Prompts:

Can you write a verilog module for a spiking leaky integrate and fire neuron? Please include a multibit current input and a refractory period.

I want the threshold to be 256 and refractory to be 8.

I want my leaky rate to be 1 and refractory period duration to be 32.

Does the code provided implement all the functionalities has the below code. if not modify my code to implement all the features as below code(the final code provided in the paper).

Now that we have a working neuron, can you create a new module that instantiates a network of neurons with 2 layers in a fully connected fashion? Please connect them with programmable synapses.