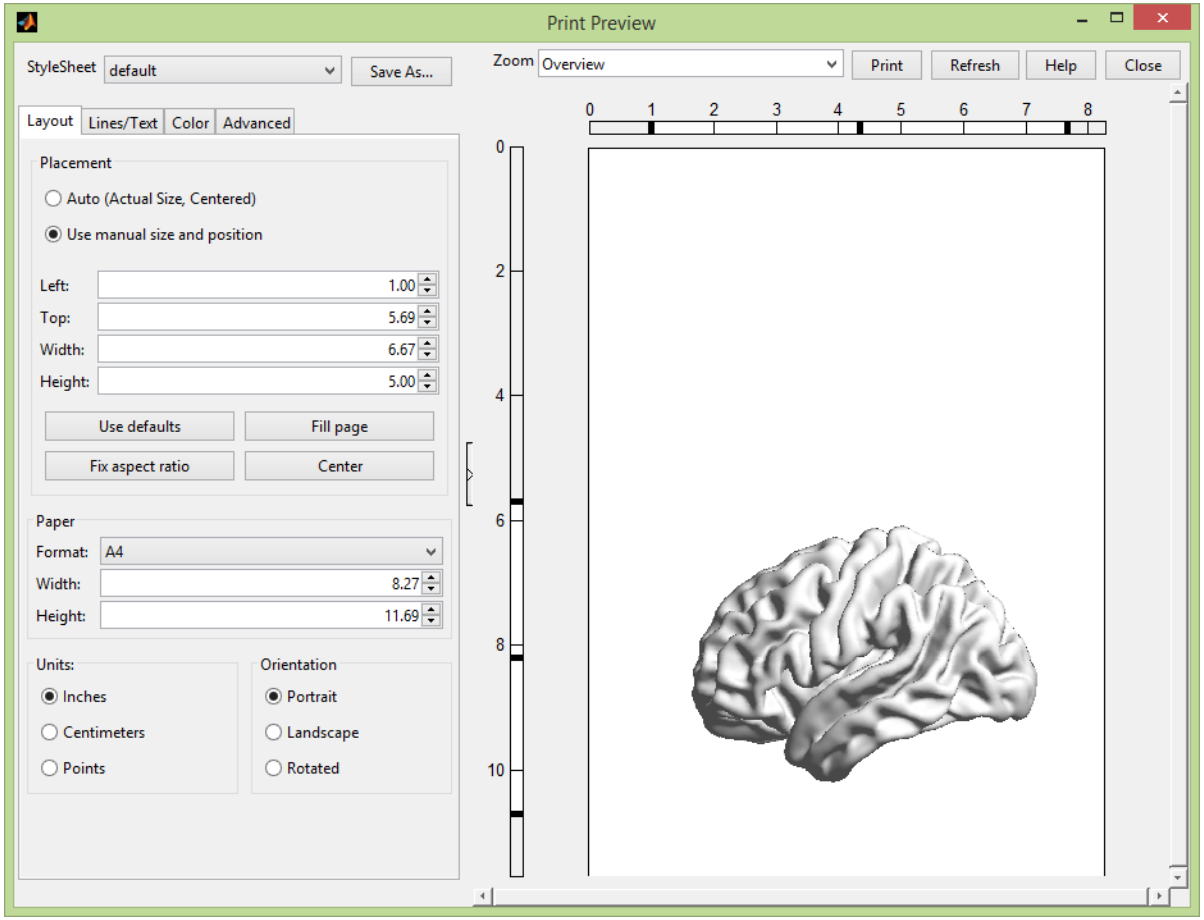
Example 2: Use interactions

Print



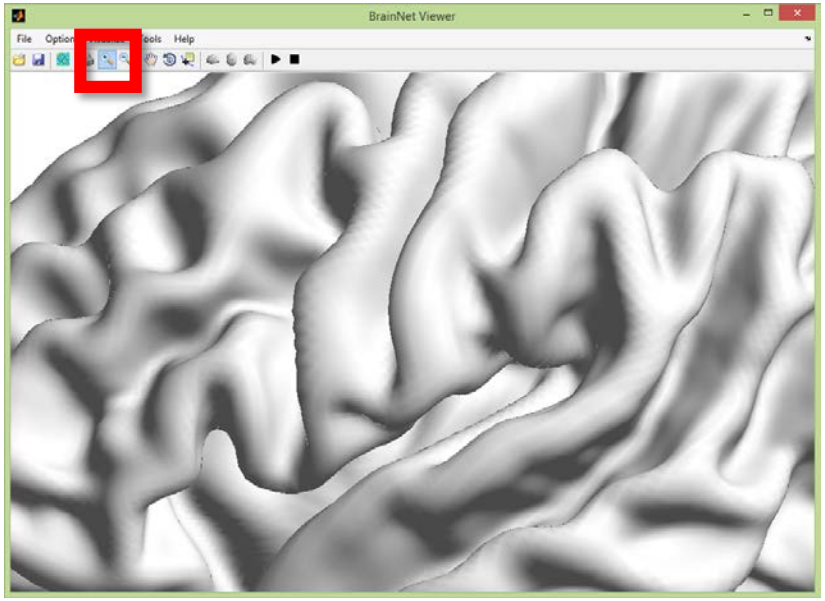
Example 2: Use interactions

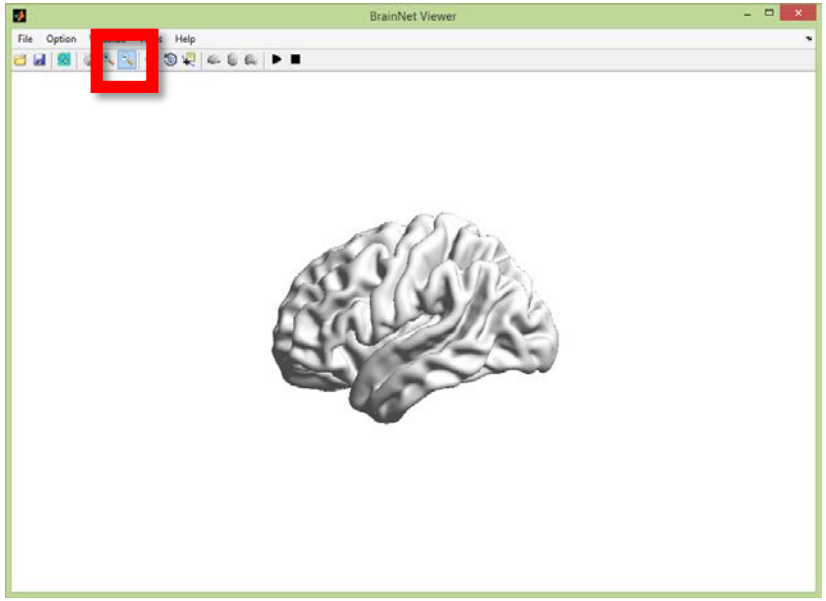
Print



Example 2: Use interactions

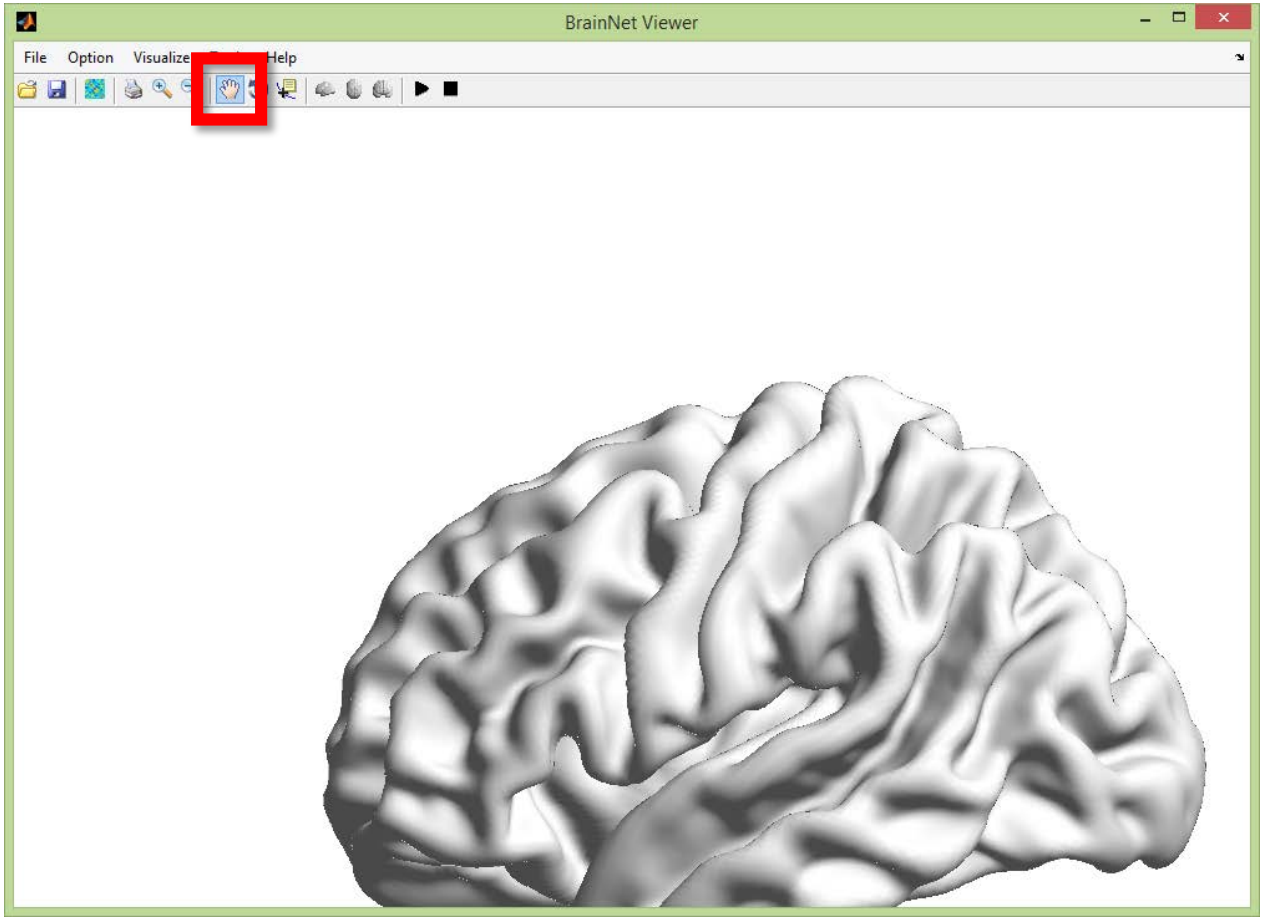
Zoom in & zoom out





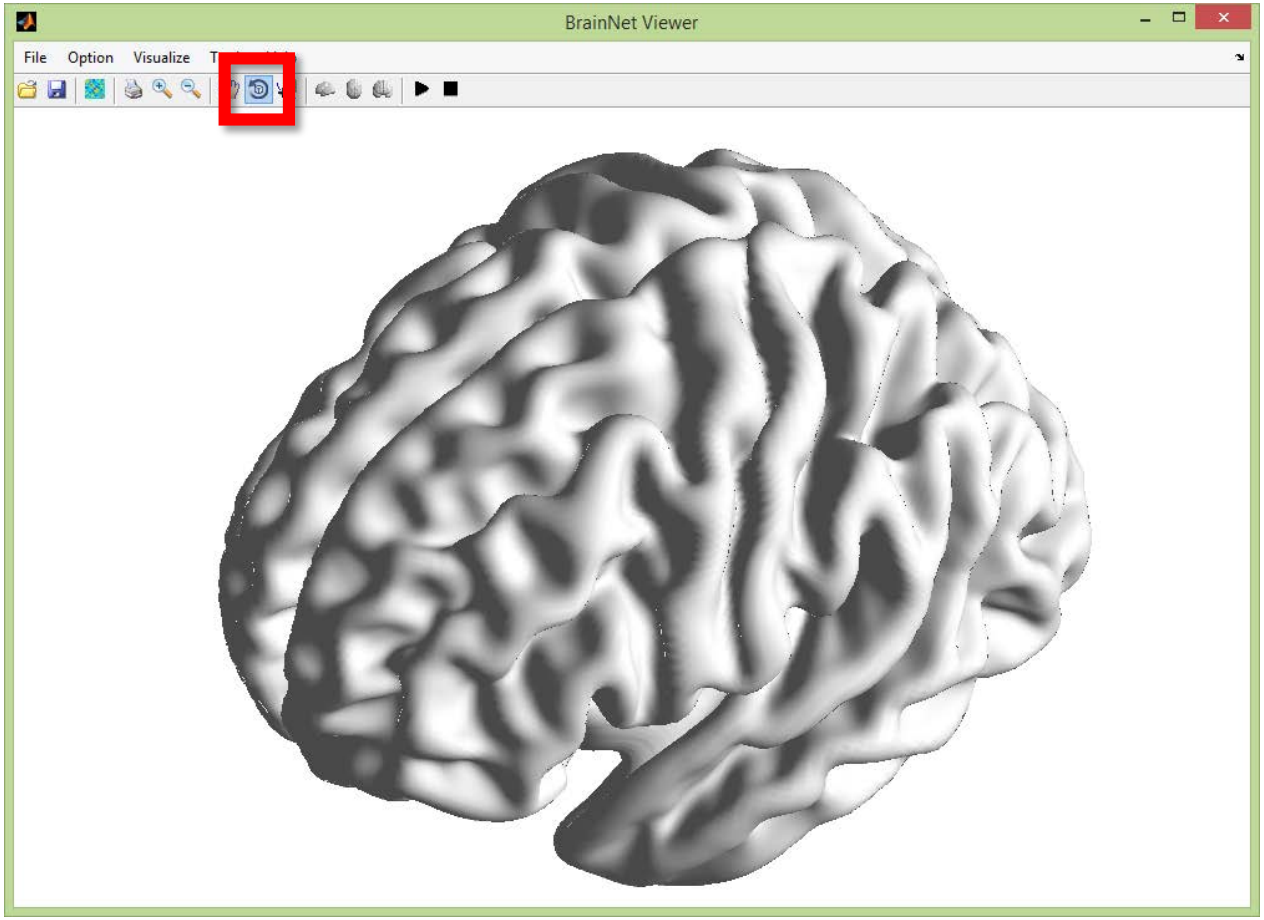
Example 2: Use interactions

Move



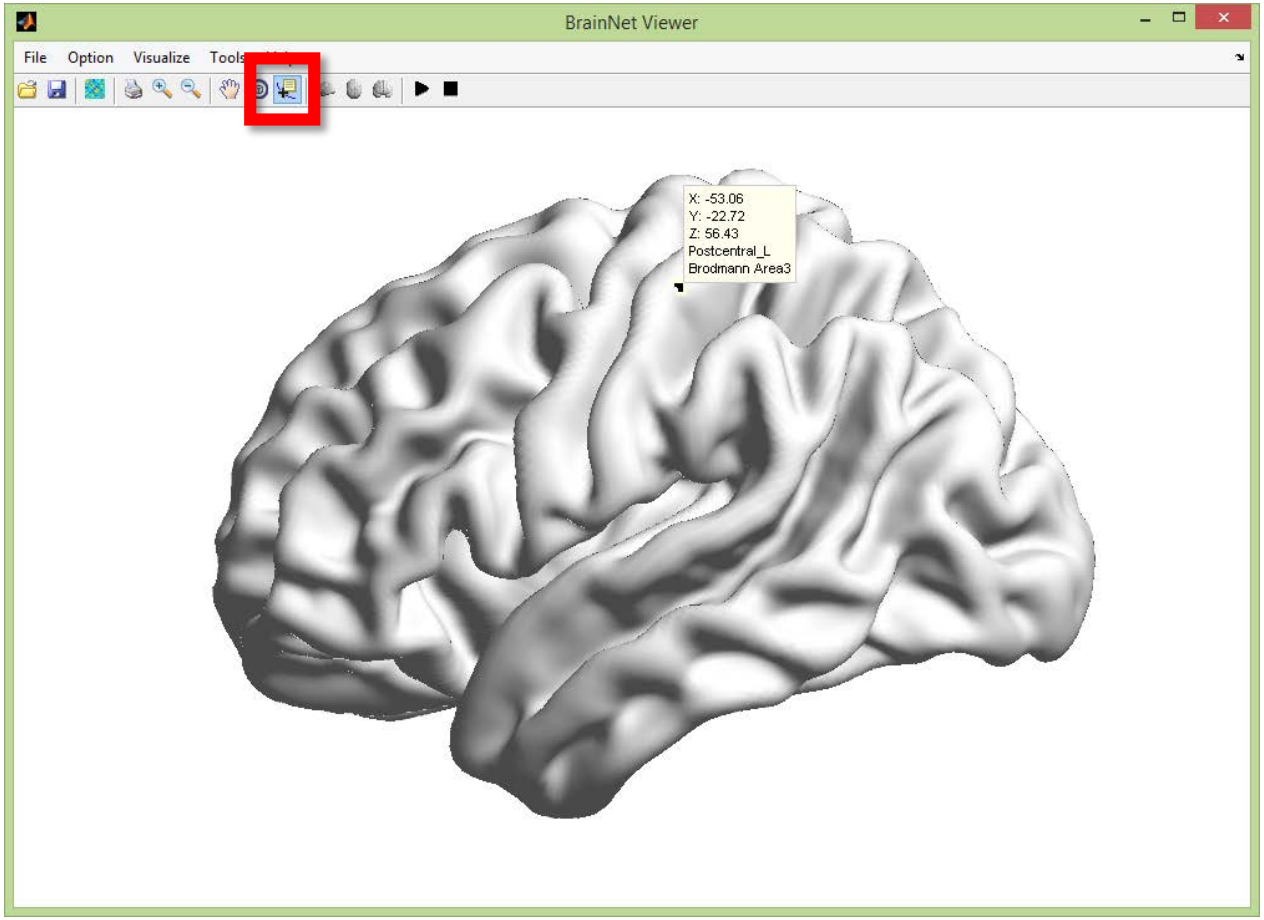
Example 2: Use interactions

Rotate



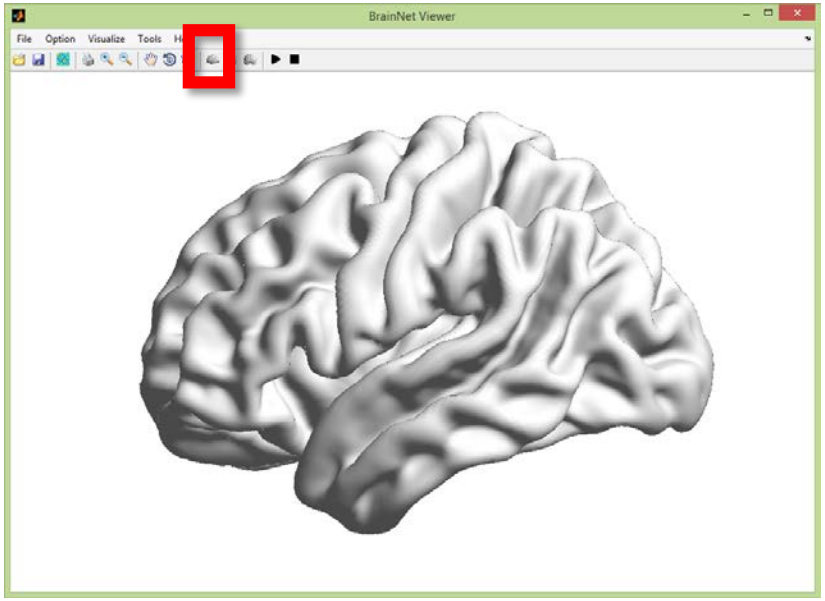
Example 2: Use interactions

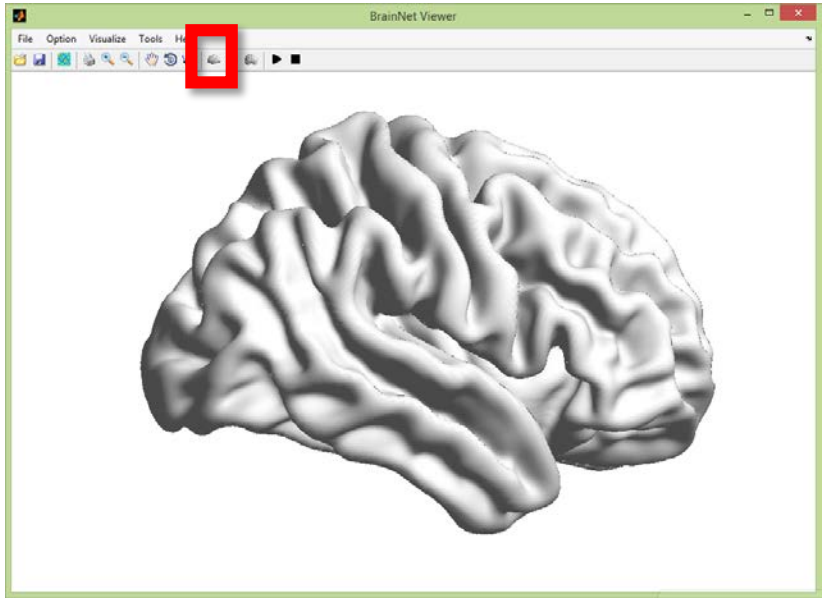
