

Santiago

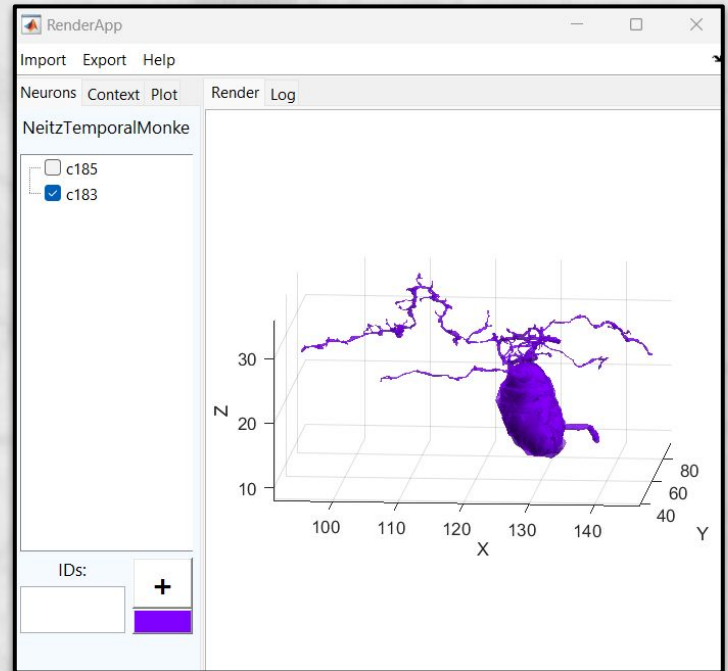
A graphical user interface for SBFSEM-tools.

Project Overview

SBFSEM-tools is a MATLAB toolbox developed by Sara Patterson for creating, analyzing and visualizing Neuron models for the sake of research and documentation. The project includes multiple GUIs to interact with the data.

Our project, Santiago, aims to continue that effort by utilizing the existing MATLAB toolbox. In its current state, many functions of the toolbox require researchers to edit values in the code, which can be difficult for people without a computer science background. Our primary goal is to make the SBFSEM-tools more accessible to those not familiar with computer programming or MATLAB. We would also like to make the existing functionality accessible within a singular user interface.

SBFSEM-tools GUI (RenderApp)



Contributors/Users

Our team consists of Greih Murray, Thomas McGuigan, and Josiah Glyshaw.

Our primary clients are Dr. Judith Ogilvie and Dr. David Marshak. They provide feedback and direction for the design of the project. Santiago will be used for research purposes by researchers and graduate students across the United States.

Santiago could also be used down the line for education regarding the neuroscience field.

Source Code

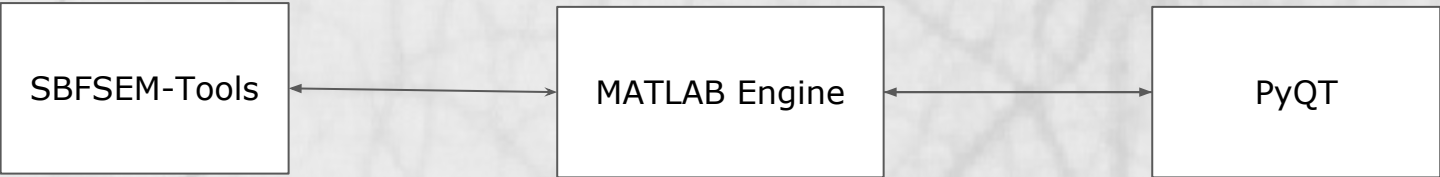
Santiago: <https://github.com/oss-slu/Santiago>

SBFSEM-tools: <https://github.com/oss-slu/SBFSEM-tools>

Implementation

The purpose of the GUI is to encompass all 30+ functions into one window. To accomplish this, we created a tab system with which the user can switch between different functions and interfaces. The general layout of the GUI has been mostly developed, but we still are working on implementing the graphs.

Our original plan was to create the new user interface with Python. We used PyQt5 to create our interface and Matplotlib for plotting our data. In order to interact with SBFSEM-tools we needed to connect Python to Matlab which required the use of MatlabEngine.

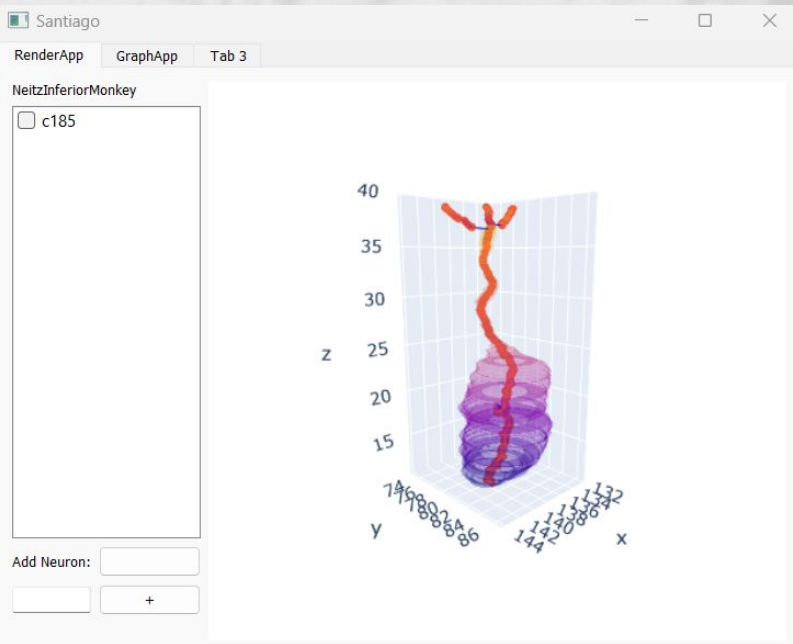


PyQT interface utilizes MATLAB Engine to get the data from SBFSEM and graph it

Progress

We were able to create a Python interface to graph the data from Matlab (shown on the previous page). However, we ran into performance issues with plotting the large data set with Python’s graphing libraries. The library would often crash or would be too slow to be interactable. We explored many options, but we weren’t able to find a simple solution to fit our purposes. We also decided that in the long run developing in MATLAB would be much more efficient. Currently we are developing the interface with MATLAB instead of Python

GUI with PyQt5



GUI with MATLAB

