NeuroMorphoVis: a framework for analysis and visualization of neuronal morphology skeletons reconstructed from microscopy stacks

Supplementary information

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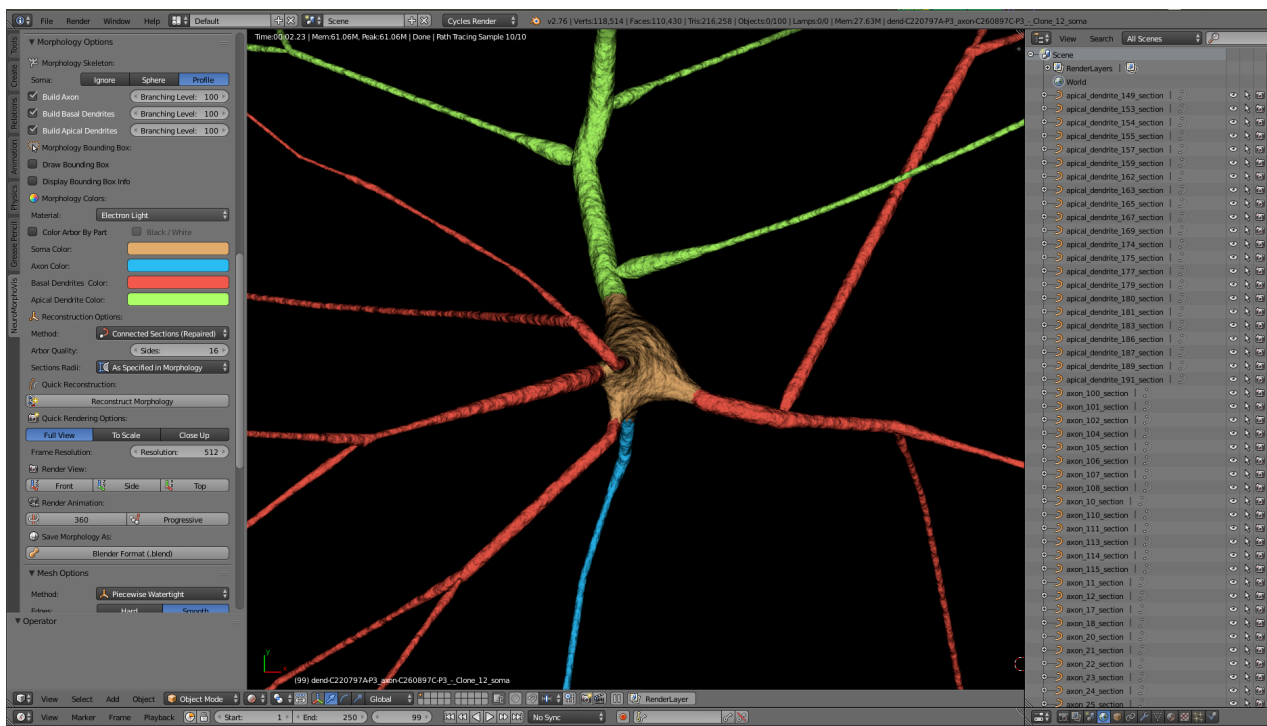
1 Supplementary figures