Data cursor



Example 2: Use interactions

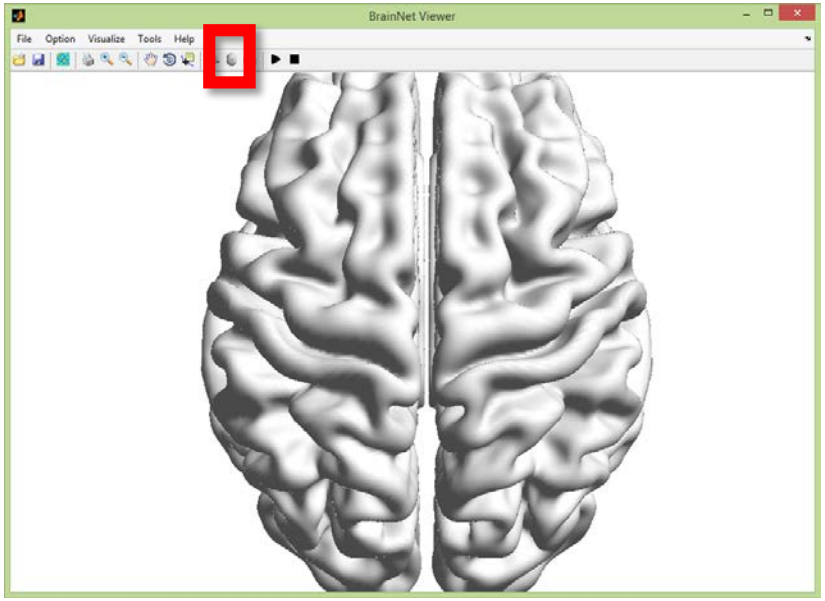
Sagittal view

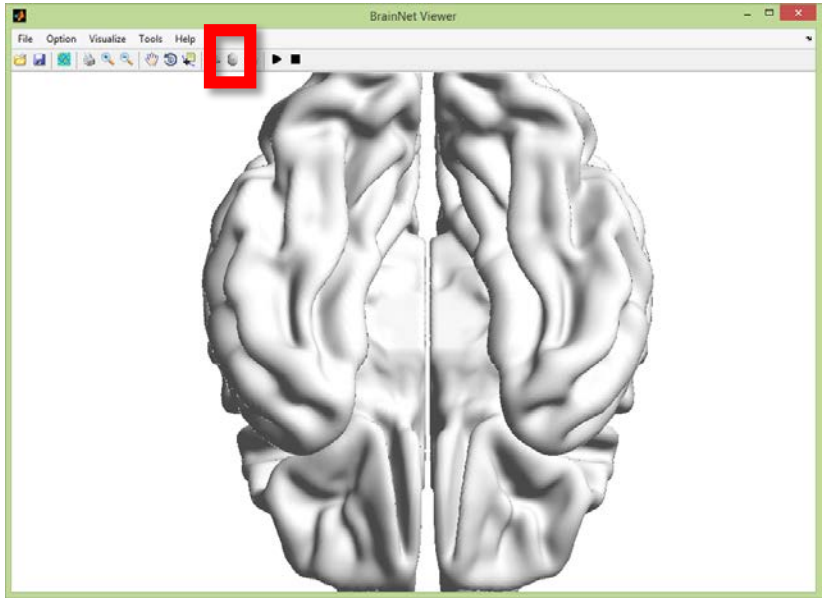




Example 2: Use interactions

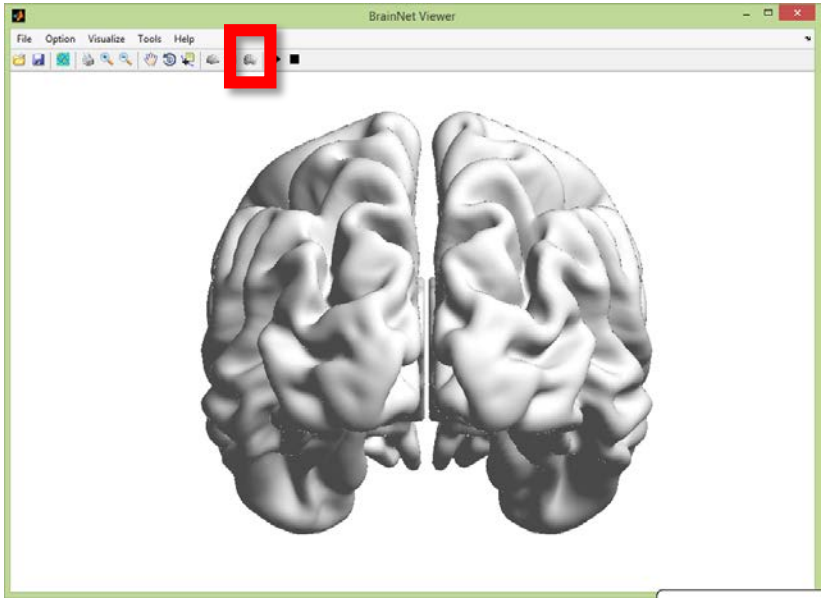
Axial view

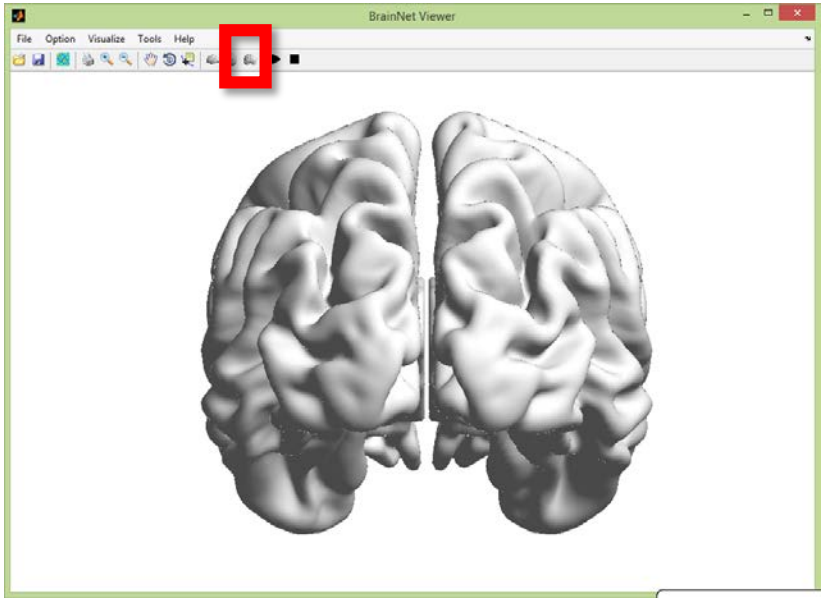




Example 2: Use interactions

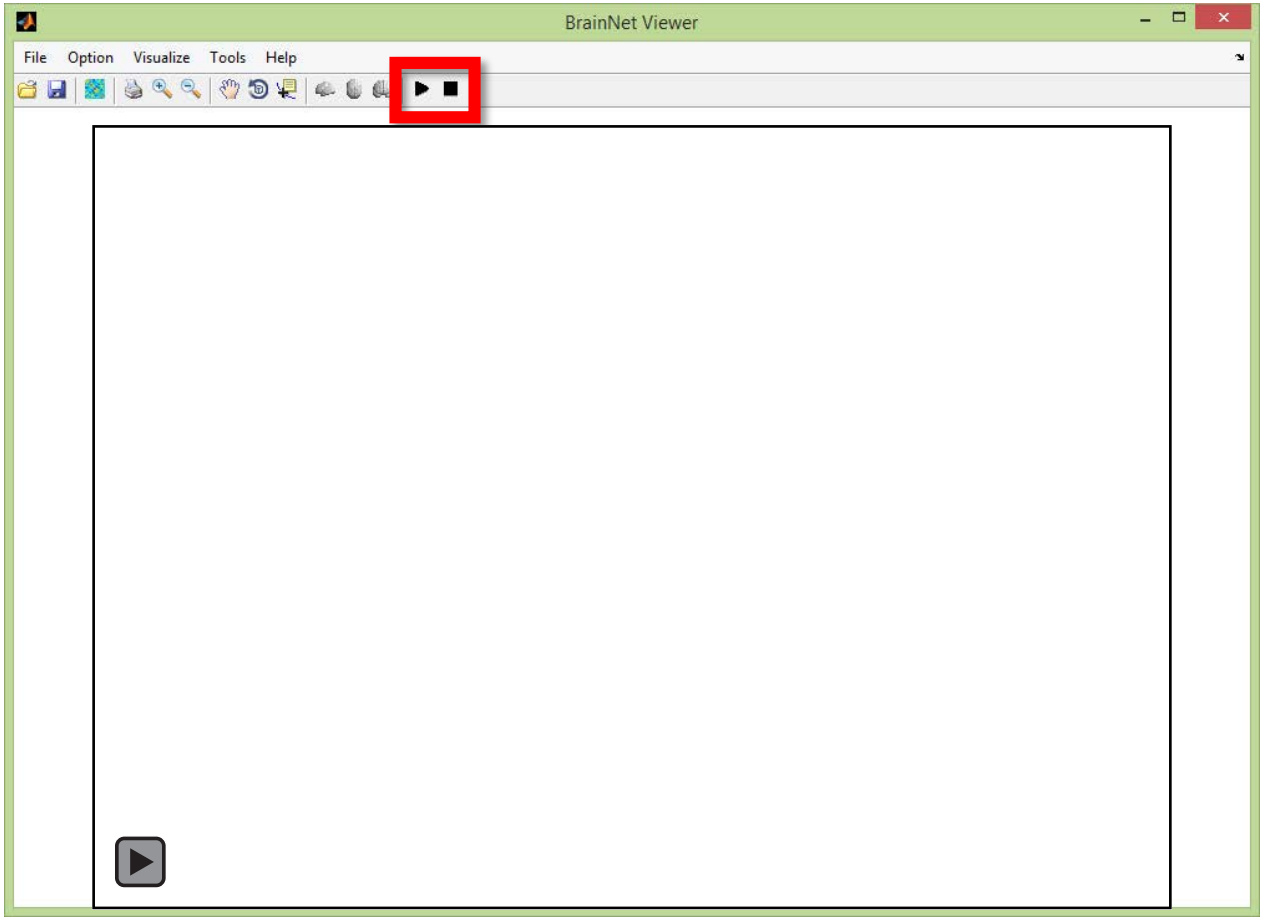
Coronal view





Example 2: Use interactions

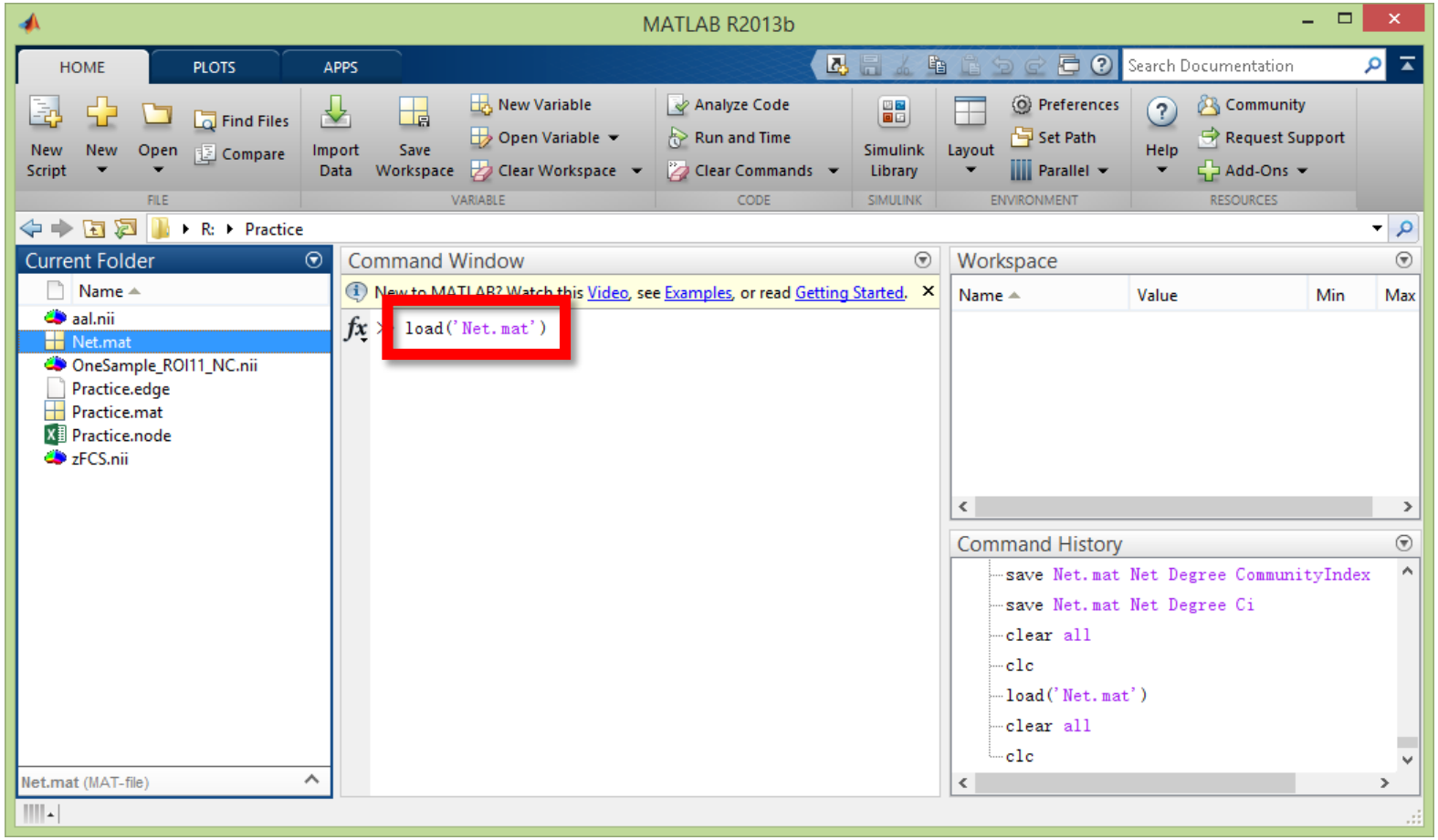
Demo and stop



Contents

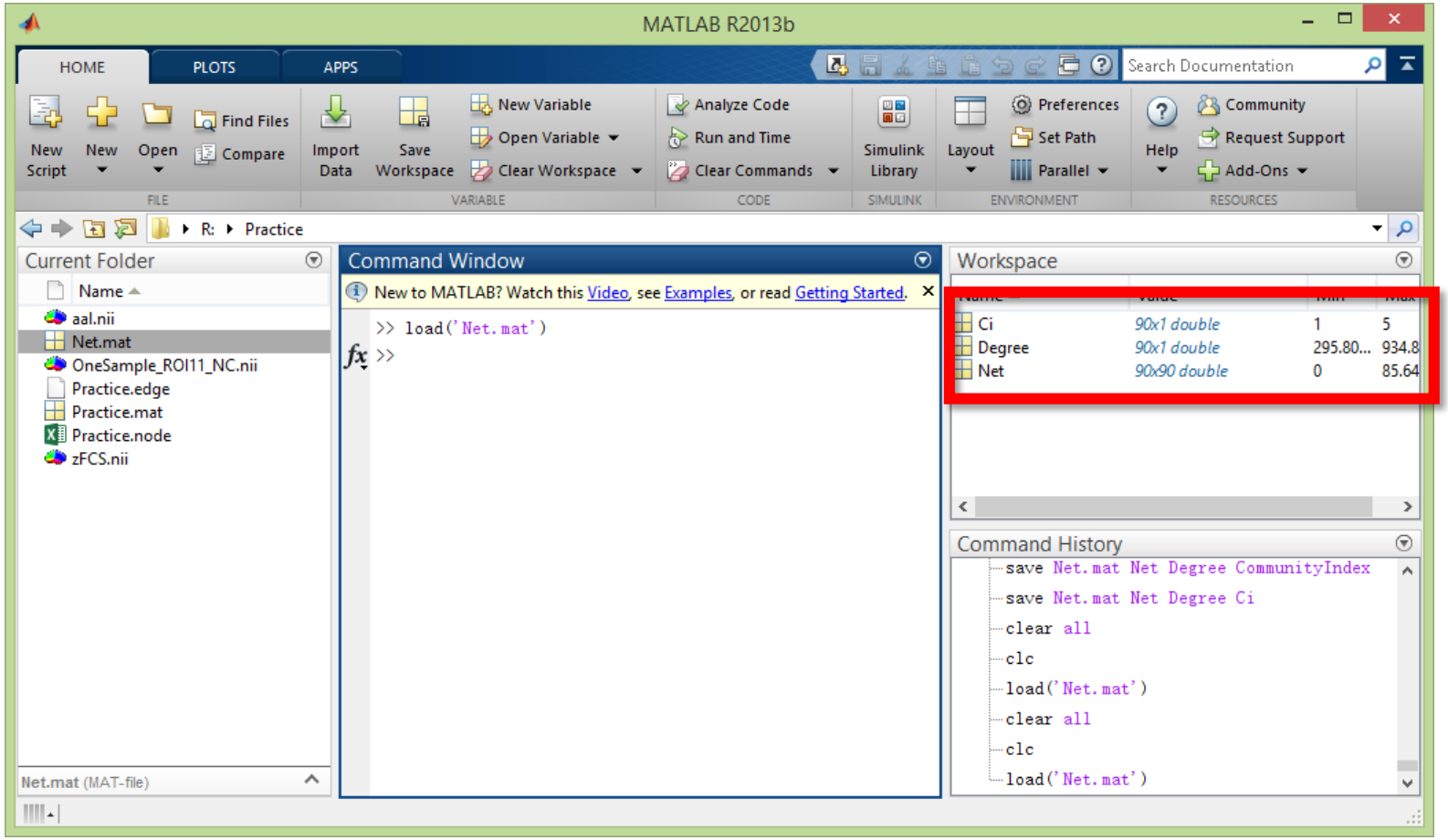
Example 3: Visualize brain surface and node

