The overall idea of the project is to develop a matlab-based platform with basic GUI such that we can select basic inputs, such as pulse, ramp, and step with selectable parameters (current amplitudes, timings,) and be able to see two main plots:

1. The time domain voltage u(t)

2. The 2D phase plot to show how the values of u and w changes over time in the 2D plot.

Six models should be implemented:

- HH (for this one only time signal u(t) is enough to be shown)

- FN Model

- ML Model

- Leaky Integrate and Fire

- Generalized (Exponential) Integrate and Fire

- 1D approximate model (for epsilon ¡¡1)

To check your codes, the outputs for each model should match the corresponding figures in the Gerstner book. So in your code you should have pre defined scenarios that use those parameters and we can check the outputs with the figures in the book. I will give you the list of figures we want as predefined scenarios by next week. But of course, the code should support other scenarios that are defined with the GUI as well..

The deadline for delivering the matlab package is 10th of Tir and the package should be delivered in person by your team to check its different scenarios working properly.

If you can propose new exciting outputs or new exciting scenarios that show some new concepts as a teaching tool, those will be counted as bonus marks for the project.

Best, BK.