1.1 Figure S1

Figure S1:   The user interface of NeuroMorphoVis.
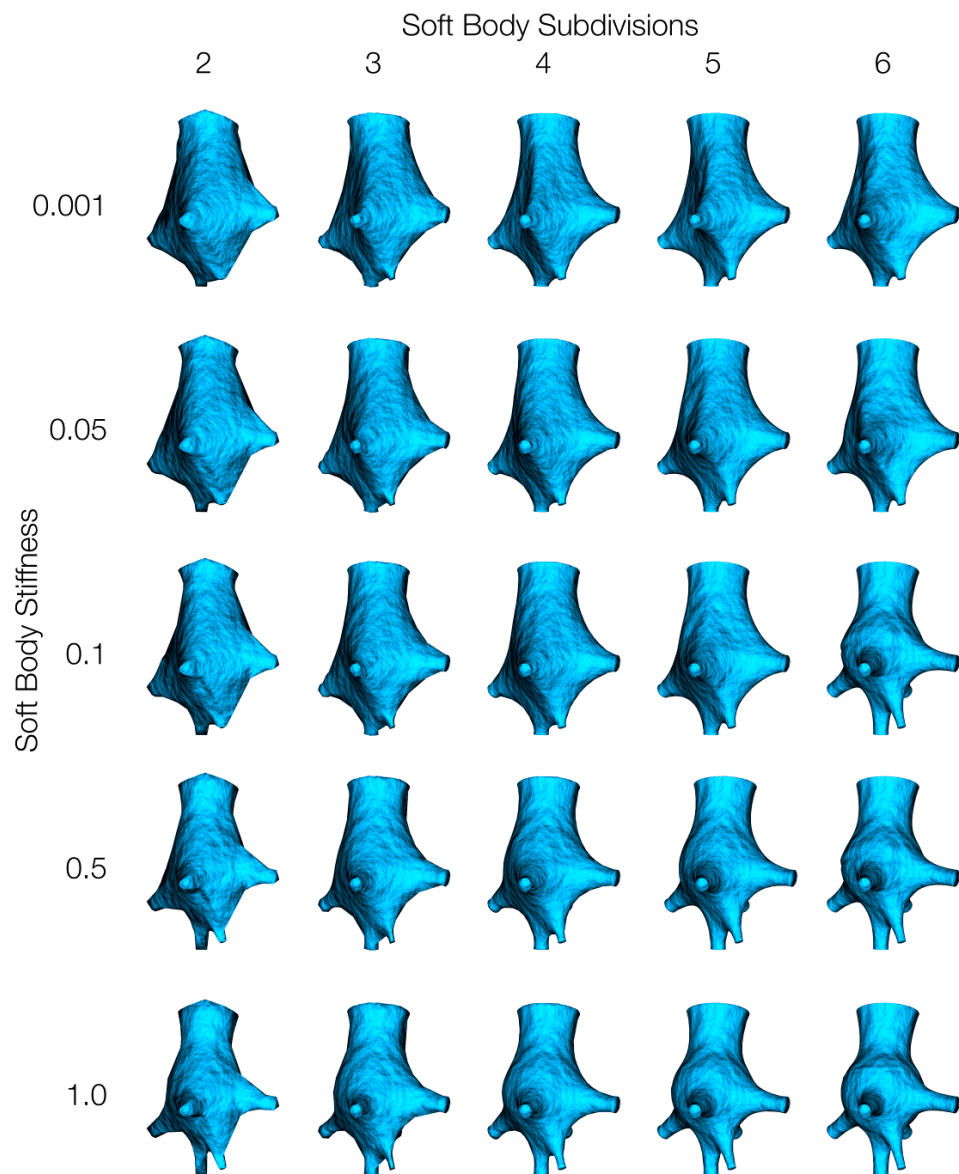
1.2 Figure S2