Prepare node file



Example 3: Visualize brain surface and node

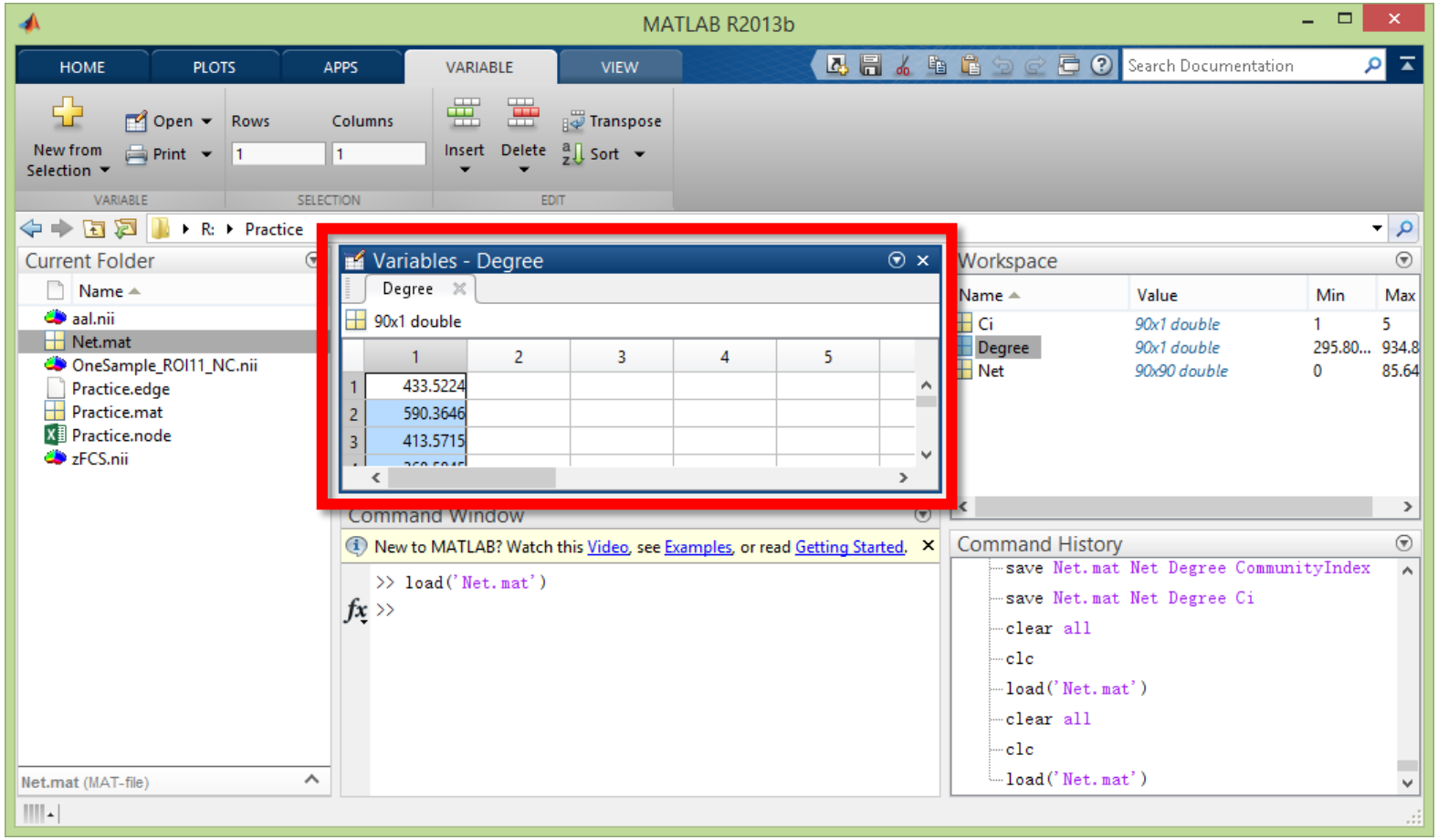
Prepare node file



Example 3: Visualize brain surface and node

Prepare node file

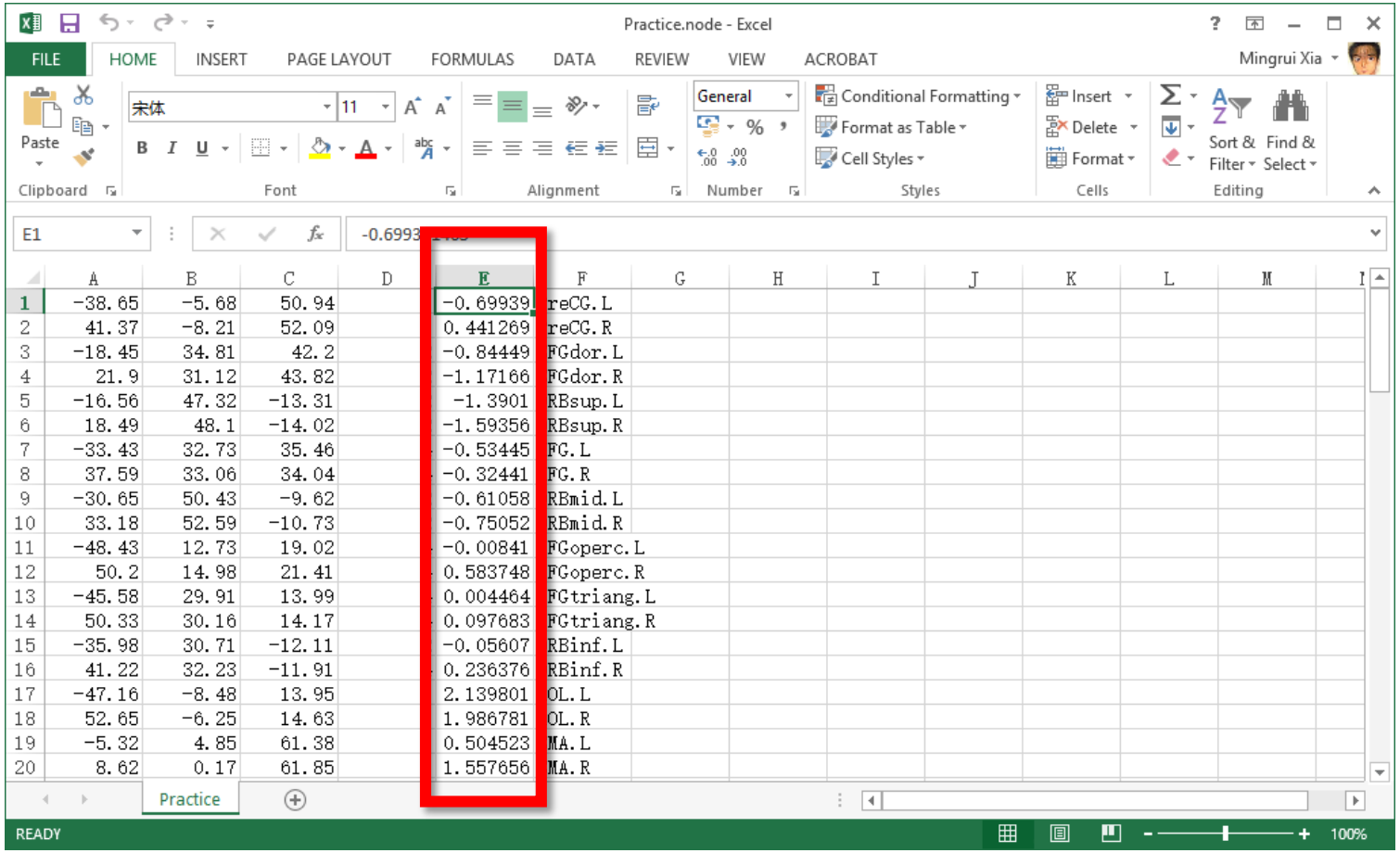
Note: copy the value of variable Degree



Example 3: Visualize brain surface and node

Prepare node file

Note: open the node file with Execel

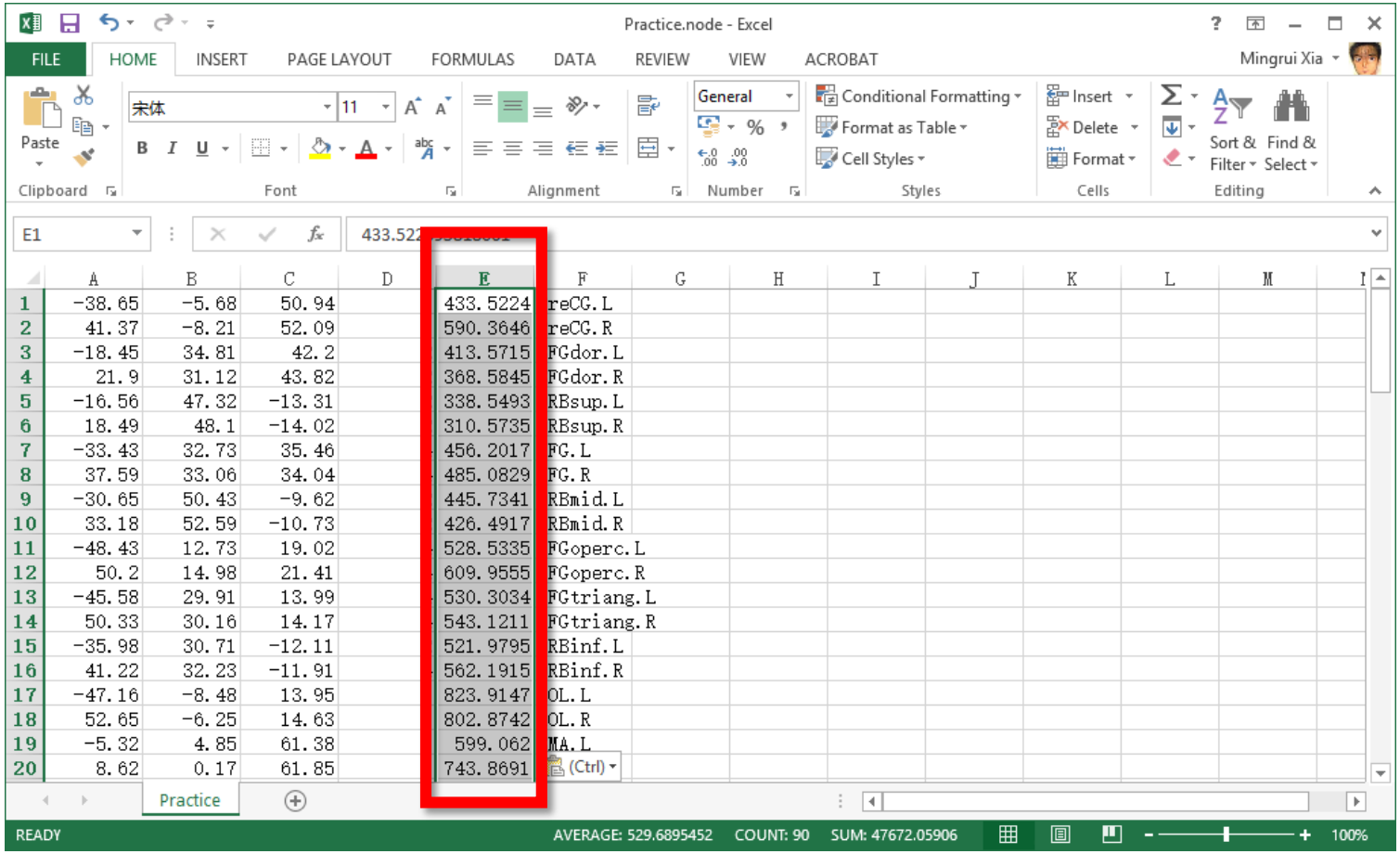


	A	B	C	D	E	F
1	-38.65	-5.68	50.94		-0.69939	reCG.L
2	41.37	-8.21	52.09		0.441269	reCG.R
3	-18.45	34.81	42.2		-0.84449	FGdor.L
4	21.9	31.12	43.82		-1.17166	FGdor.R
5	-16.56	47.32	-13.31		-1.3901	RBsup.L
6	18.49	48.1	-14.02		-1.59356	RBsup.R
7	-33.43	32.73	35.46		-0.53445	FG.L
8	37.59	33.06	34.04		-0.32441	FG.R
9	-30.65	50.43	-9.62		-0.61058	RBmid.L
10	33.18	52.59	-10.73		-0.75052	RBmid.R
11	-48.43	12.73	19.02		-0.00841	FGoperc.L
12	50.2	14.98	21.41		0.583748	FGoperc.R
13	-45.58	29.91	13.99		0.004464	FGtriang.L
14	50.33	30.16	14.17		0.097683	FGtriang.R
15	-35.98	30.71	-12.11		-0.05607	RBinf.L
16	41.22	32.23	-11.91		0.236376	RBinf.R
17	-47.16	-8.48	13.95		2.139801	OL.L
18	52.65	-6.25	14.63		1.986781	OL.R
19	-5.32	4.85	61.38		0.504523	MA.L
20	8.62	0.17	61.85		1.557656	MA.R

Example 3: Visualize brain surface and node

Prepare node file

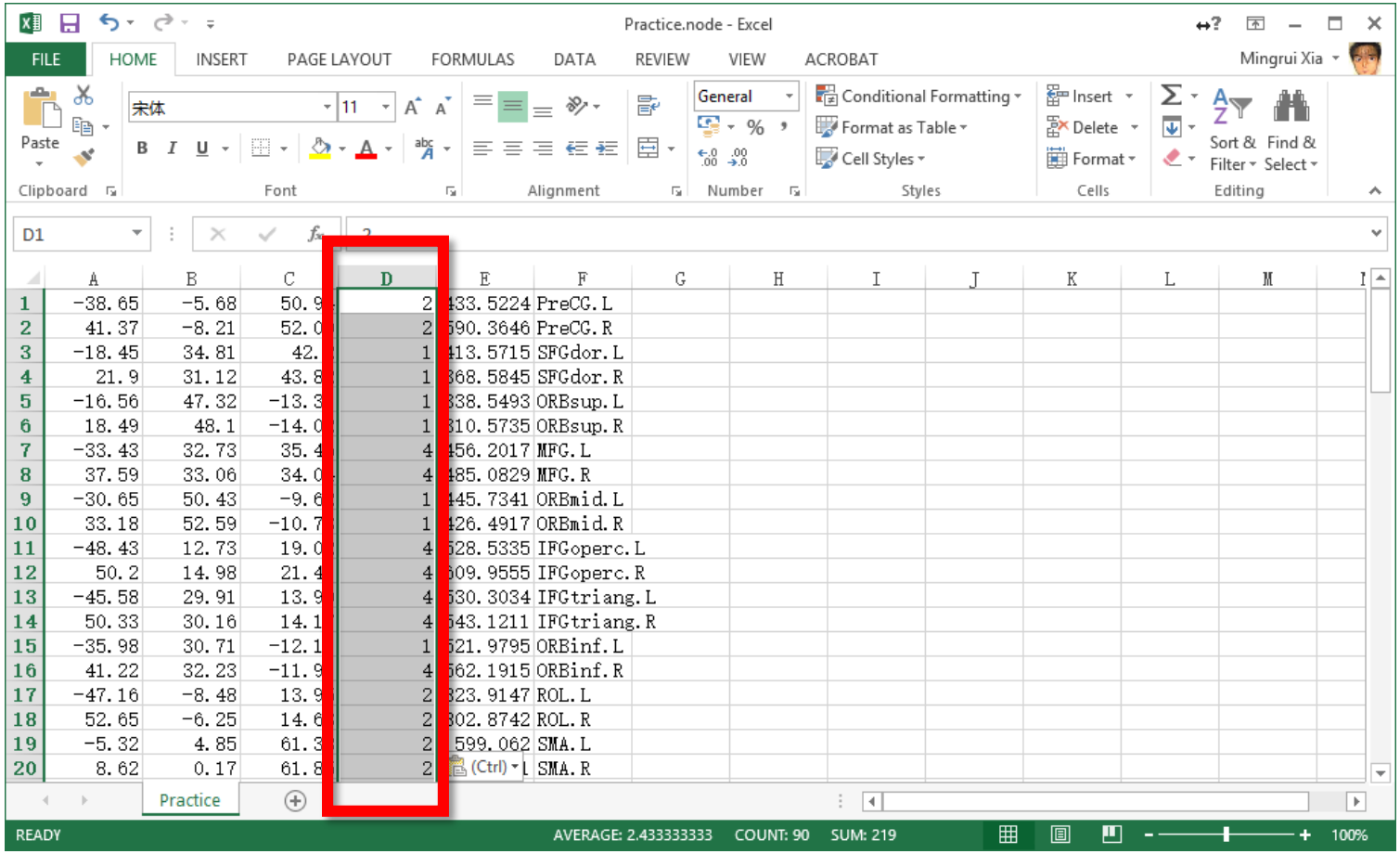
Note: to display the nodal size as degree,
replace the value of the fifth column with the value of Degree



Example 3: Visualize brain surface and node

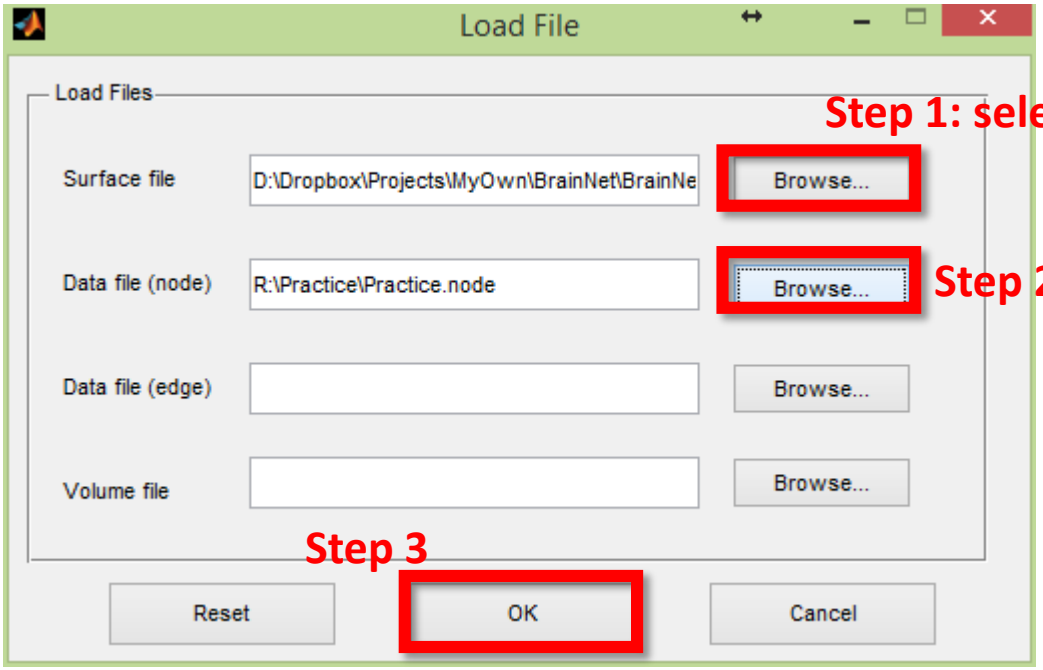
Prepare node file

Note: to display the nodal color as module, replace the value of the forth column with the value of Ci. Last step, save the file as its original format.



Example 3: Visualize brain surface and node

Load files



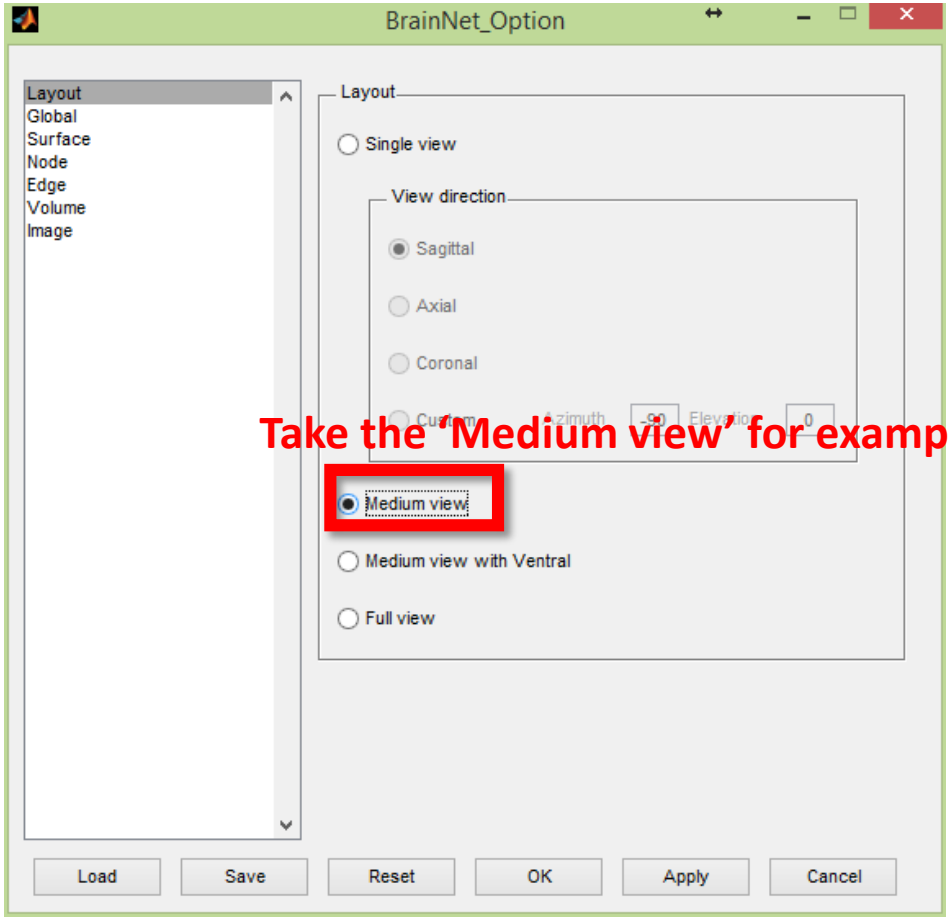
Step 1: select brain surface file

Step 2: select node file

Step 3

Example 3: Visualize brain surface and node

Configuration - layout



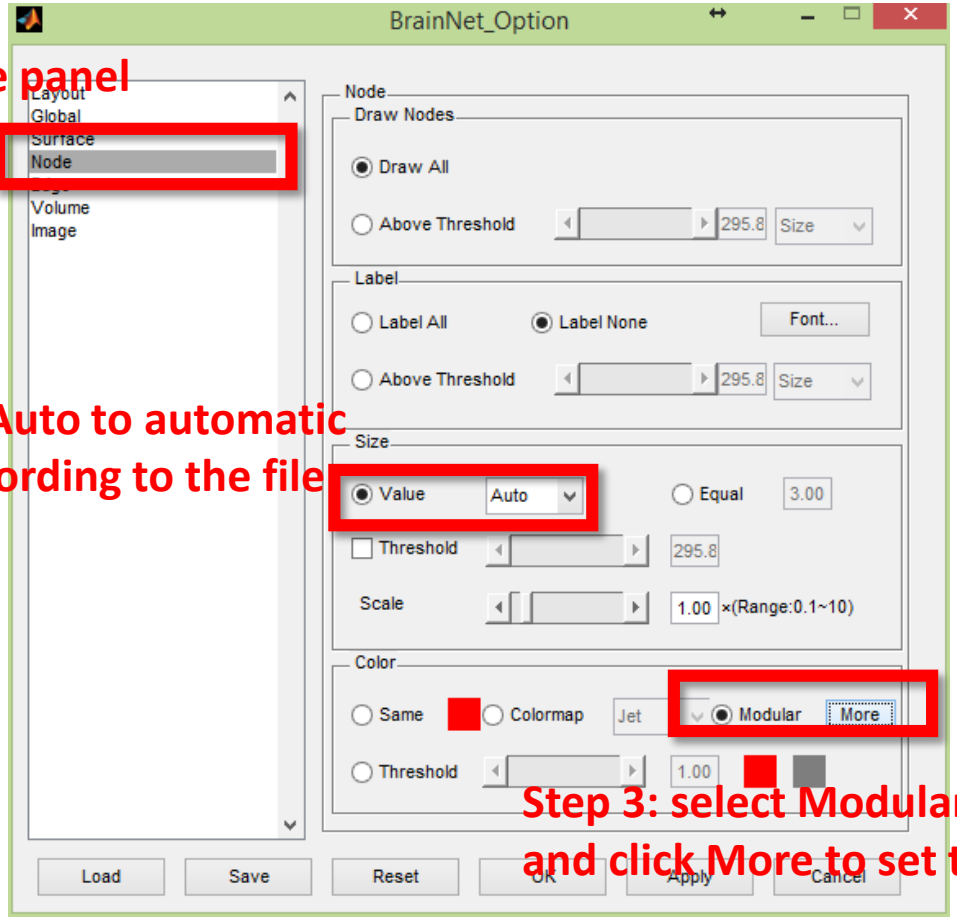
Take the 'Medium view' for example

Example 3: Visualize brain surface and node

Configuration - node

Step 1: select the Node panel

Step 2: select Value->Auto to automatic arrange nodal size according to the file

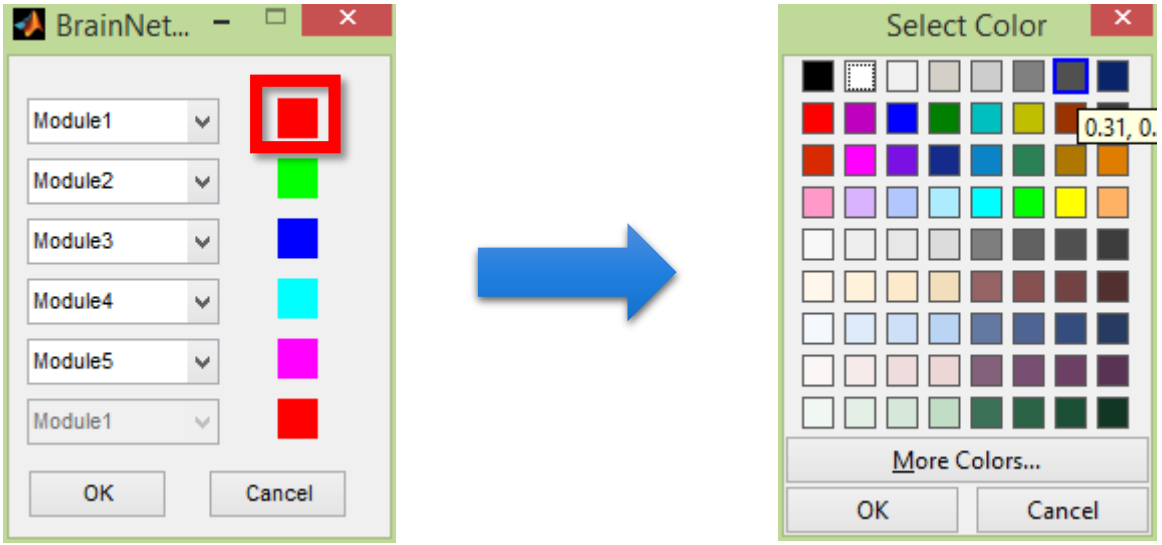


Step 3: select Modular to set nodal color, and click More to set the color of each module

