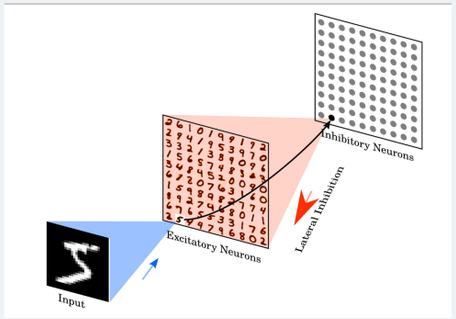
Unsupervised learning of digit recognition using spike-timing-dependent plasticity

- neuron
  - excitatory and inhibitory
  - $\tau \frac{dV}{dt} = (E_{rest} - V) + g_e(E_{exc} - V) + g_i(E_{inh} - V)$

    dynamic:
  - synapses increase their conductance instantaneously by the synaptic weight w
- 

  network: recurrent
  - learning: 4 STDP rules
- how to inference:
  - After training is done, we set the learning rate to zero, fix each neuron's spiking threshold, and assign a class to each neuron, based on its highest response to the ten classes of digits over one presentation of the training set.
  - The predicted digit is determined by averaging the responses of each neuron per class and then choosing the class with the highest average firing rate

  amazing, without loss