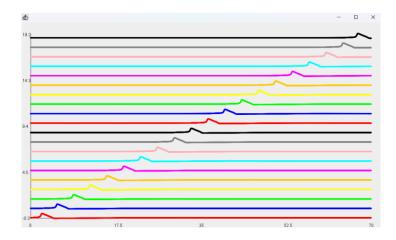
Benjamin Evans CPSC 310 HW 5 Report Prof Fietkiewicz 4/26/2023

## 1.

## numNodes = 10



## numNodes = 20



# 2.

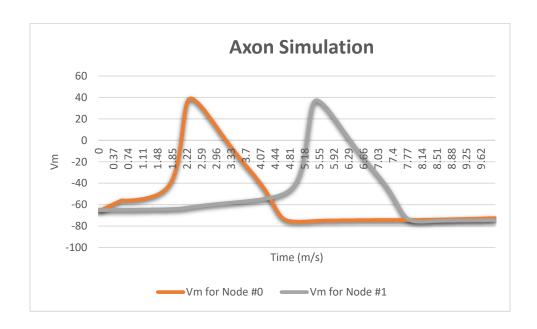
a.

Here are the first few lines of the output.csv file, which is in this zip file

Time	Vm for Node #0	Vm for Node #1
О	-65.00003243	-65.00003243

0.01	-65.00006366	-65.00006366
0.02	-65.00009376	-65.00009376
0.03	-65.00012277	-65.00012277
0.04	-65.00015074	-65.00015074
0.05	-65.00017773	-65.00017773
0.06	-65.00020376	-65.00020376

b.



3.

I could not get the grapher to graph the binary file correctly.

But I think I got it written to the file correctly.

## 4.

- a. A possible advantage of implanting electrodes in the cortex is that it would allow for much more complex and flexible control over said prosthetic limb, as the signals can be processed by the brain before even being transmitted to the prosthetic limb. One advantage of connecting electrodes to peripheral axons in the arm is that the sensors can be more closely integrated with the prosthetic limb, which can provide a more natural feeling for the patient. This is due to the peripheral nerves provide much more direct contact between the limb and the brain, allowing for more precise and accurate control of movements and sensations.
- b. The electrodes should be placed near to the peripheral axons instead of the cortex because the peripheral nervous system directly controls muscle movement and feeling. So, by stimulating the peripheral nerves directly, the electrodes can not inflict any problems or

damage, which would improve the precision of the movements and sensations produced by the electrodes as well as increase the reliability. This would also inhibit more exact feedback from those nerves.

#### 5.

a.

I think that the electrode from the same node is probably Simulation 2 because the currents occur at the same time as each other.

b.

I think that the electrode from the same node is probably Simulation 1 since the current from the left spikes before the current from the right, which would mean that there is some current disbalance on the node, indicating that the stimulation occurred adjacent to that node.

c.

I think that the node with the stimulus was on the left since, based on my previous answer, the adjacent node had a current increase, action potential on the left side before the right side.

### 6.