Example 3: Visualize brain surface and node

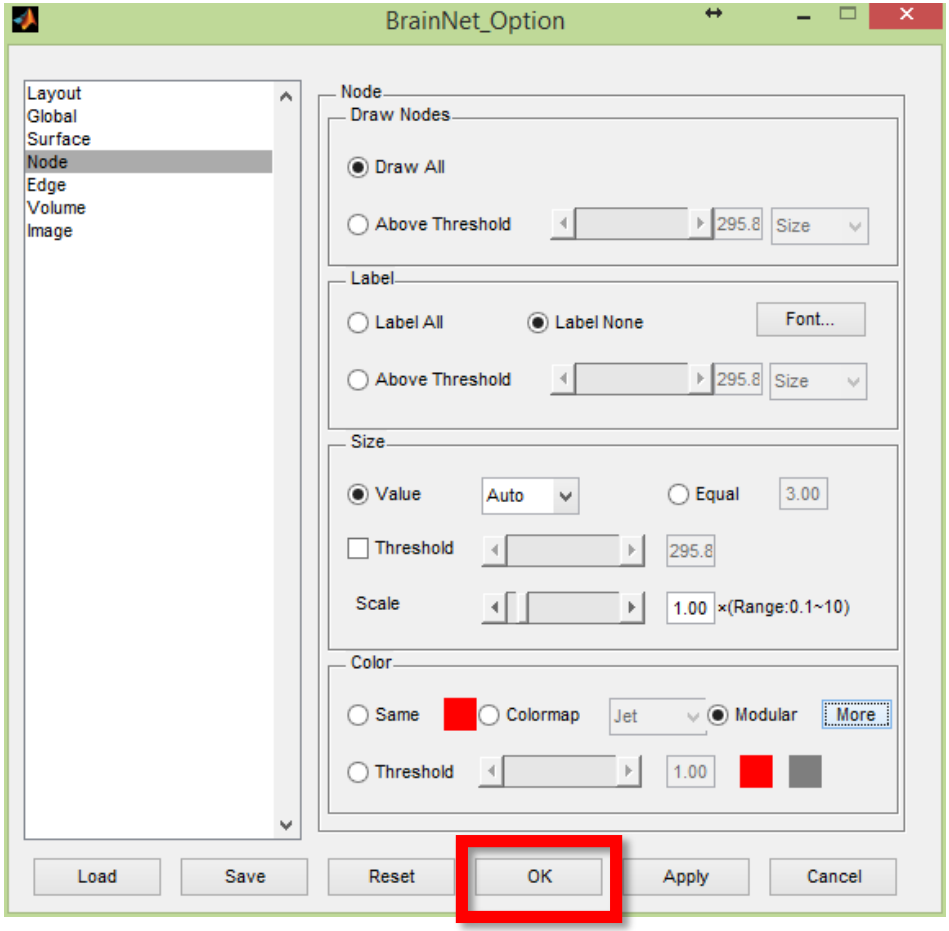
Configuration – nodal color

Right click to change color



Example 3: Visualize brain surface and node

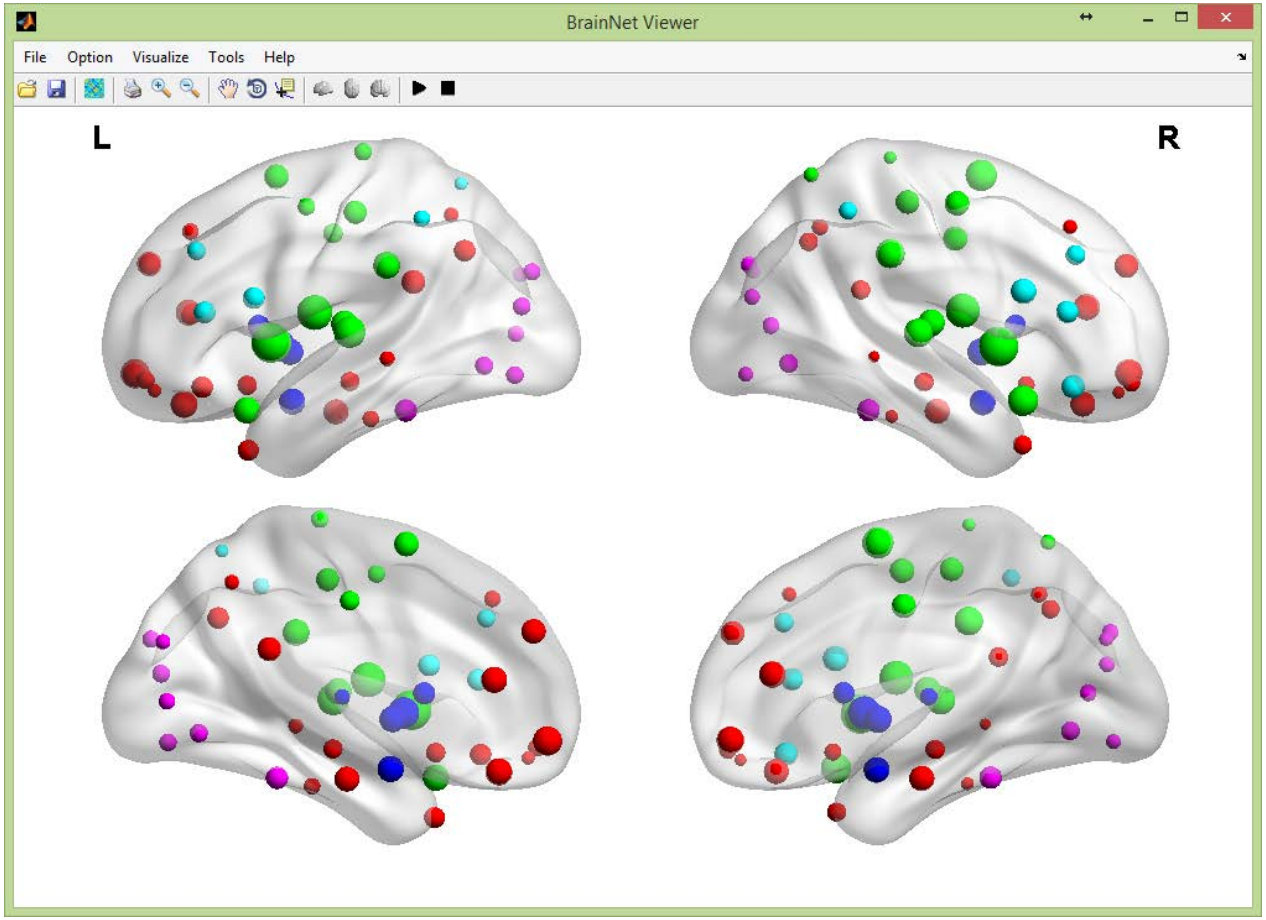
Configuration - node



Click OK when finish setting

Example 3: Visualize brain surface and node

Figure drawing

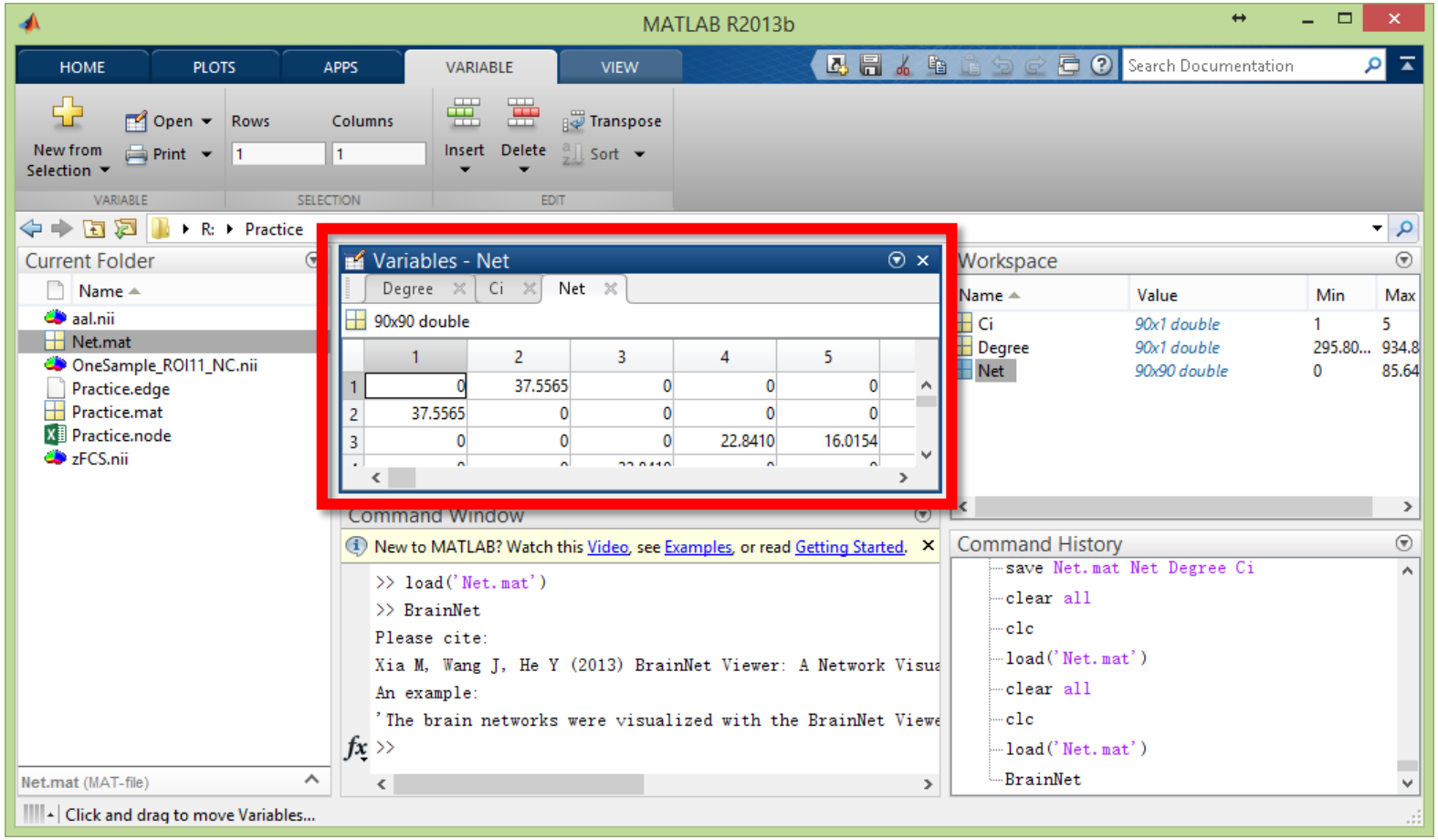


Contents

Example 4: Visualize brain network

Prepare edge file, see example 3 for node file preparation

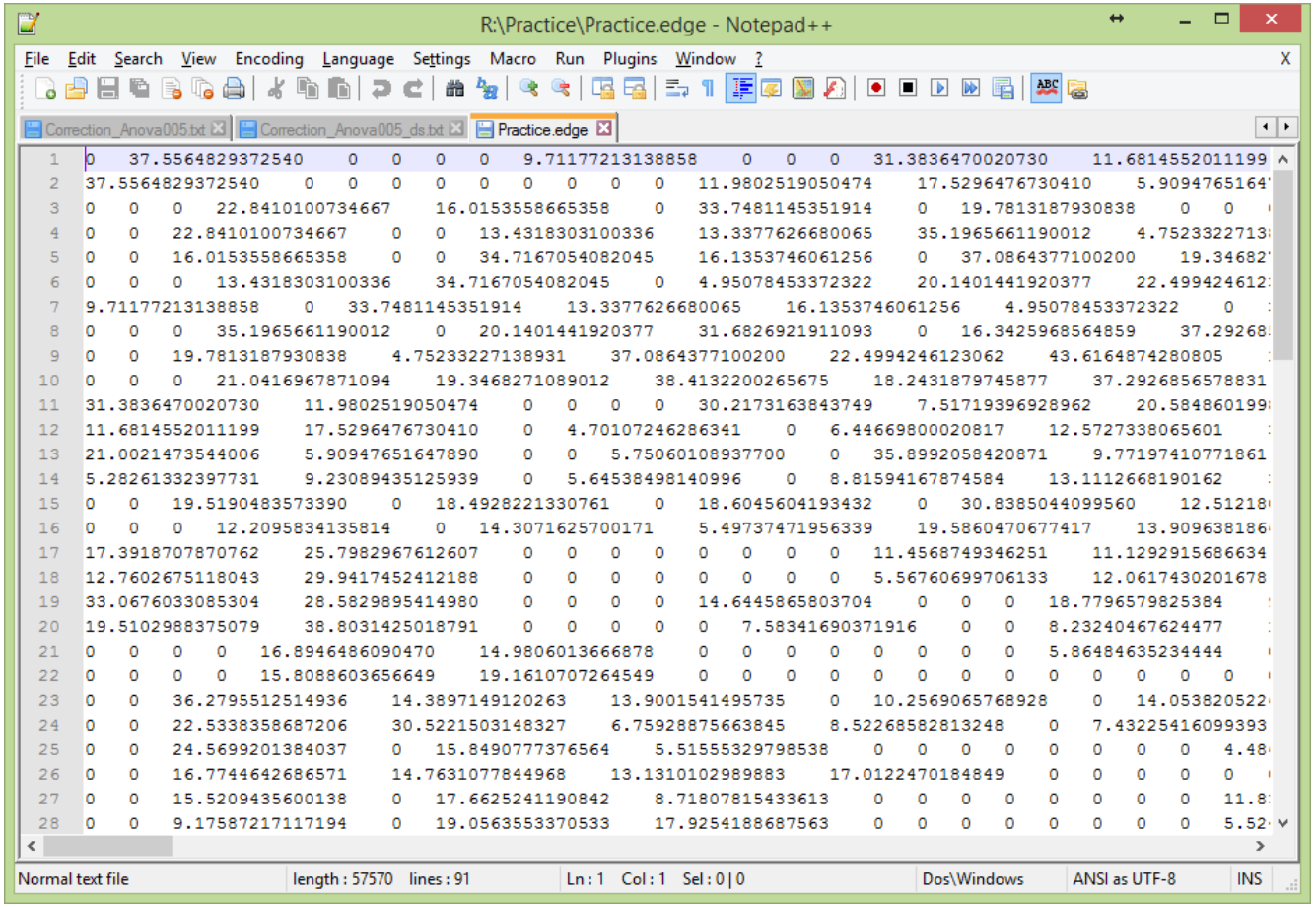
Note: copy the value of variable Net



Example 4: Visualize brain network

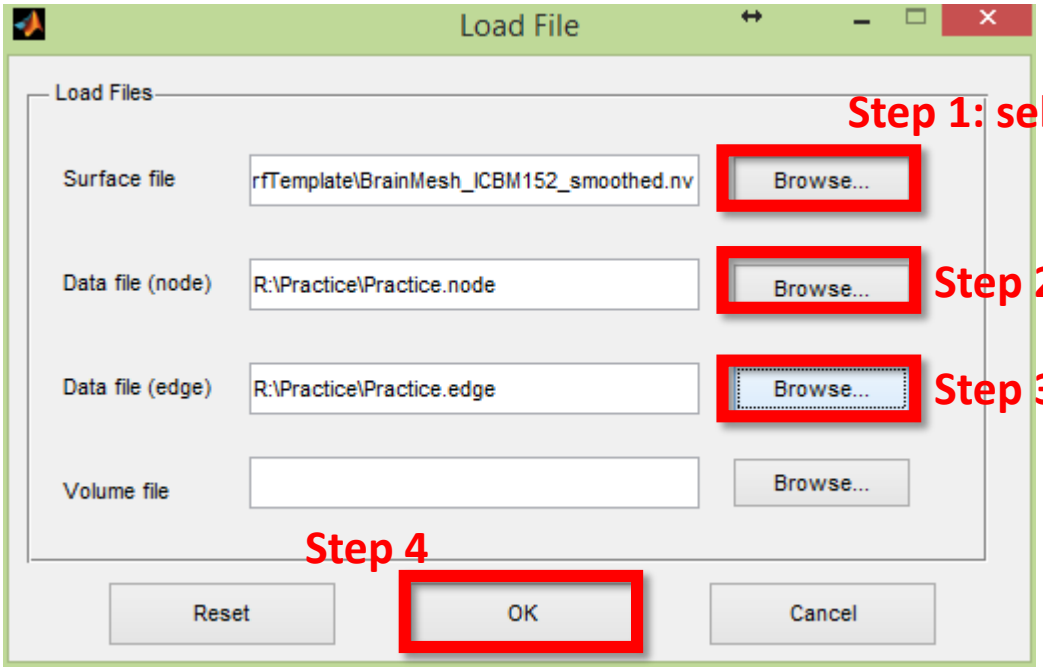
Prepare edge file

Note: open the Practice.edge file with text editor, paste the matrix, and save in original file format



