10.10.2024 Day 4.

Python basics in relation to Hodgkin-Huxley modeling

Main tasks for today:

Let’s continue learning the basics of Python. Today we do it in application to basal ganglia model of Hodgkin-Huxley neurons.

1. Let’s find out what is inside of Python notebook on the topic.
2. What is a function in Python and how to call one?
3. What are the different variable types in Python?
4. How to work with numpy arrays and lists?
5. How to plot the data?
6. Let’s see how one can solve a system of differential equations governing the voltage evolution on the cell membrane.
7. Let’s see how the speed of code execution increases by using numba.

Learning outcomes:

1. Getting familiar with basics in Python programming.
2. Learning about functions and decorators.
3. Learning about different types of variables.
4. Learning about working with numpy arrays (slicing, calling, filling with zeros, etc.).
5. Learning how to display our data output.
6. Learning how to solve the system of differential equations with Python using a for-loop.
7. Learning about numba and how to make our code run faster.