Figure S2: The effect of varying the parameters of the soma reconstruction module, mainly the number of soft body subdivisions and stiffness, is visually demonstrated on a layer 5 pyramidal neuron.
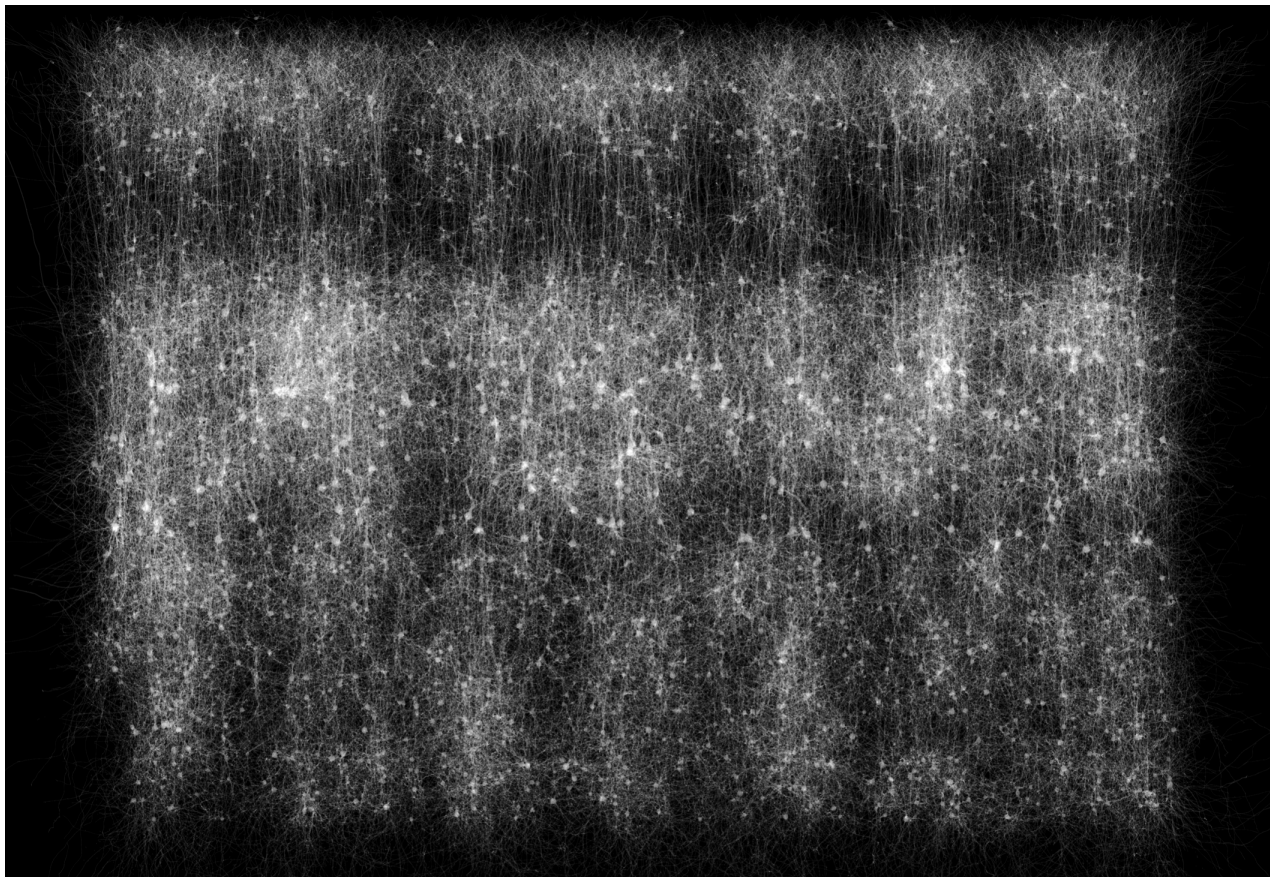
1.3   Figure S3

Figure S3:   A fraction of 10% of a mesoscale circuit that is composed of 100, 000 neurons reflecting a digital slice extracted from the somatosensory cortex of rat brain.

2 Supplementary videos

2.1 Video V1

https://www.youtube.com/watch?v=v02HogkFODU

2.2 Video V2

https://www.youtube.com/watch?v=74PGirMx3ks&t=74s

2.3 Video V3

https://www.youtube.com/watch?v=oxCKwrZSV98

3   NeuroMorphoVis Installation

NeuroMorphoVis is an add-on that can be installed in Blender following the normal procedure of loading add-ons to the user interface via Blender User Preferences panel. In this section, we will demonstrate how to download and install it into Blender.

3.1   Dependencies

1. Blender 2.67, 2.77 or 2.78

2. HDF5 library, that can be installed on Ubuntu via `sudo apt-get install python-h5` for python 2.7 or `sudo apt-get install python3-h5` for python 3. This dependency is only requested if the user want to load `.h5` morphologies only.

3.2   Repository

The framework is available under the GNU license at https://github.com/BlueBrain/NeuroMorphoVis.

3.3   Installation

The users can install Blender on Debian operating systems using `sudo apt-get install blender` or download a free version online from the Blender website.