Example 4: Visualize brain network

Load files



Step 1: select brain surface file

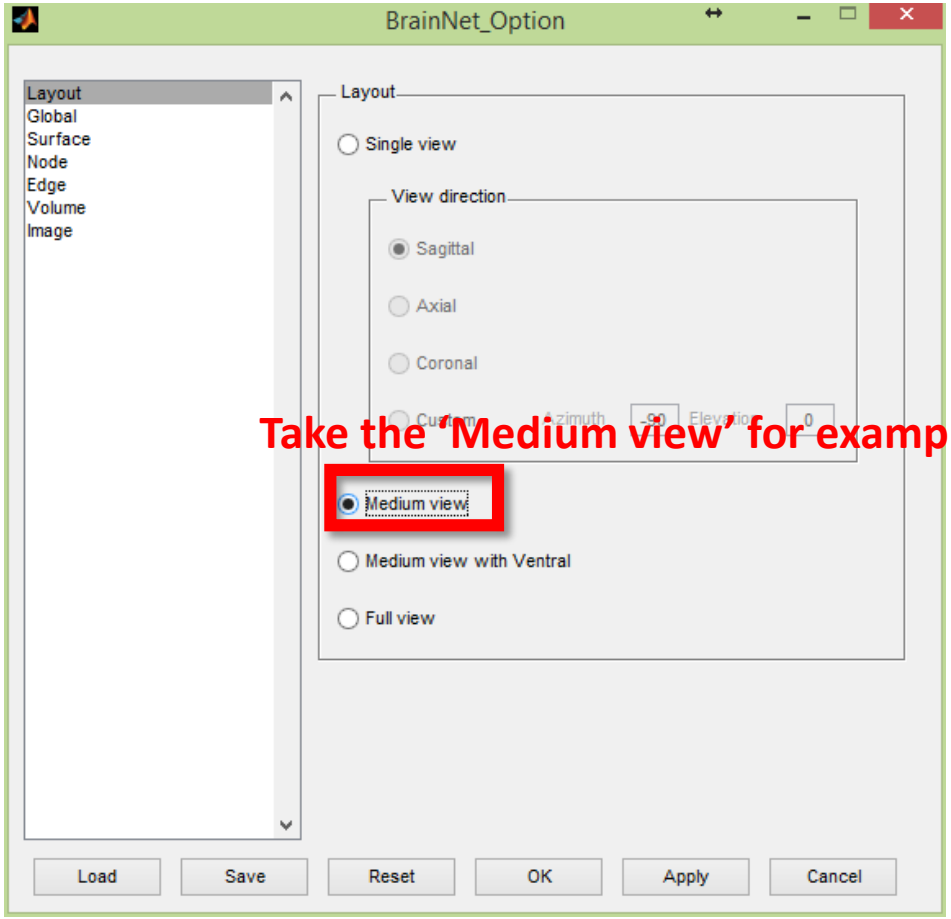
Step 2: select node file

Step 3: select edge file

Step 4

Example 4: Visualize brain network

Configuration - layout



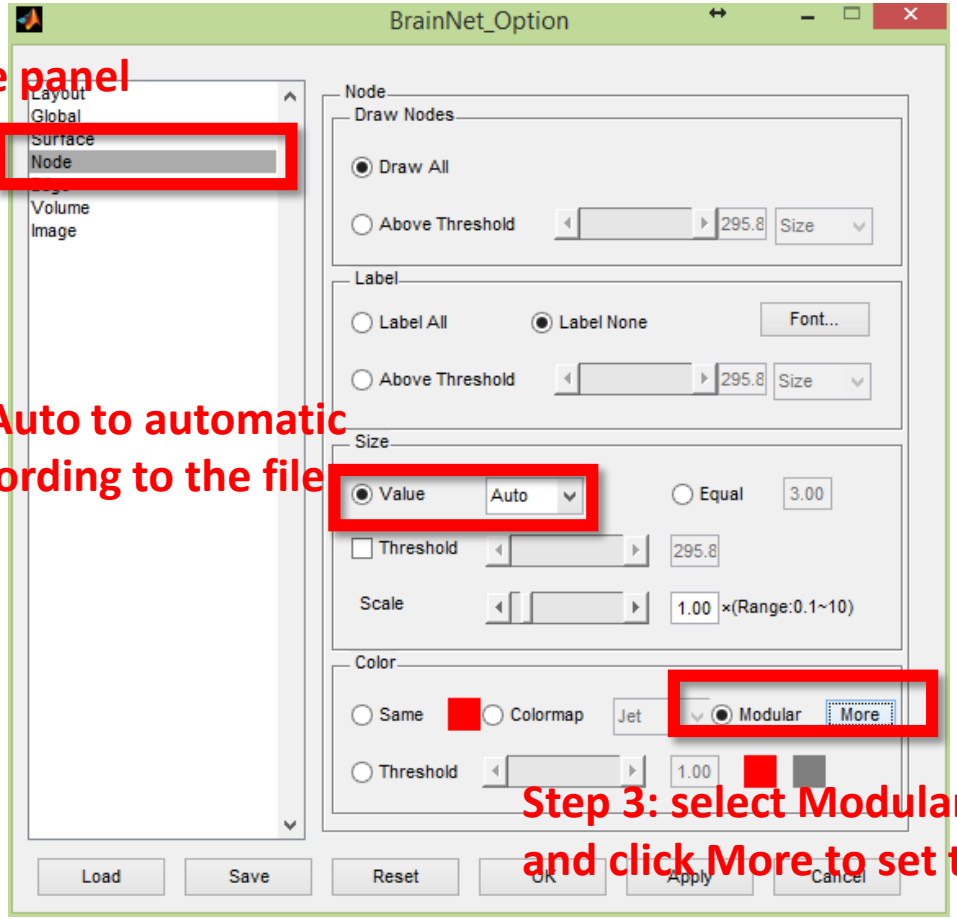
Take the 'Medium view' for example

Example 4: Visualize brain network

Configuration - node

Step 1: select the Node panel

Step 2: select Value->Auto to automatic arrange nodal size according to the file

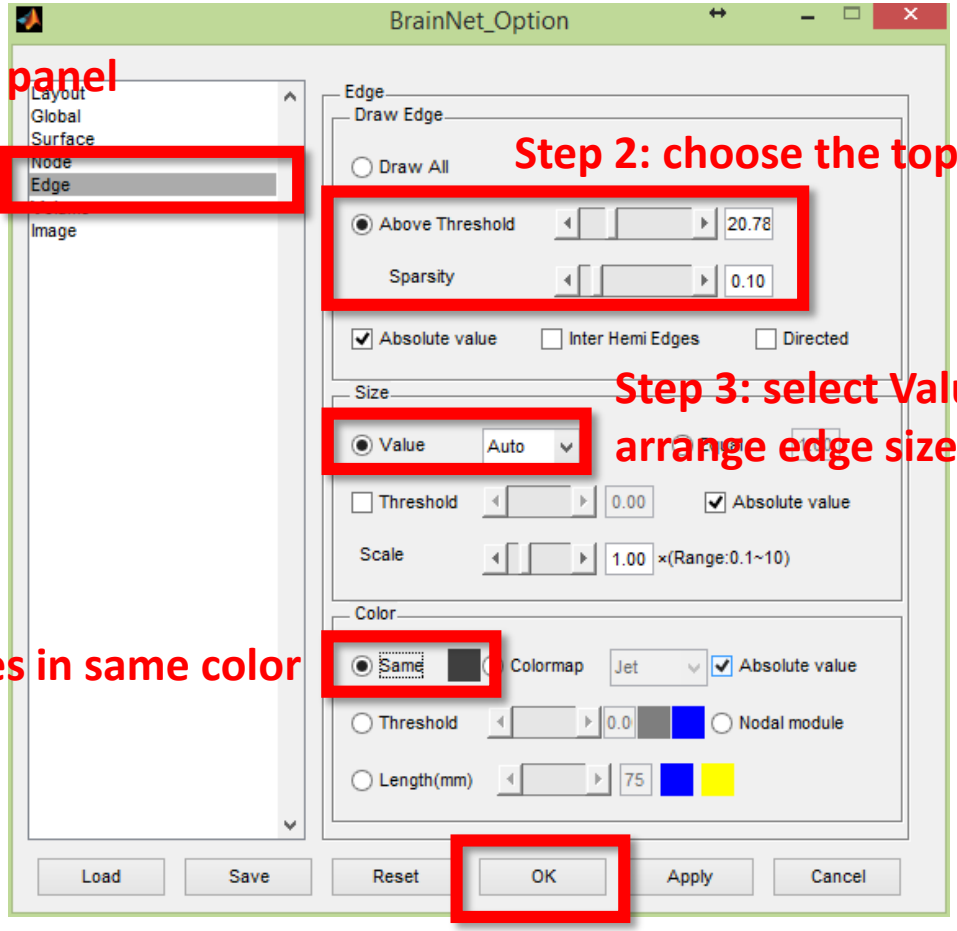


Step 3: select Modular to set nodal color, and click More to set the color of each module

Example 4: Visualize brain network

Configuration - edge

Step 1: select the Edge panel



Step 2: choose the top 10% edge to be drawn

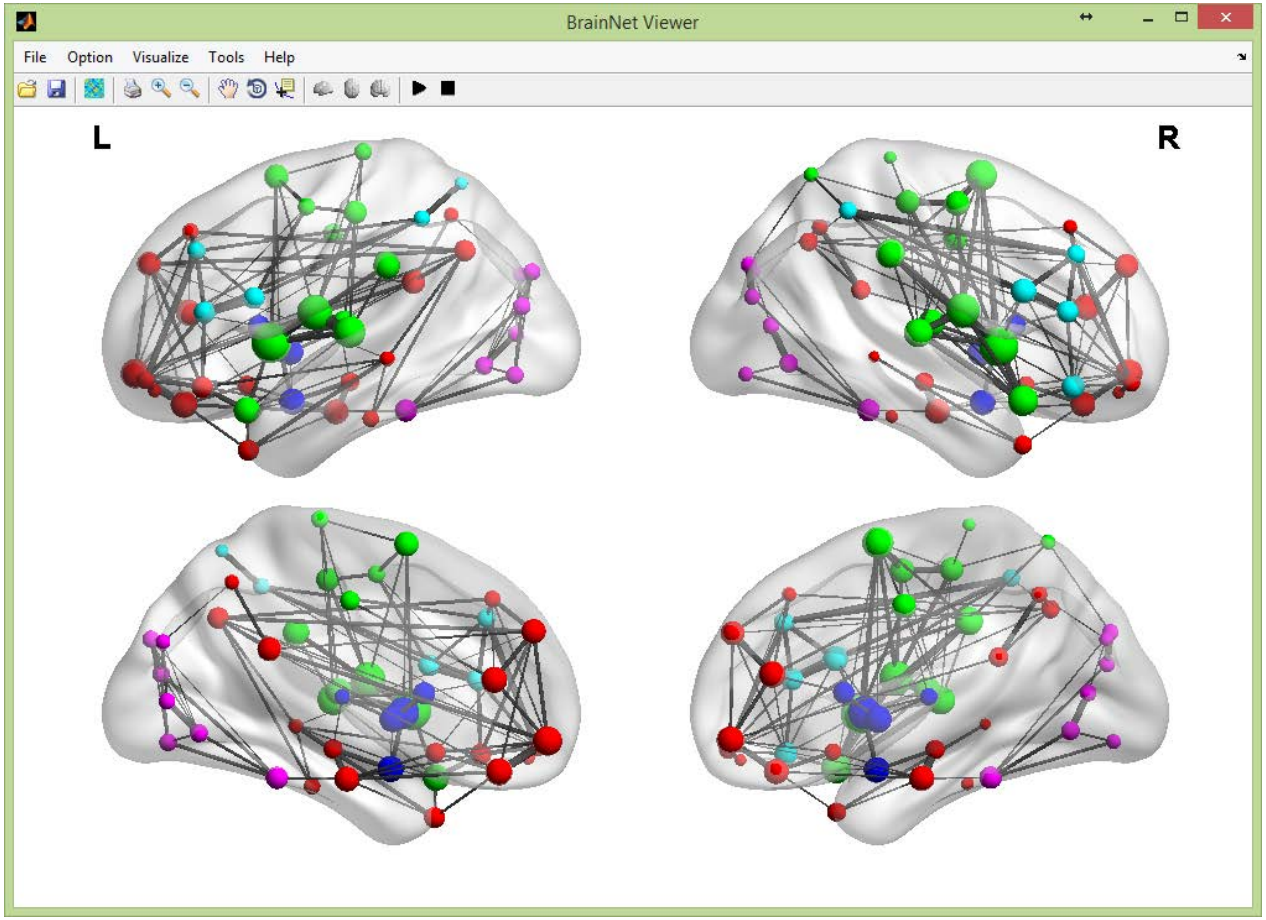
Step 3: select Value->Auto to automatic arrange edge size according to the file

