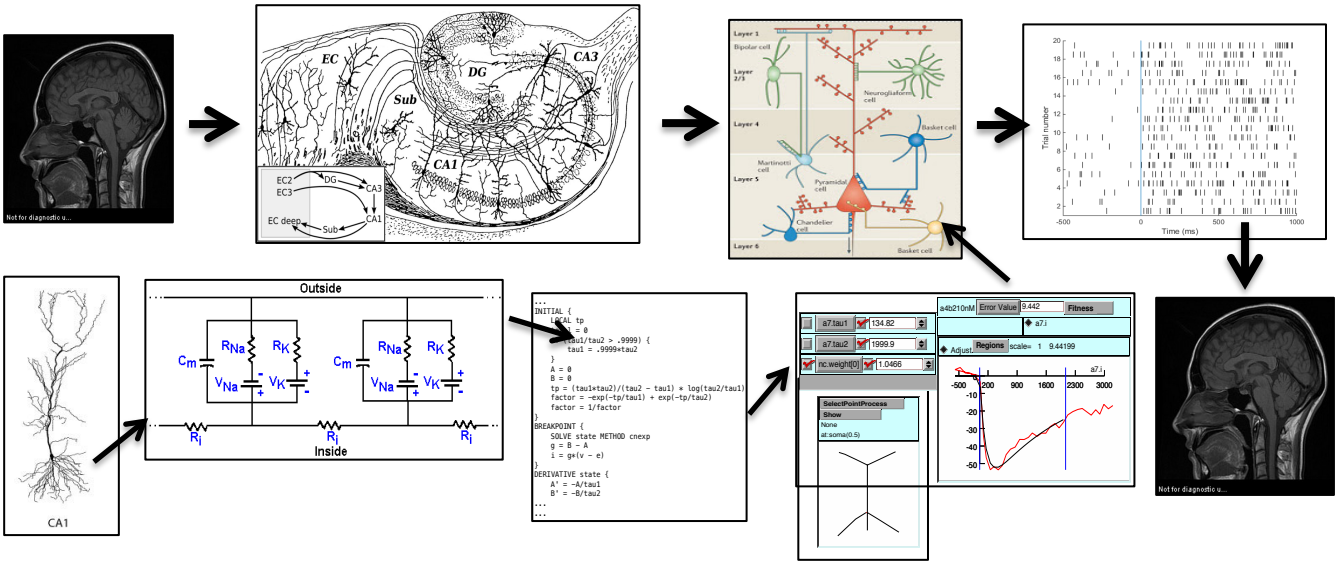
FALL 2018 PHYSICS 470.001 MWF 9-9:50am

INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE



DESCRIPTION:

Introduction to basic computational techniques for analyzing, modeling and understanding the behavior of cells and circuits in the brain.

You will be exposed to: basic neuroanatomy; biophysics of neurons and synapses; mathematical description of neuronal circuits; numerical methods and commonly used modeling software; simulations of single neurons and small groups of neurons; processing of information in neuronal networks; brain systems, their adaptation, learning and relation to artificial neural networks. We will use NEURON (https://neuron.yale.edu/neuron/about) for demonstrations, exercises and projects to gain deeper understanding of concepts and methods introduced in the course.

PREREQUISITES:

- introductory physics (241, 242 or permission of instructor)
- mathematics (calculus I)
- ability to write simple code in any programming language (or strong willingness to learn)
- No previous knowledge of neuroscience is required

If you are unsure – come talk to me.

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SH 475