Brain Visualizer

Pablo Montes Arango

Input File Format

The first line contains a single integer, n, indicating the number of cell types. n lines follow, each containing a single letter, c, the letter that represents that particular cell type.

Next there is a line containing a single integer, m, indicating the number of cells that follow. For each cell there is a line containing 6 integers, separated by a single space: *cell_type*, x, y, z, a and d. *cell_type* is an integer between 0 and $n-1$ based on the order in which the cell types were given, a is the number of axons, d is the number of dendrites, and x, y and z are the absolute coordinates of the cell.

The next a lines contain the information for each axon and the following d lines contain the information for each dendrite. These $a+d$ lines contain each 6 integers, separated by a single space: x_{begin}, x_{end}, y_{begin}, y_{end}, z_{begin}, and z_{end}, the absolute coordinates of the corresponding axon or dendrite.

The rest of the lines in the file contain the information for the synapses, each containing 5 integers, separated by a single space: $from$, to, x, y, and z. $from$ and to are integers between 0 and $m-1$ based on the order in which the cells were given, and x, y and z are the absolute coordinates of the synapse.

Usage

Main Window

Shows the somas and allows the user to show synapses for specific cells.

Left click	Show the synapses originated from the selected cell. The color of a synapse matches the color of the source cell.
Right click (click with two fingers in MacOs X)	Show the synapses where the destination is the selected cell. The color of a synapse matches the color of the source cell.
<SHIFT> + (left or right) click	Accumulate the selection of cells to show synapses (up to 10 cells as input and 10 cells as output).
<OPTION> + left click	Show the cell type and coordinates in the status bar.
<CTRL> + left click	Open synaptic field window for the selected cell.
Left Menu	Allows rotation, translation and zoom. Also allows to show/hide specific cell types and change their display color.
Sweep-select	Zoom over the selected region. Fits all the elements inside the selected region into the screen (including those that are hidden behind other objects).
Restore button	Restore the view to the initial size after doing a sweep-select.

Synaptic Field Window

Shows the synaptic field of the selected cell and of all the cells that have a synapses with it. Axons are shown in blue, dendrites are shown in green and synapses are shown in red.

Left Menu	Allows rotation, translation and zoom. Also allows to show/hide the synaptic field for specific cell types.
Sweep-select	Zoom over the selected region. Fits all the elements inside the selected region into the screen (including those that are hidden behind other objects).

Pending

- Fix bug that prevents letters to be displayed in Heraldo's laptop.
- Allow resizing of bird-eye view window.
- Allow rotation of bird-eye view window.
- Show the letters of the cell types in the synaptic field window.
- Check the orientation of the x, y, and z axes.