Step 4: display all edges in same color

Step 5: click OK when finish

Example 4: Visualize brain network

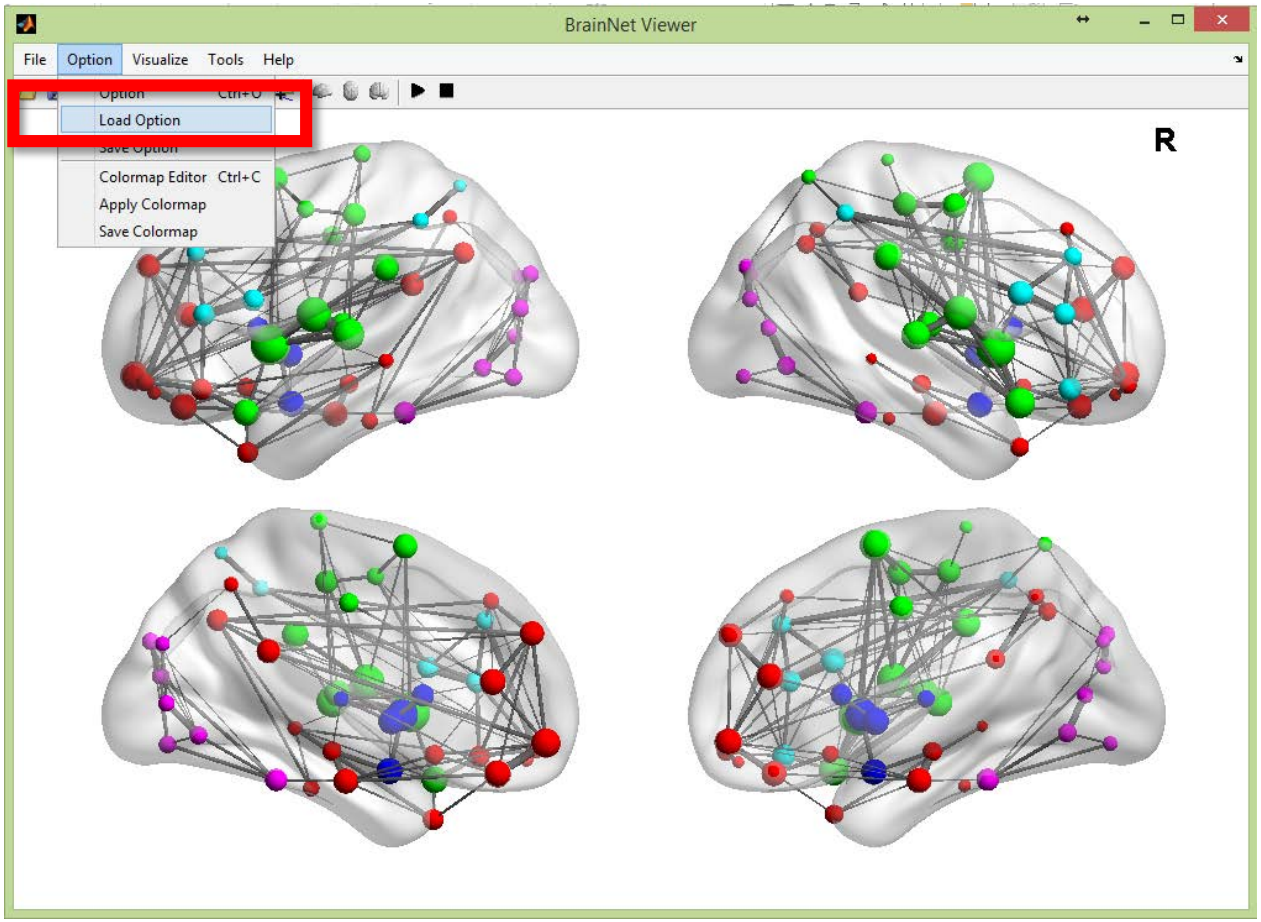
Figure drawing



Example 4: Visualize brain network

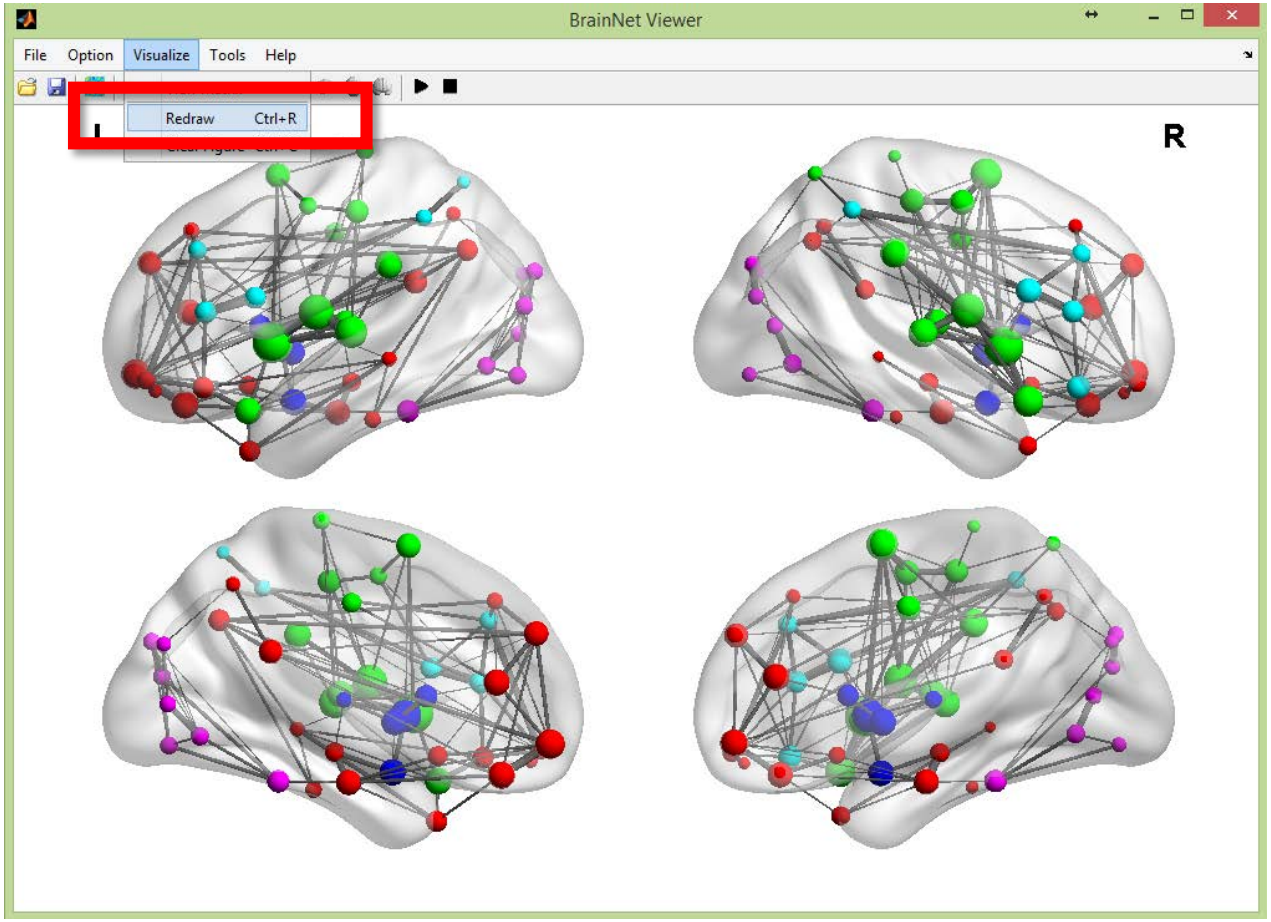
Load a pre-saved option file

Select Practice.mat in the popup dialog



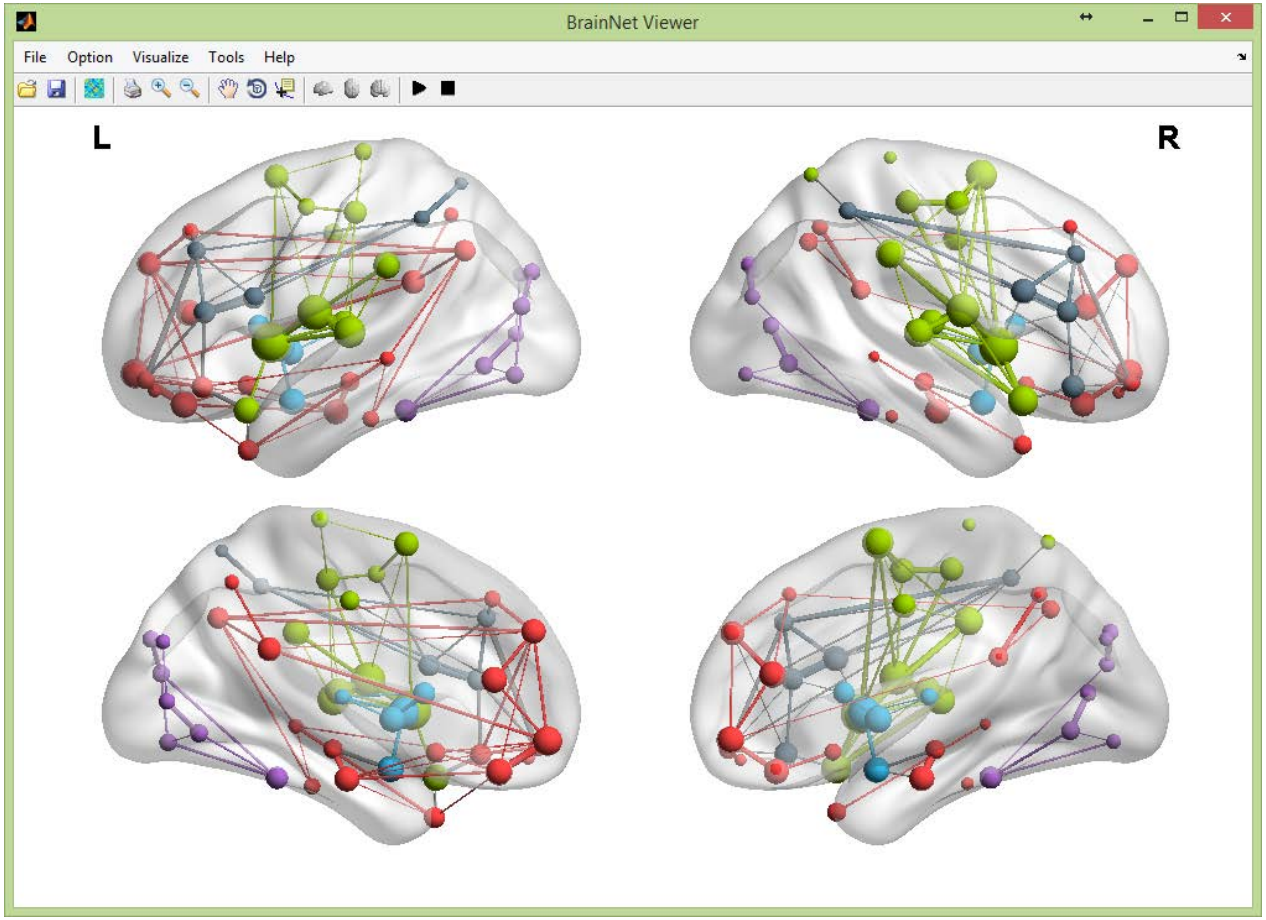
Example 4: Visualize brain network

Load a pre-saved option file



Example 4: Visualize brain network

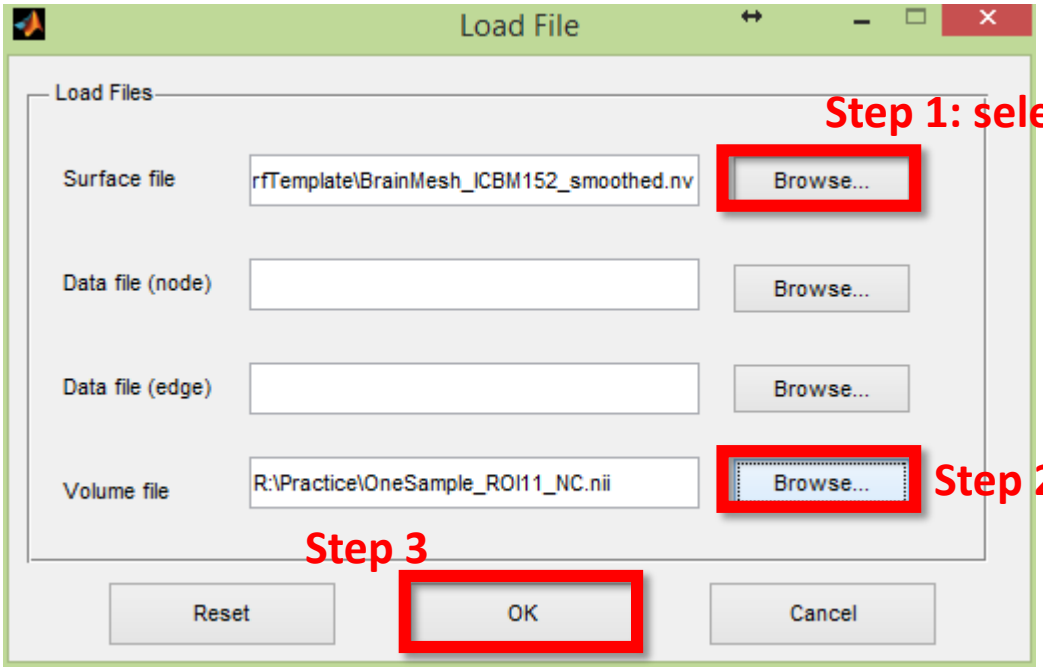
Load a pre-saved option file



Contents

Example 5: Map statistical volume file

Load files



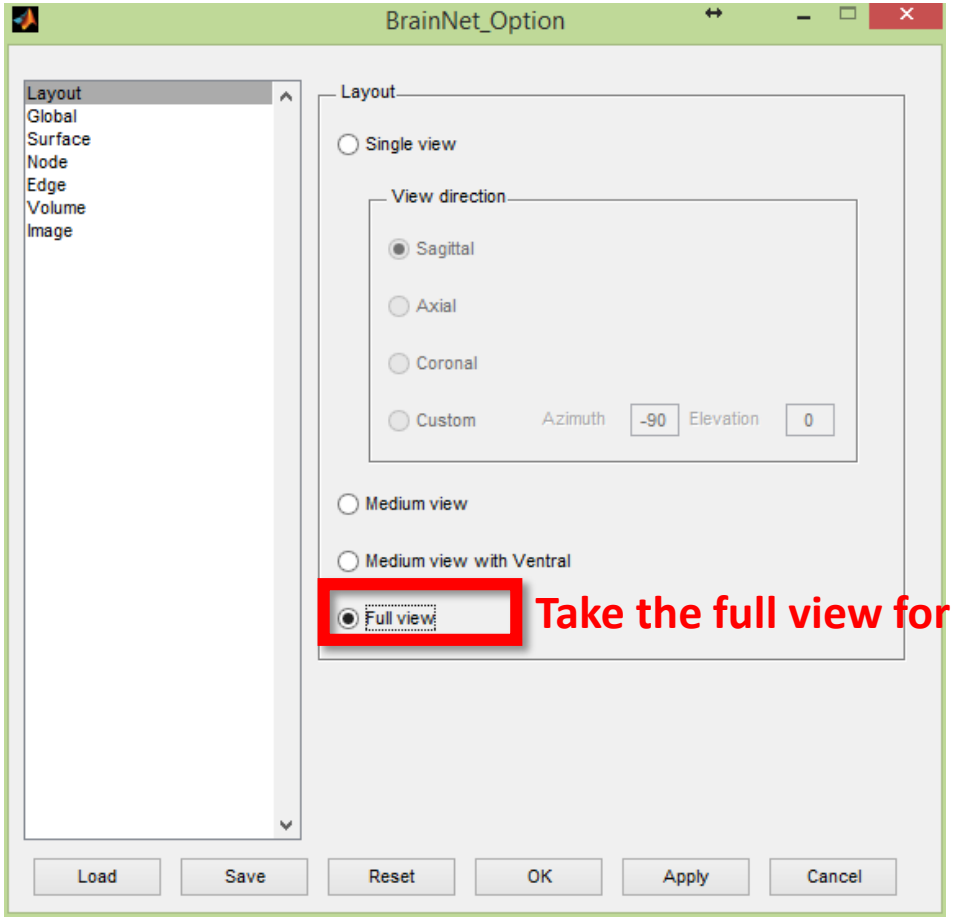
Step 1: select brain surface file

Step 2: select volume file

Step 3

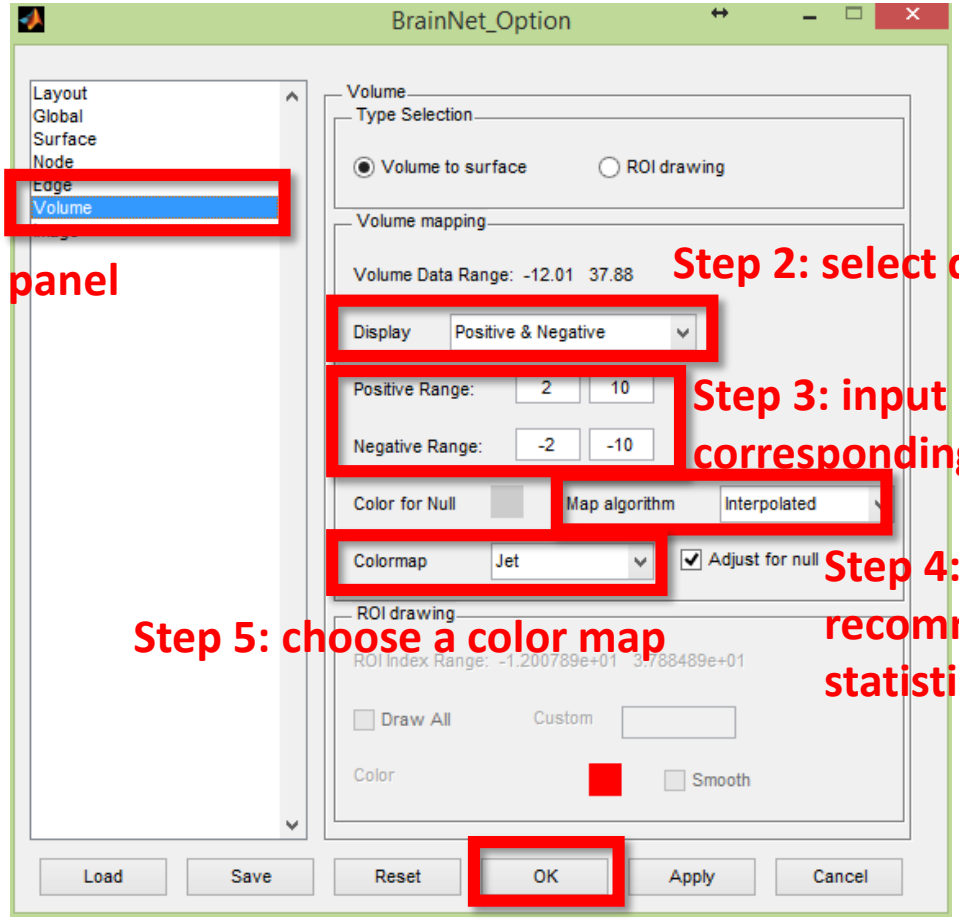
Example 5: Map statistical volume file

Configuration - Layout



Example 5: Map statistical volume file

Configuration - Volume



Step 1: select Volume panel

Step 2: select data

Step 3: input map range, usually corresponding to statistical threshold

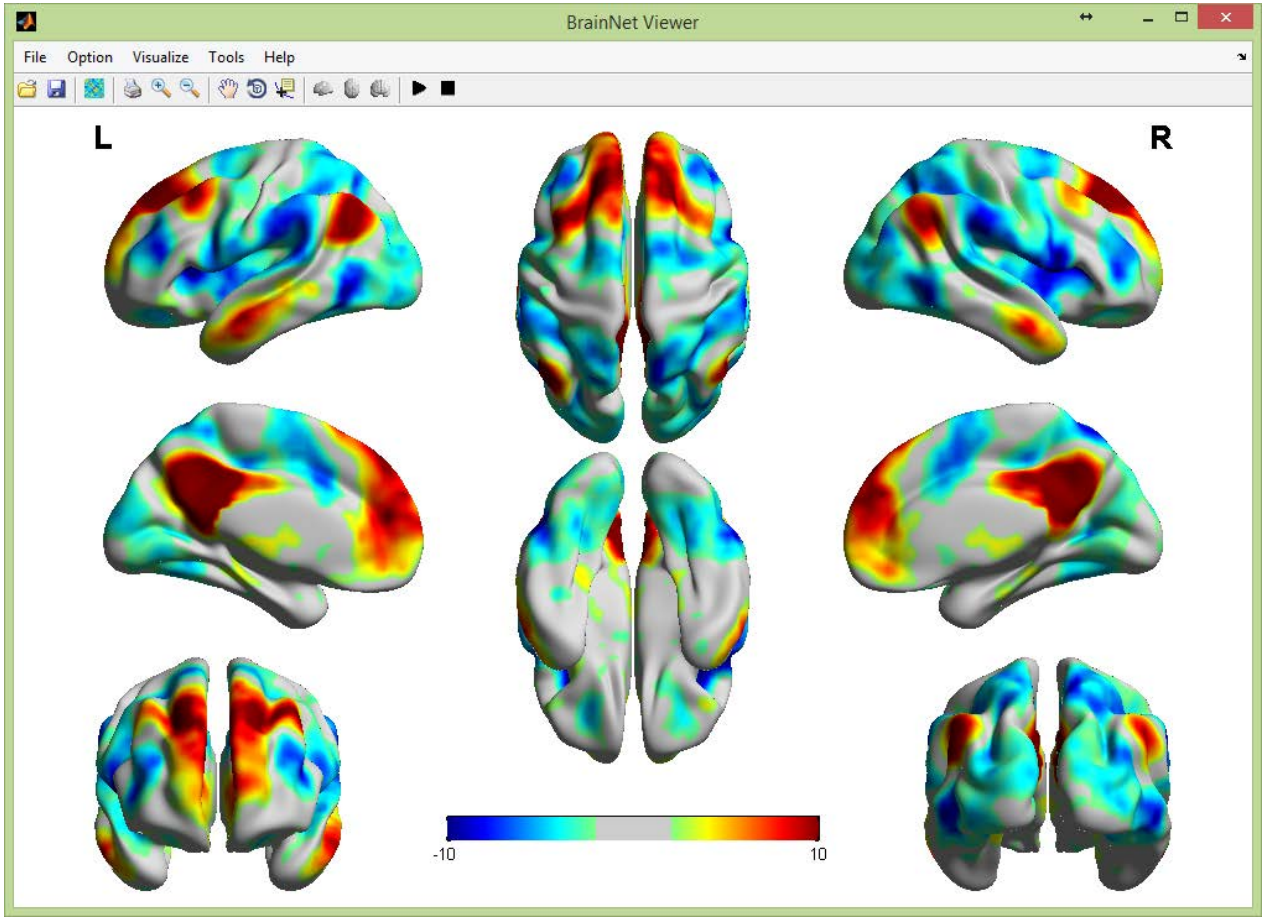
Step 4: select map algorithm, recommend interpolated for statistical map

Step 5: choose a color map

Step 6

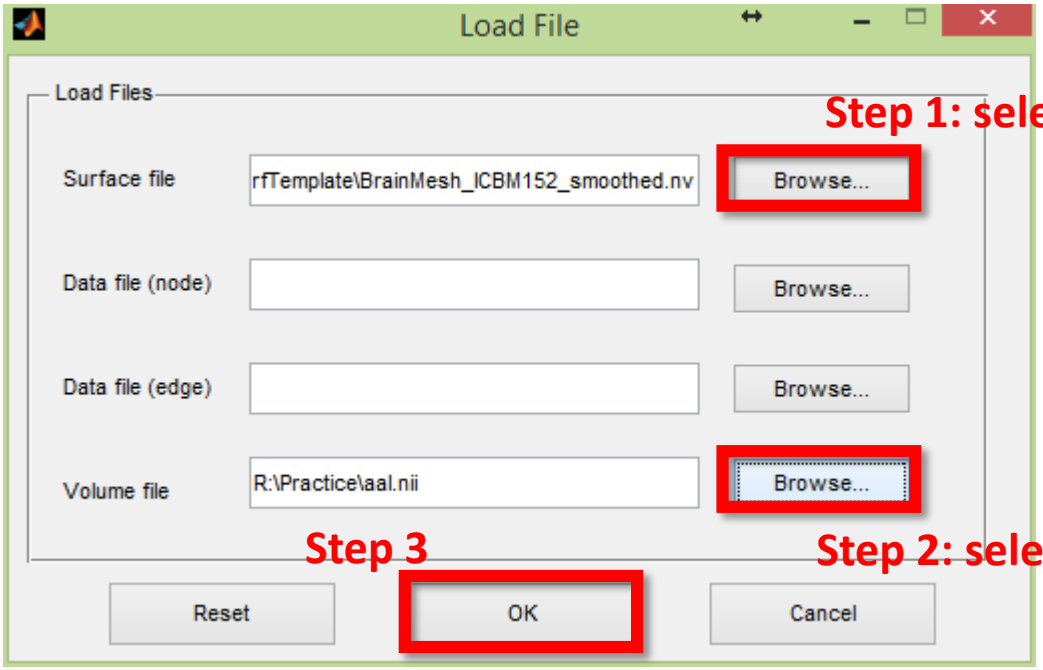
Example 5: Map statistical volume file

Figure drawing



Example 5: Map atlas volume file

Load files



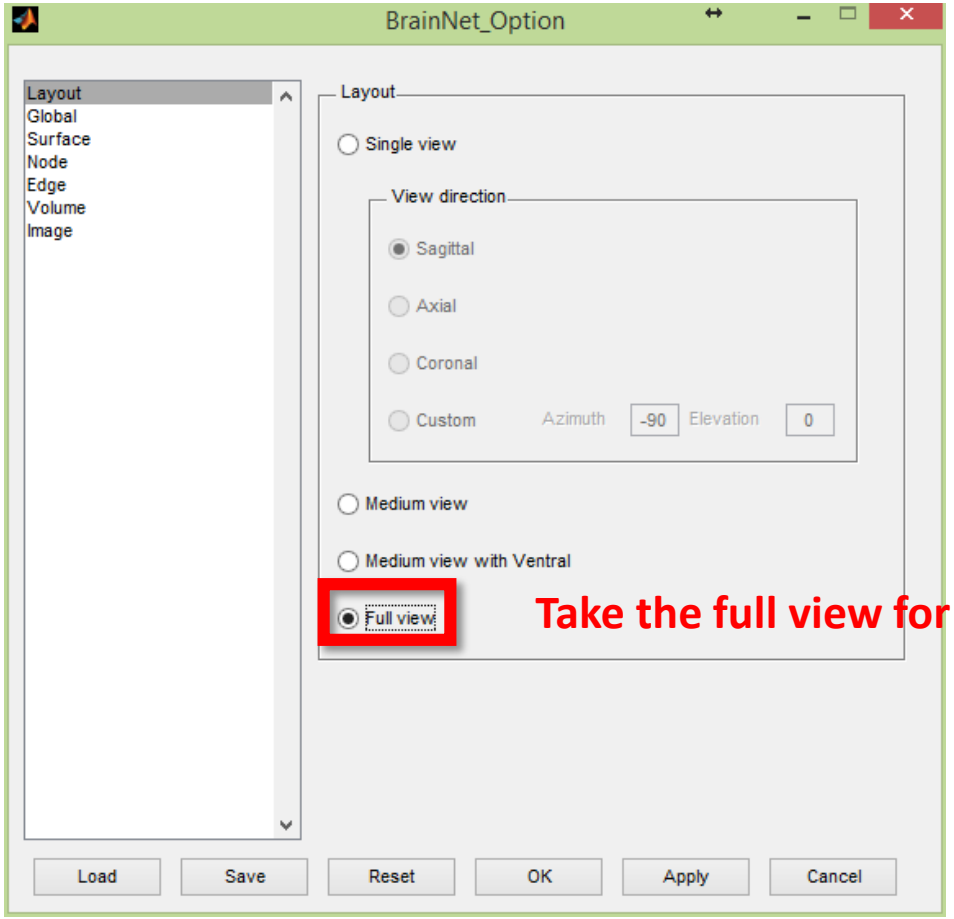
Step 1: select brain surface file

Step 3

Step 2: select atlas volume file

Example 5: Map atlas volume file

Configuration - Layout

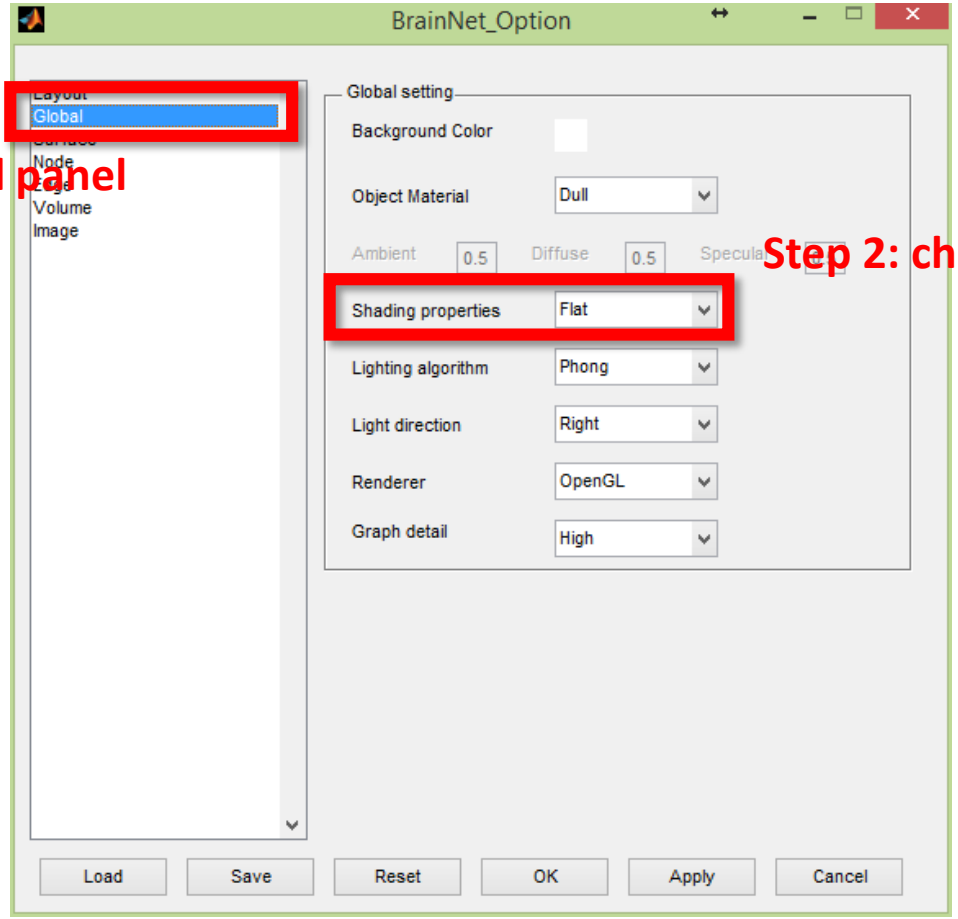


Take the full view for example

Example 5: Map atlas volume file

Configuration - Global

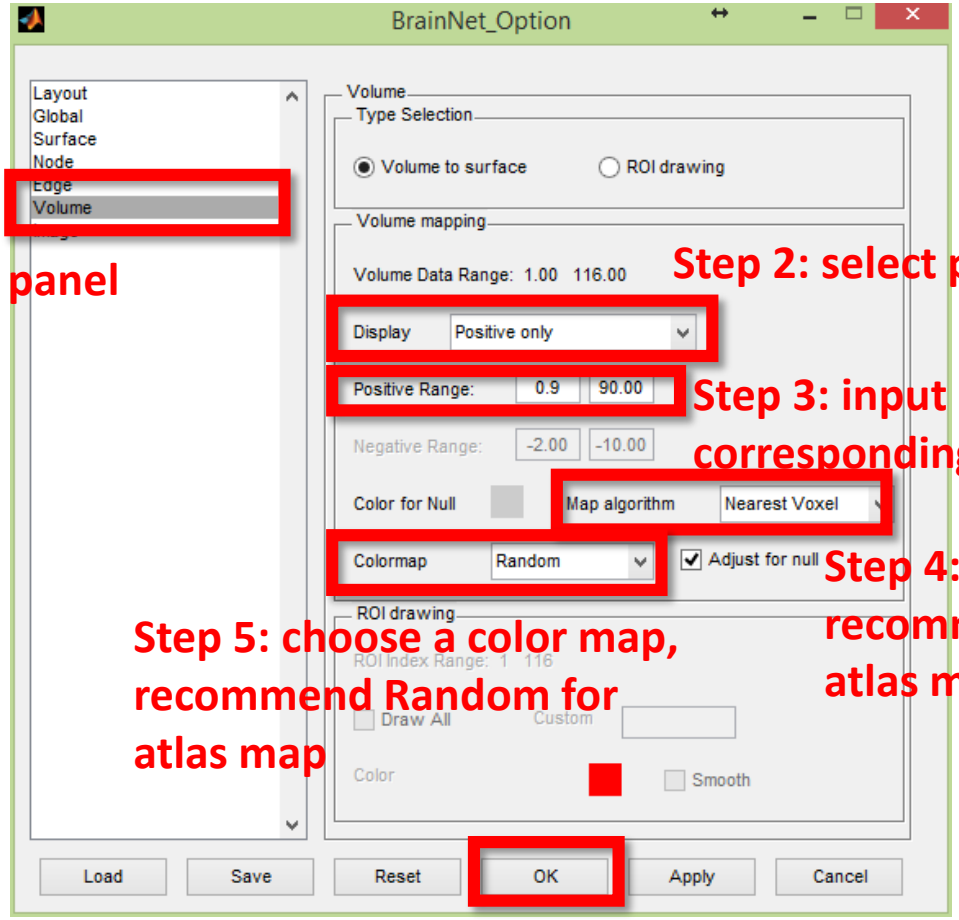
Step 1: choose Global panel



Step 2: change shading to Flat

Example 5: Map atlas volume file

Configuration - Volume



Step 1: select Volume panel

Step 2: select positive only

Step 3: input map range, usually corresponding to brain region

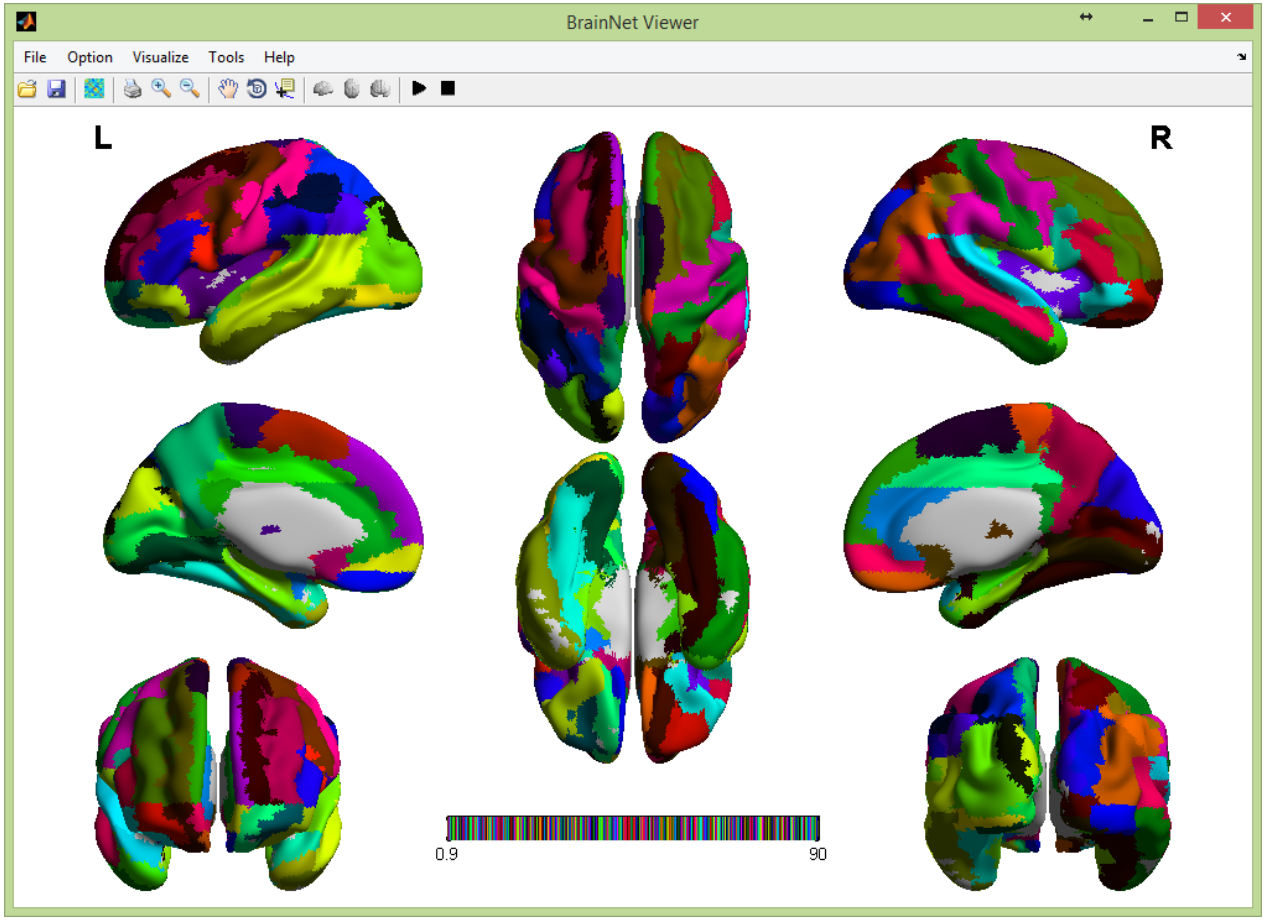
Step 4: select map algorithm, recommend Nearest Voxel for atlas map