For a system-installed Blender on Linux, the add-on can be cloned into the addons directory in the user home space as follows

1. Open the directory `$HOME/.config/blender/2.76/scripts/addons/`.

2. Clone the repository `git clone https://github.com/BlueBrain/NeuroMorphoVis.git`.

3. Open Blender from the terminal using the command `blender`.

4. Open the User Preferences panel from the File menu, as shown in Figure S5.

5. Open the `Add-ons` tab and select NeuroMorphoVis, see Figure S4.

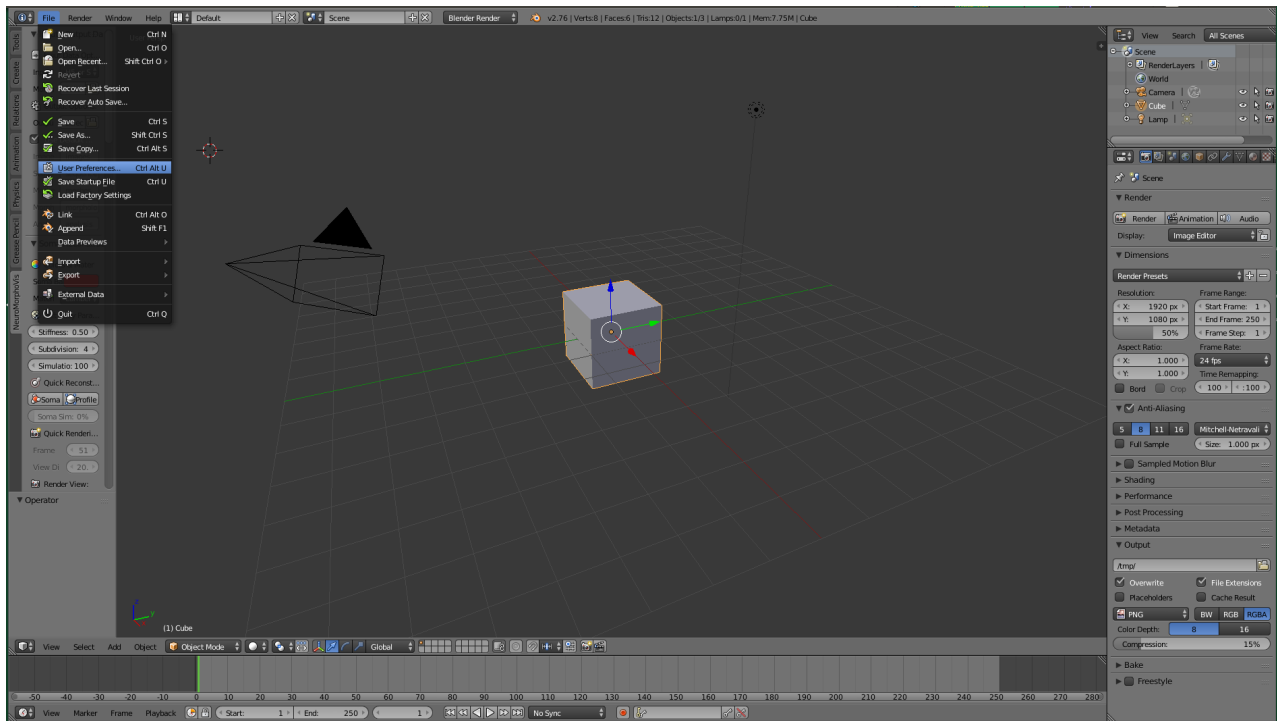6. Select a morphology file and start processing it using the different modules of the tool shown in Figure S6.

