Homework Assignment 8

April 10, 2015

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1 Install Neuron on your personal OS (linux,win,mac)

See the following URL for instructions on how to go about this: `http://neuron.duke.edu/`

2 Step through the first part of the Neuron tutorial

See the following URL: `www.anc.ed.ac.uk/school/neuron/` This tutorial consists of parts A,B,C,D. You only need to do part A for this assignment. Turn the figure produced at the end of tutorial section A, which consists of a series of action potentials for a sub-thalammic neuron, but modify the stimulus duration from 100ms to 150ms. Turn in the file you in this excercise, which you should call sthA_mod.hoc

3 Optional: explore neurondb

See the database of models at URL `https://senselab.med.yale.edu/ModelDB/ListByModelName.cshtml?c=19&lin=-1`

By searching on Pospischil, you can locate a downloadable Neuron model implementing the Pospischil et al (2008) paper that I went over briefly in class.

Download the model. You will ned to run "nrnivmodl" in this directory to make a compiled version of the .mod files that are present.

If this is successful for you, you can then do "nrngui mosinit.hoc" to run the four types of non-standard Hodgkin Huxley mechanisms described in this paper.

This excercise will require your OS to be able to complile C code, which will be automatically done for you, but which may require more work, depending on the details of your OS environment, etc.

Due to the many different envinonments in use in the class, this purely optional, but is worthwhile attempting.

I have demonstrated this in class, and we will take another look at it next time.

Note that there are many, many other models available in modelDB. Take a look at around, and if feeling ambitious, try downloading and running some of them!