

BT6270 Computational Neuroscience

Assignment 1

Simulating and observing the Hodgkin-Huxley model

The attached code in the folder computes the number of firing spikes per seconds with the input of external current considering voltages, conductance of ions.

Threshold value of external current I_1 , I_2 , I_3 are

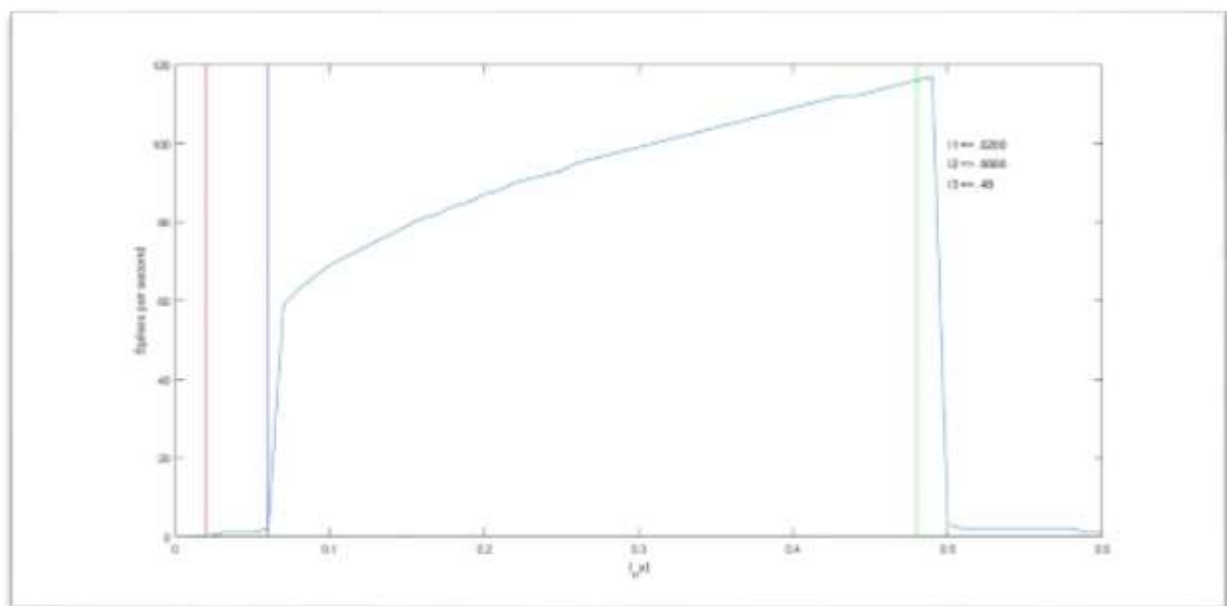
$I_1=0.02$

$I_2=0.06$

$I_3=0.48$

Observation on Dynamical behaviour of neuron:

- Value current **I_1 (red)** till which no Action Potentials observed
- Value current **I_2 (blue)** till which finite number of Action Potentials were observed
- Value current **I_3 (green)** till which infinite number of Action Potentials were observed
- After I_3 there were no Action Potentials observed



Assumptions:

- Minimum value of firing potential to be called it as action potential is 8.
- Stepping in the input current values is 0.01, hence the threshold values are accurate up to 2 decimals.