Step 5: choose a color map, recommend Random for atlas map

Step 6

Example 5: Map atlas volume file

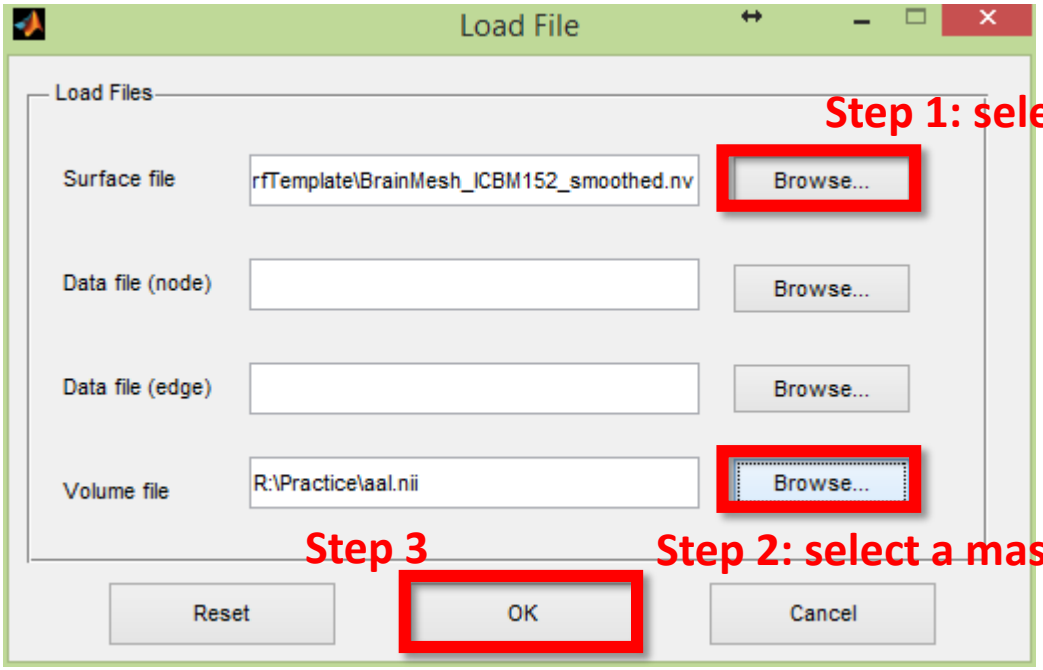
Figure drawing



Contents

Example 6: Construct 3D ROI

Load files



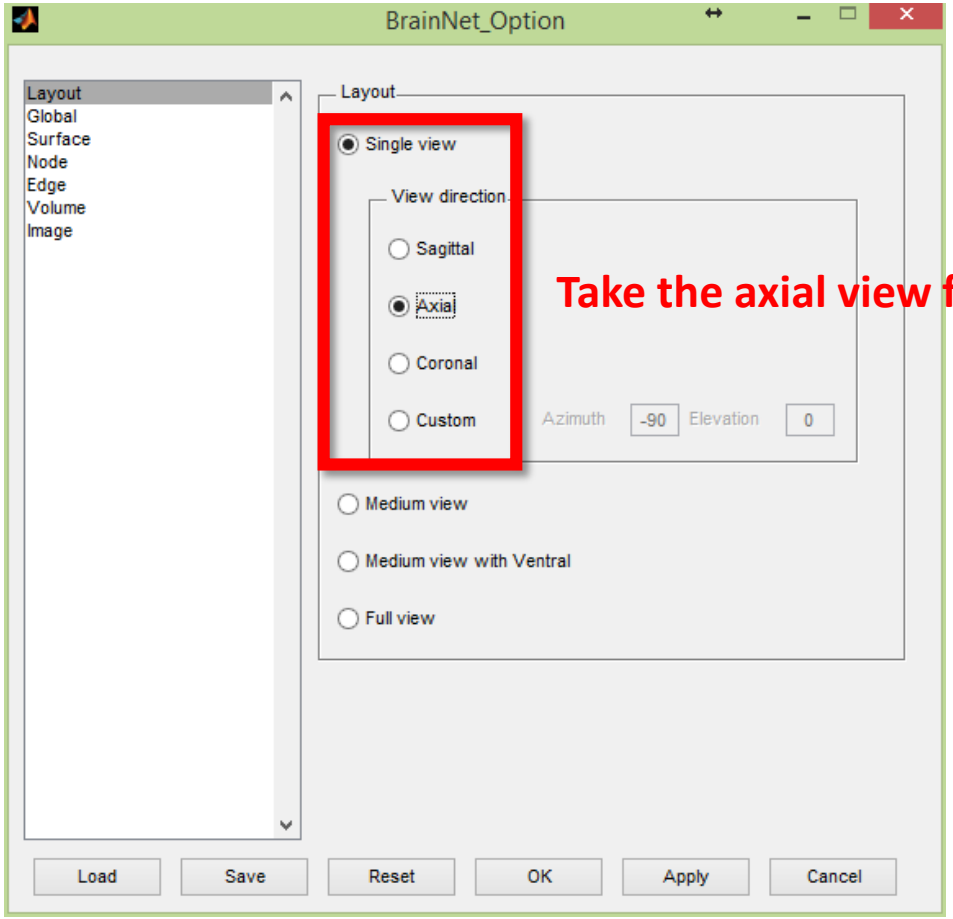
Step 1: select brain surface file

Step 3

Step 2: select a mask or atlas volume file

Example 6: Construct 3D ROI

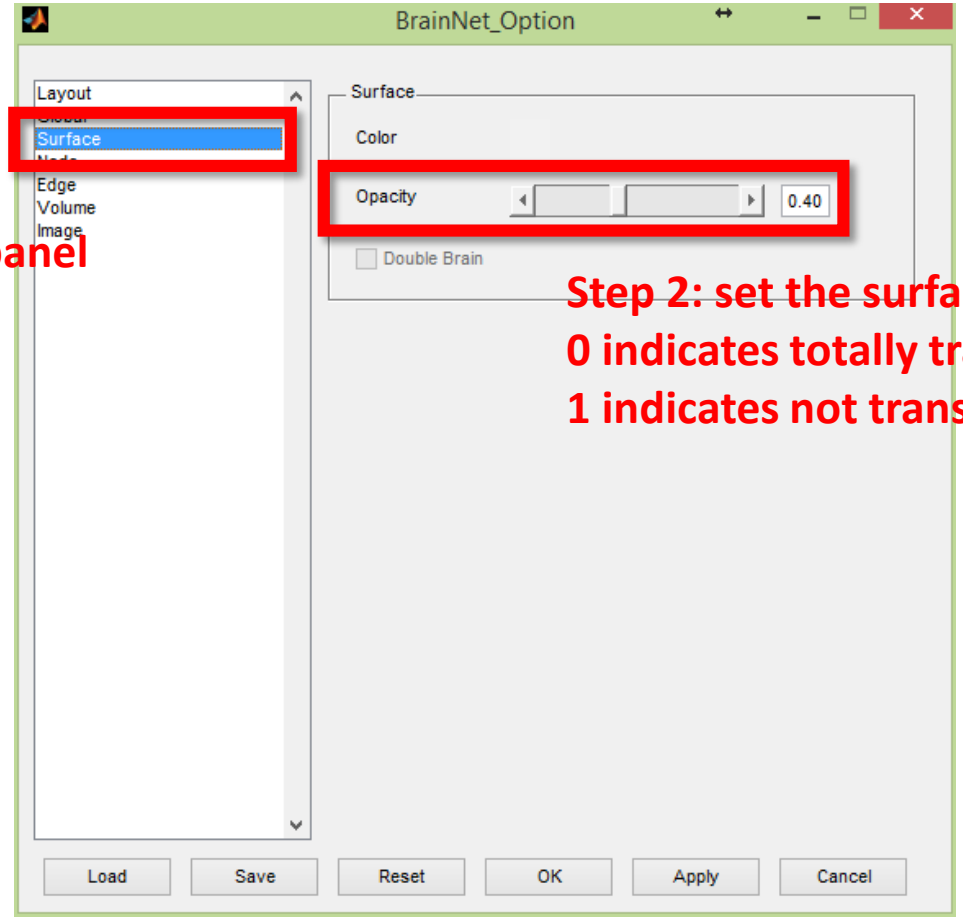
Configuration - Layout



Take the axial view for example

Example 6: Construct 3D ROI

Configuration - Surface

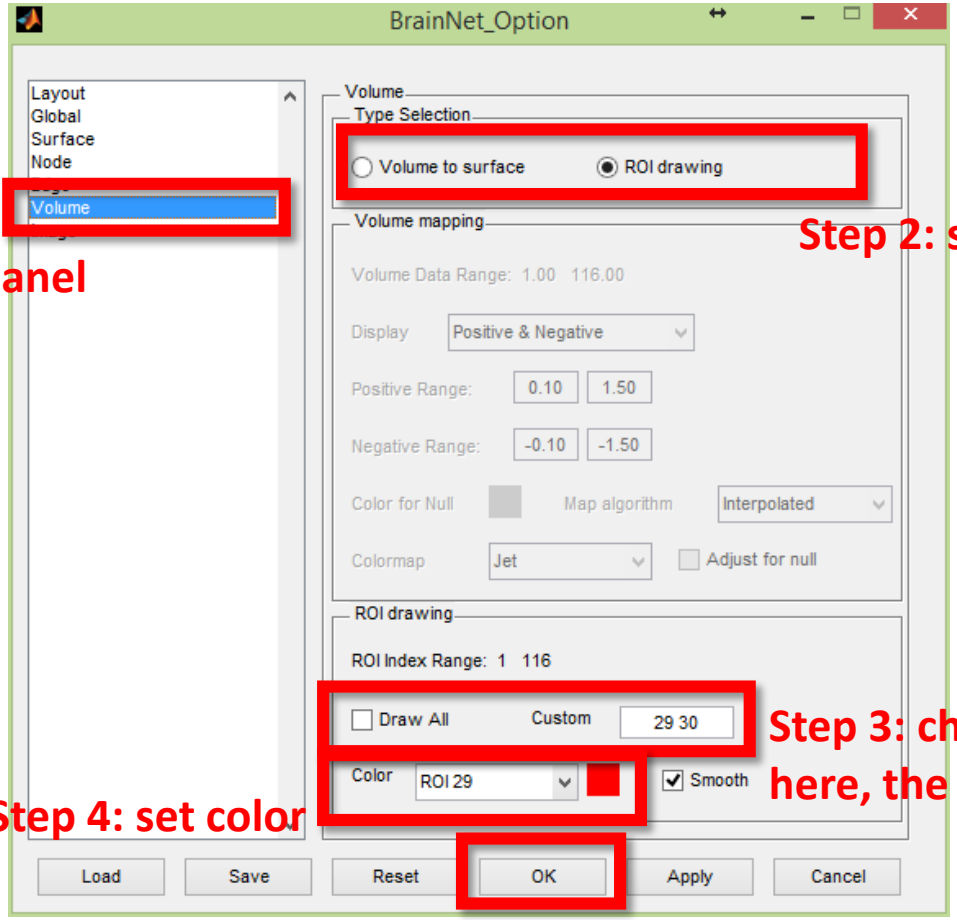


Step 1: select Surface panel

Step 2: set the surface transparent,
0 indicates totally transparent
1 indicates not transparent

Example 6: Construct 3D ROI

Configuration - Volume



Step 1: select Volume panel

Step 2: select ROI drawing

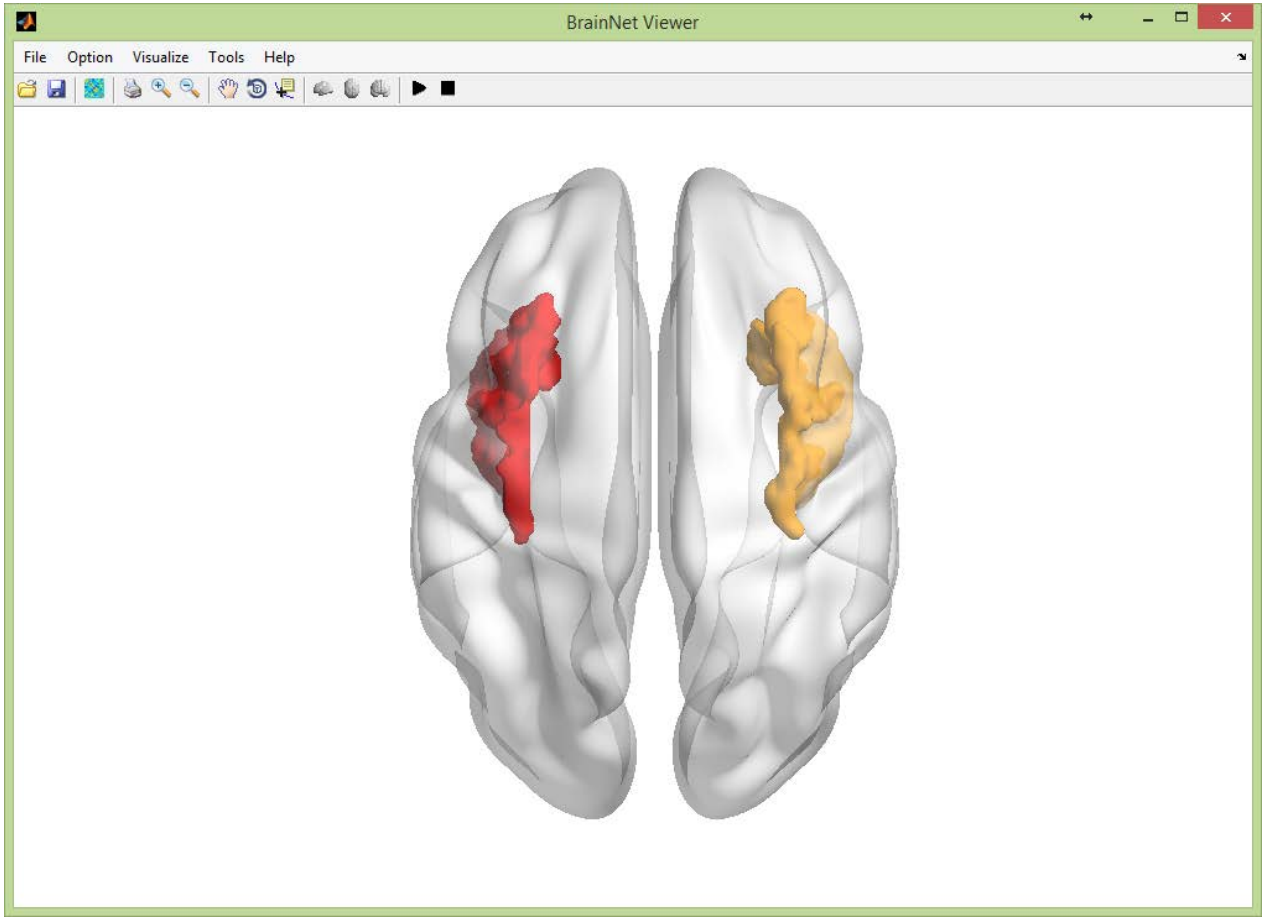
Step 3: choose the ROI, here, the insula

Step 4: set color

Step 5

Example 6: Construct 3D ROI

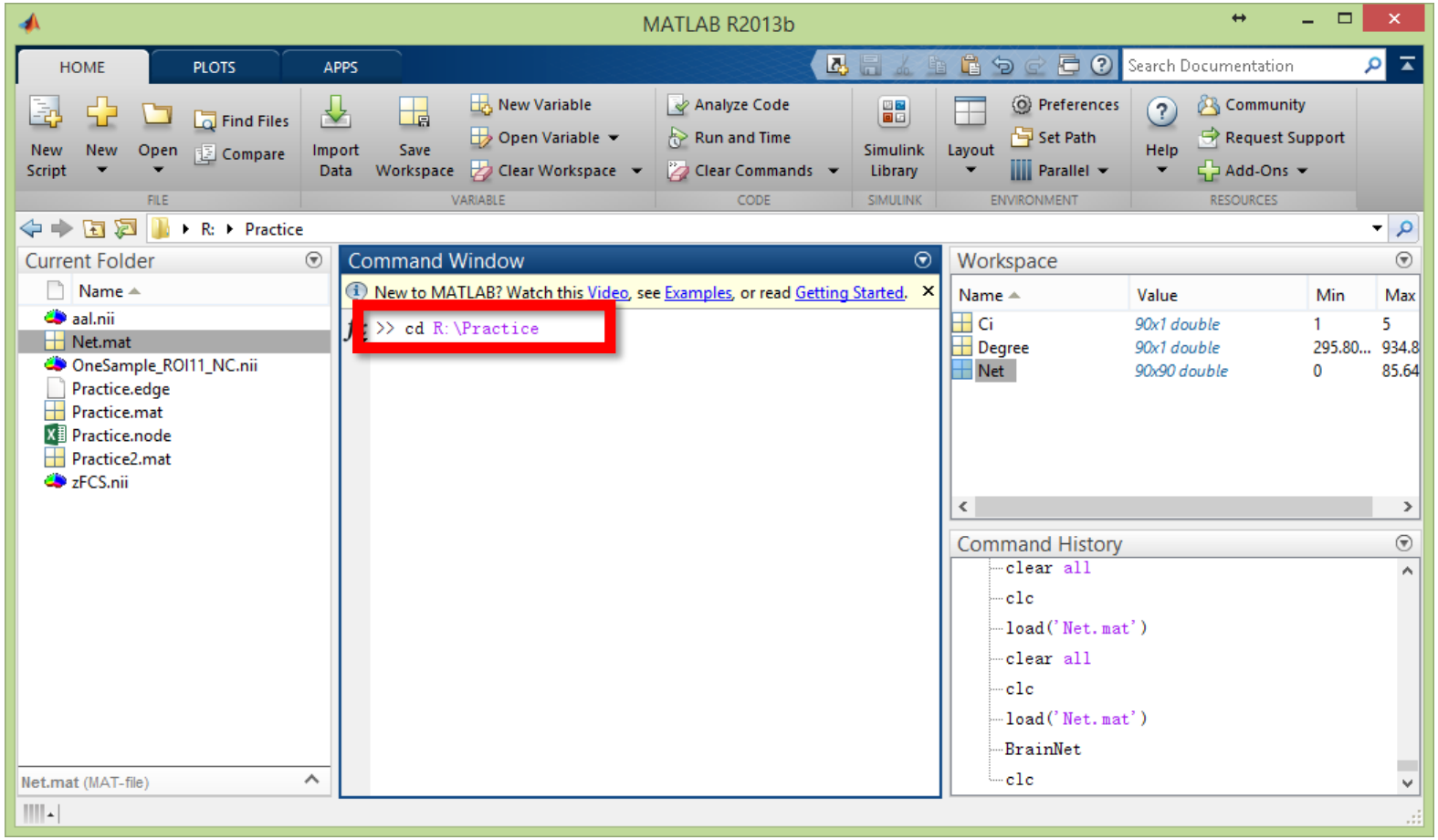
Figure drawing



Contents

Example 7: Use commandline

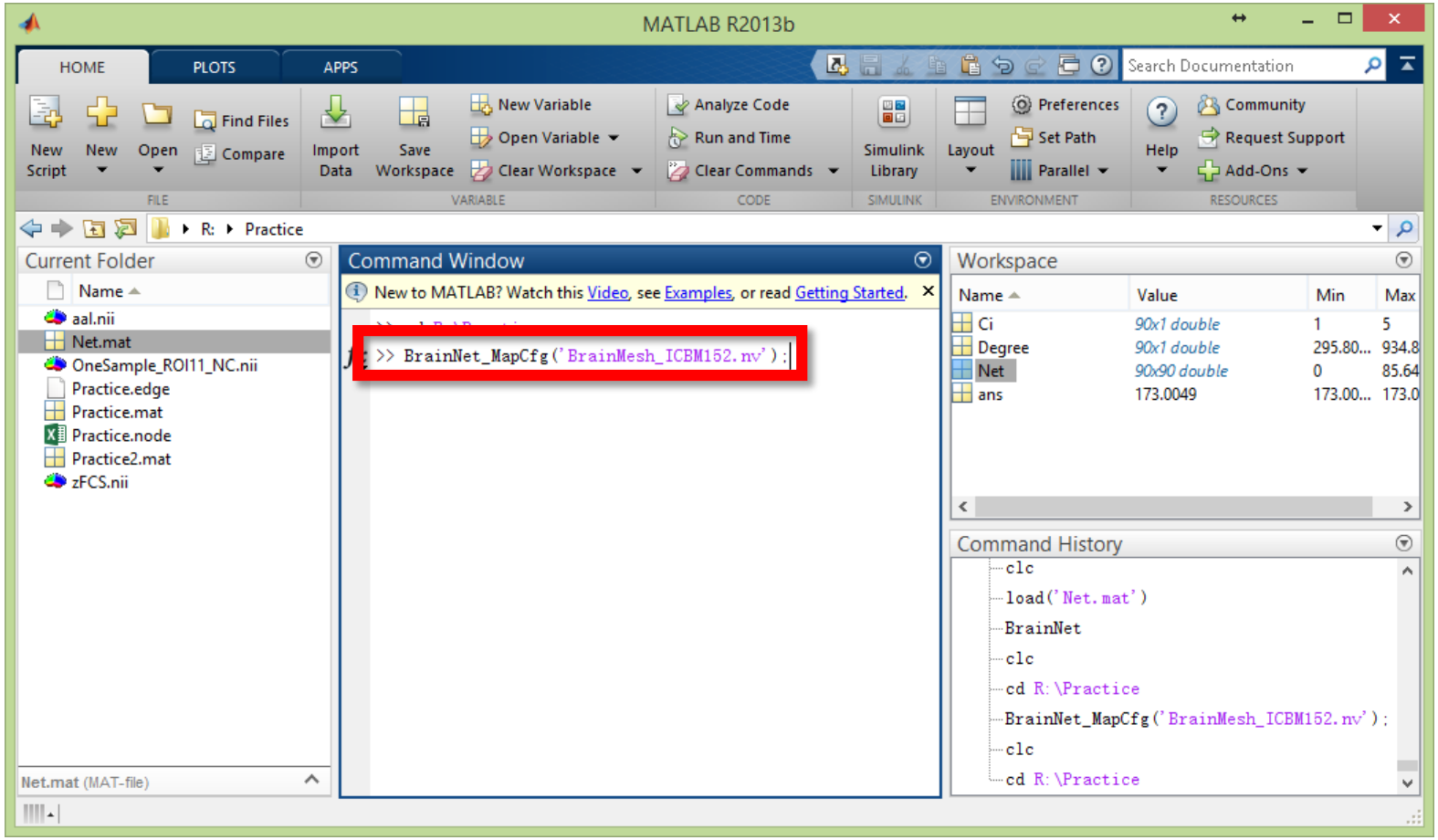
Change the directory to your file folder