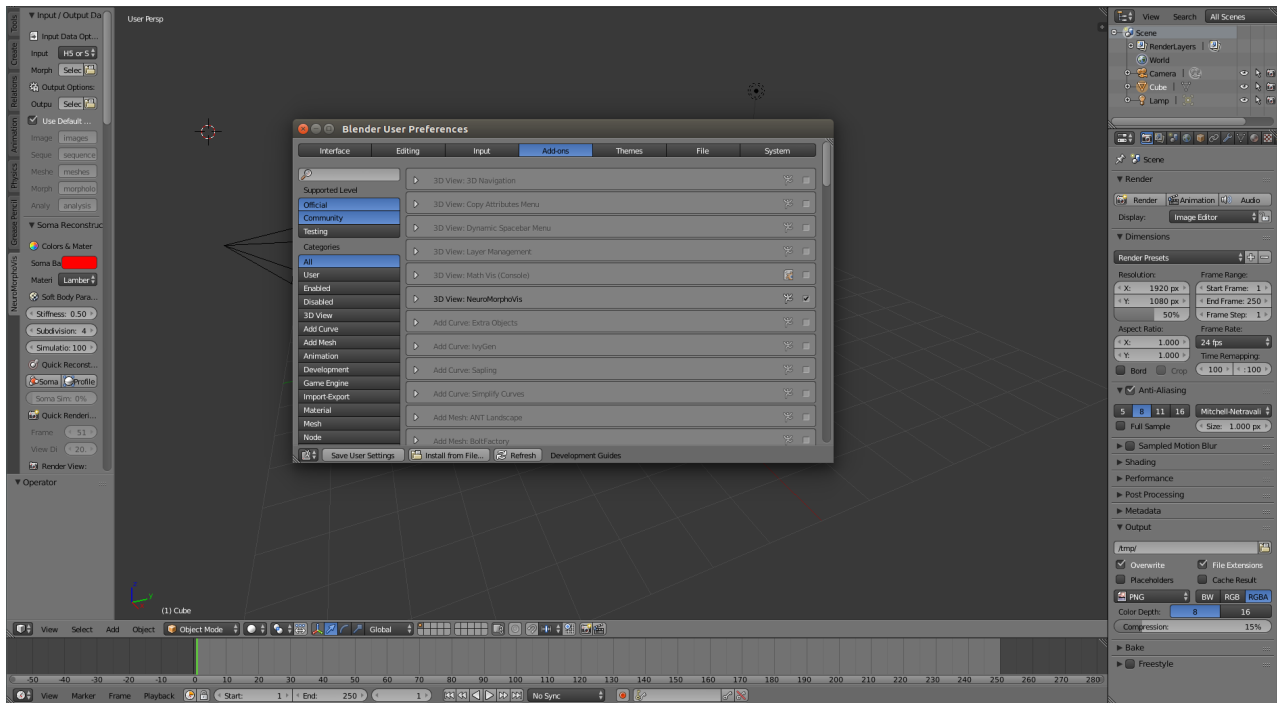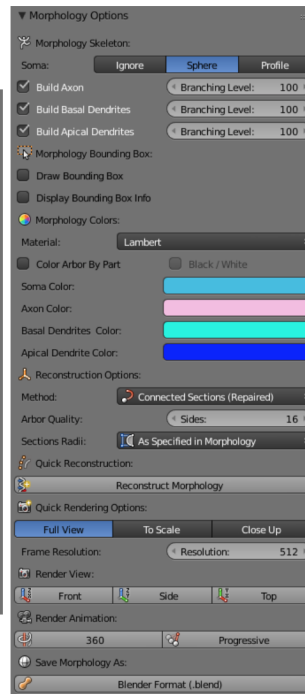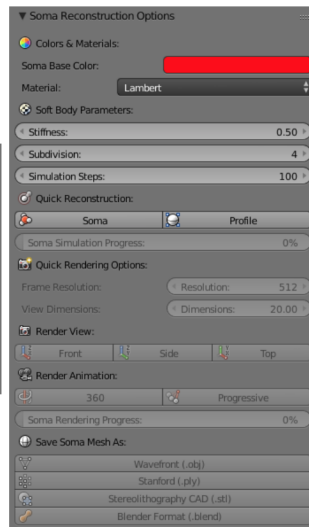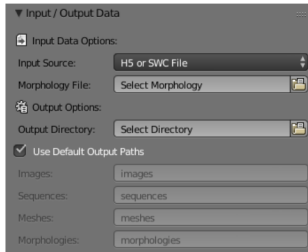Figure S4:   Opening the user preferences panel in Blender from the File menu.

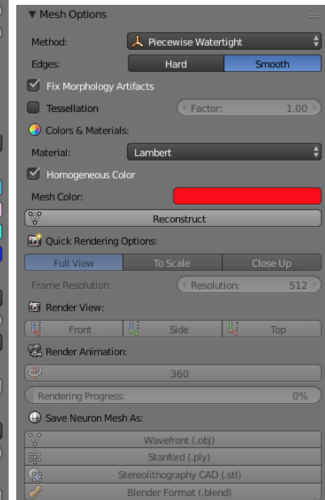Figure S5: Loading the NeuroMorphoVis add-on from the Blender Add-ons panel.

Figure S6: The interface of the different modules of NeuroMorphoVis.