Example 7: Use commandline

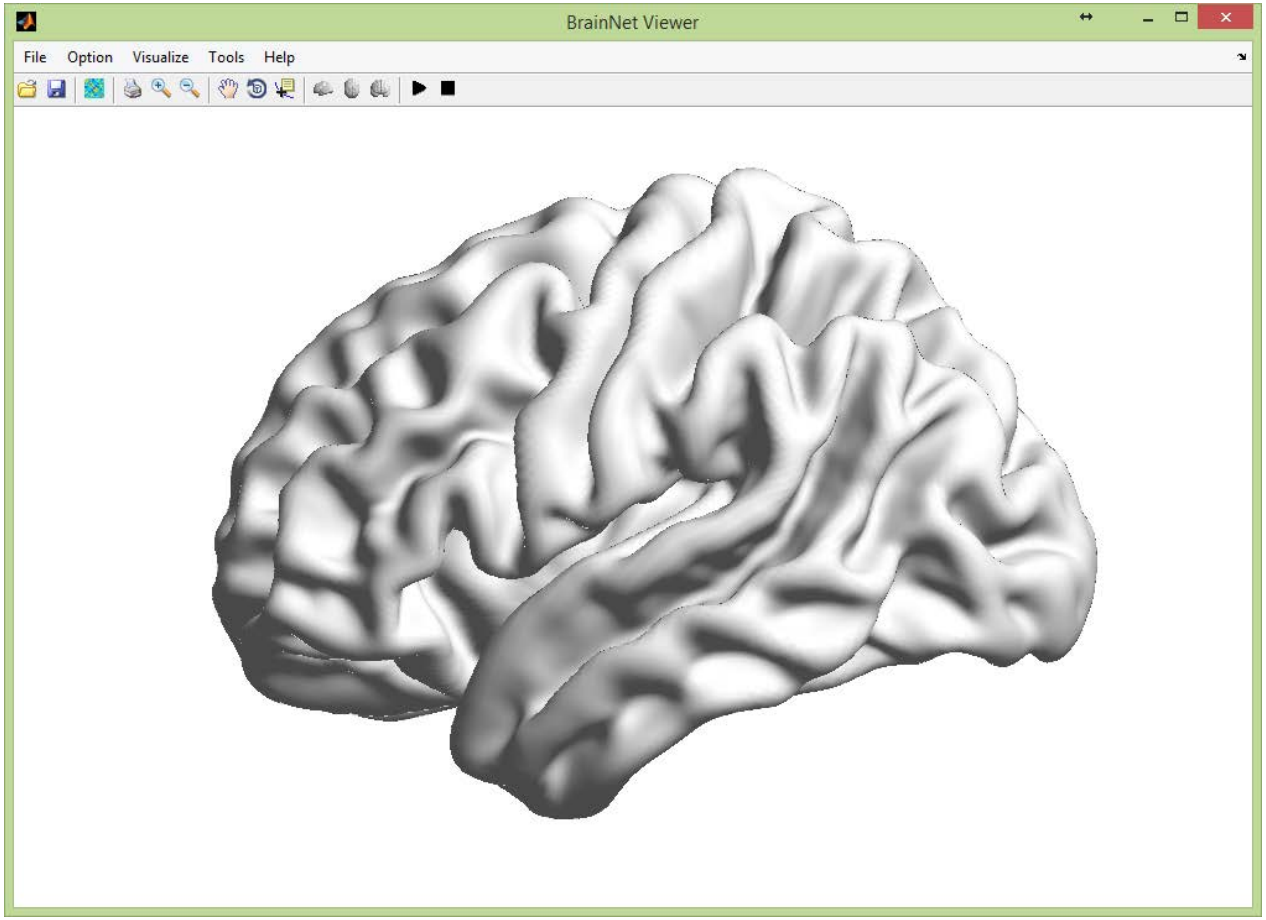
Draw a surface

Type: BrainNet_MapCfg('BrainMesh_ICBM152.nv');



Example 7: Use commandline

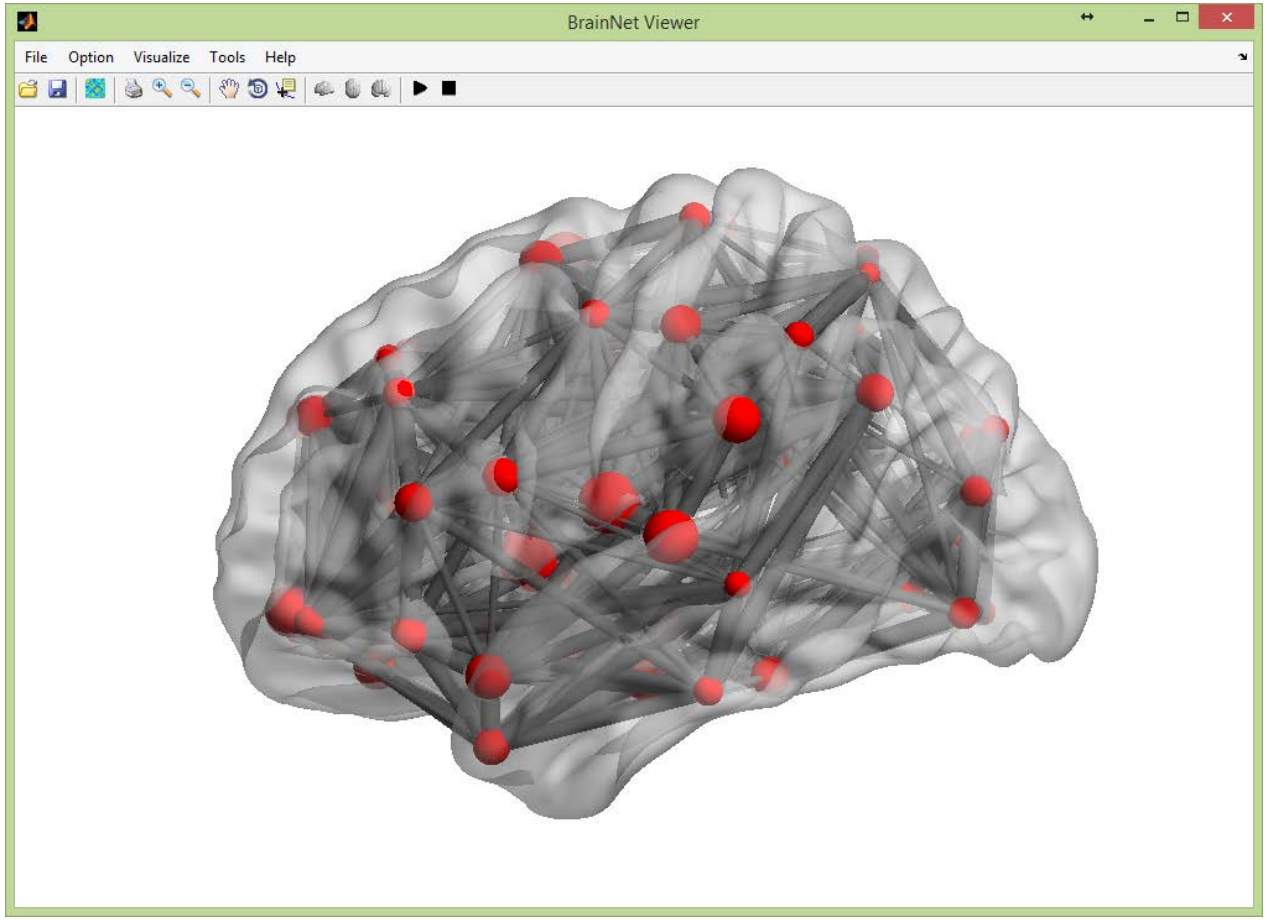
Draw a surface



Example 7: Use commandline

Draw surface, nodes and edges

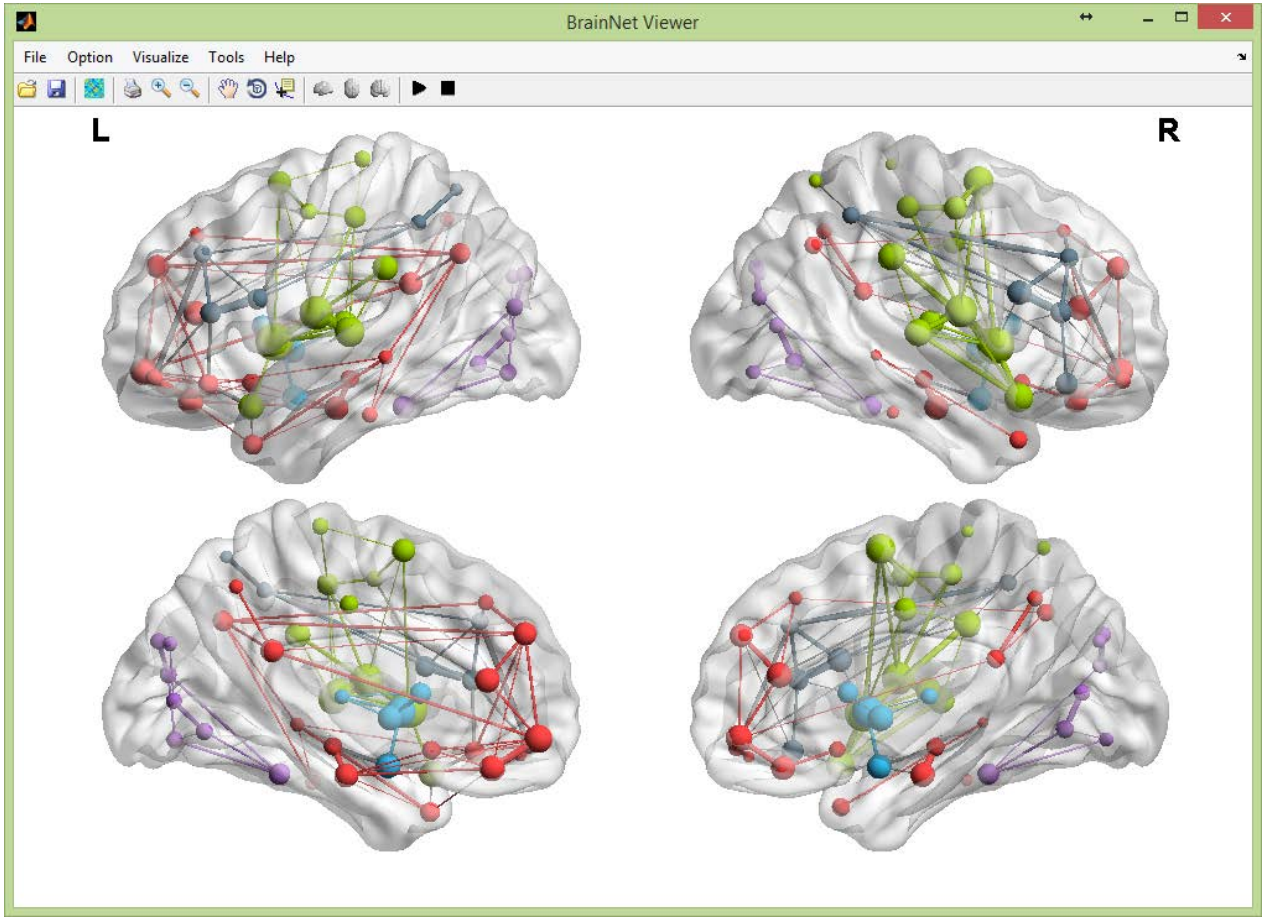
Type: BrainNet_MapCfg('BrainMesh_ICBM152.nv','Practice.node','Practice.edge');



Example 7: Use commandline

Draw surface, nodes and edges with a pre-saved configuration

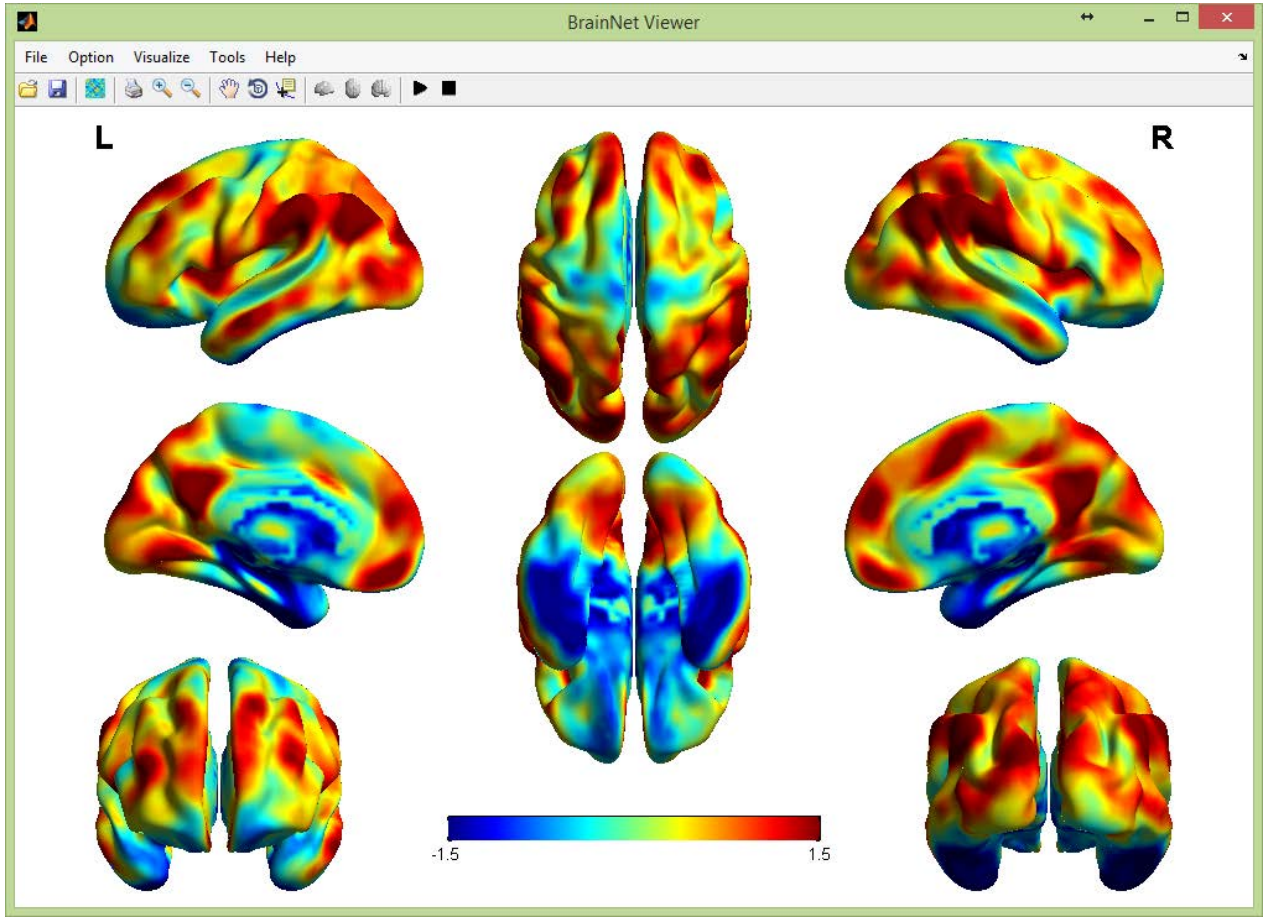
Type: BrainNet_MapCfg('BrainMesh_ICBM152.nv','Practice.node','Practice.edge', 'Practice1.mat');



Example 7: Use commandline

Draw volume mapping with pre-saved configuration

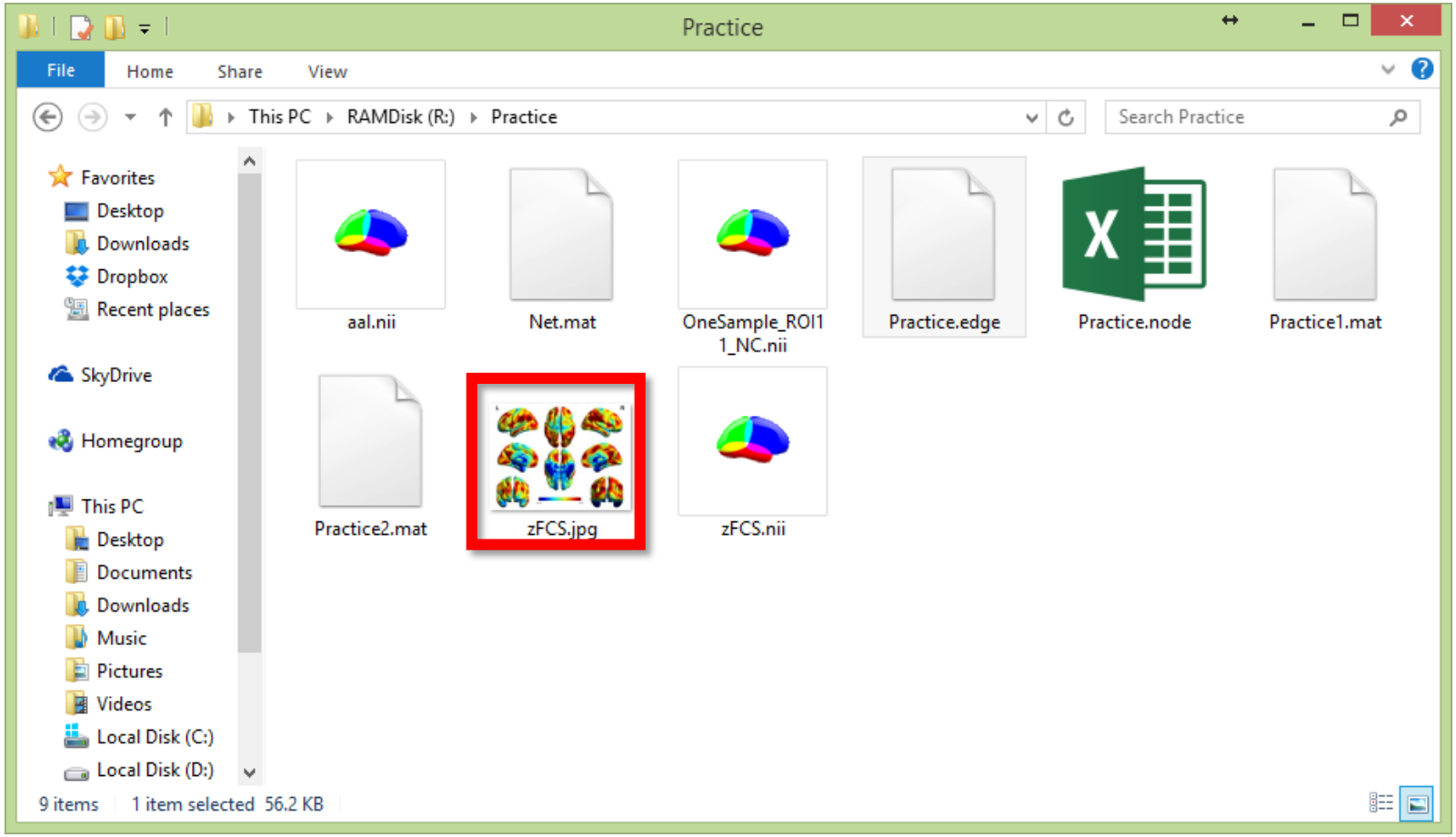
Type: BrainNet_MapCfg('BrainMesh_ICBM152_smoothed.nv', 'zFCS.nii', 'Practice2.mat');



Example 7: Use commandline

Draw volume mapping with pre-saved configuration, and save image

Type: BrainNet_MapCfg('BrainMesh_ICBM152_smoothed.nv', 'zFCS.nii', 'Practice2.mat', 'zFCS.jpg');



Thanks!!