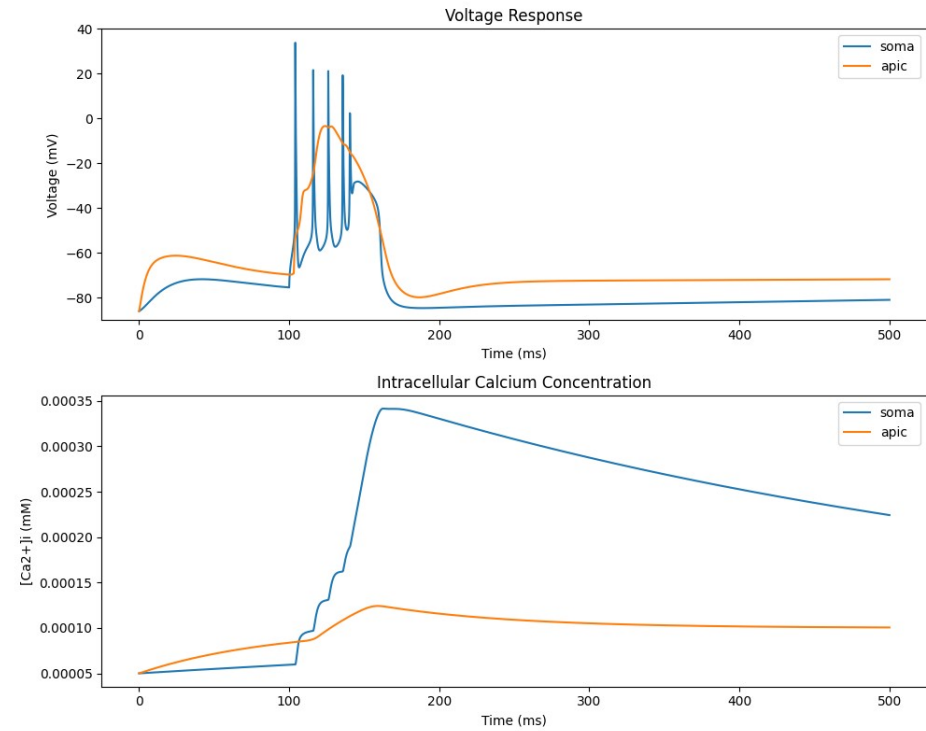
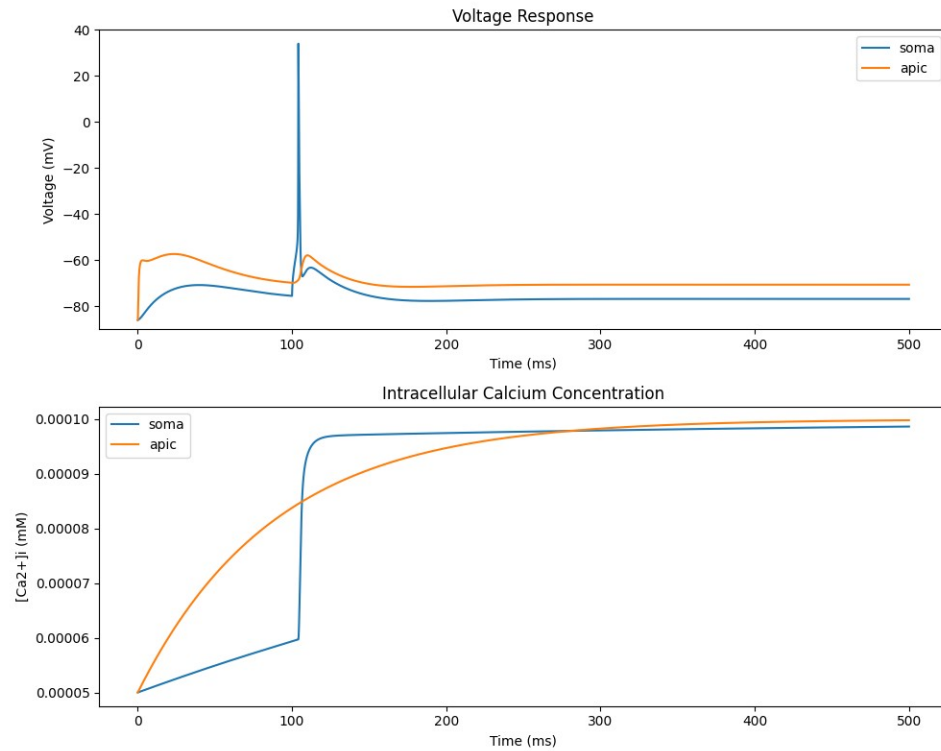


The information processing ability of L5 pyramidal cell

小组成员：贾仁和，蔡锬瑾，毛川

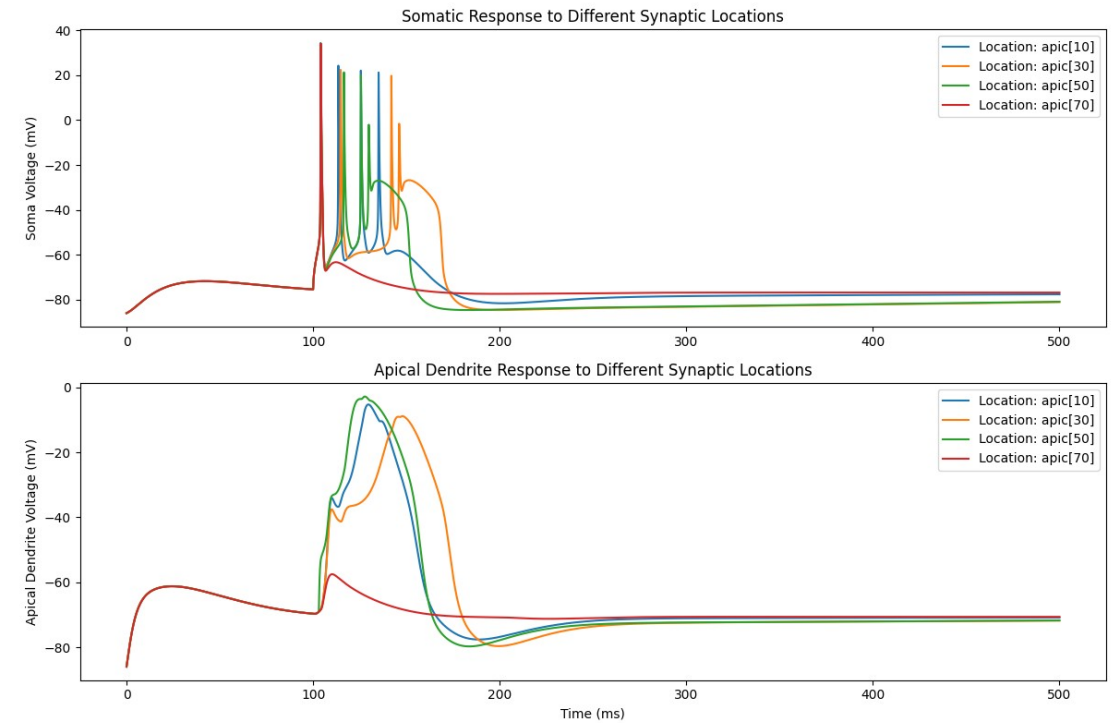
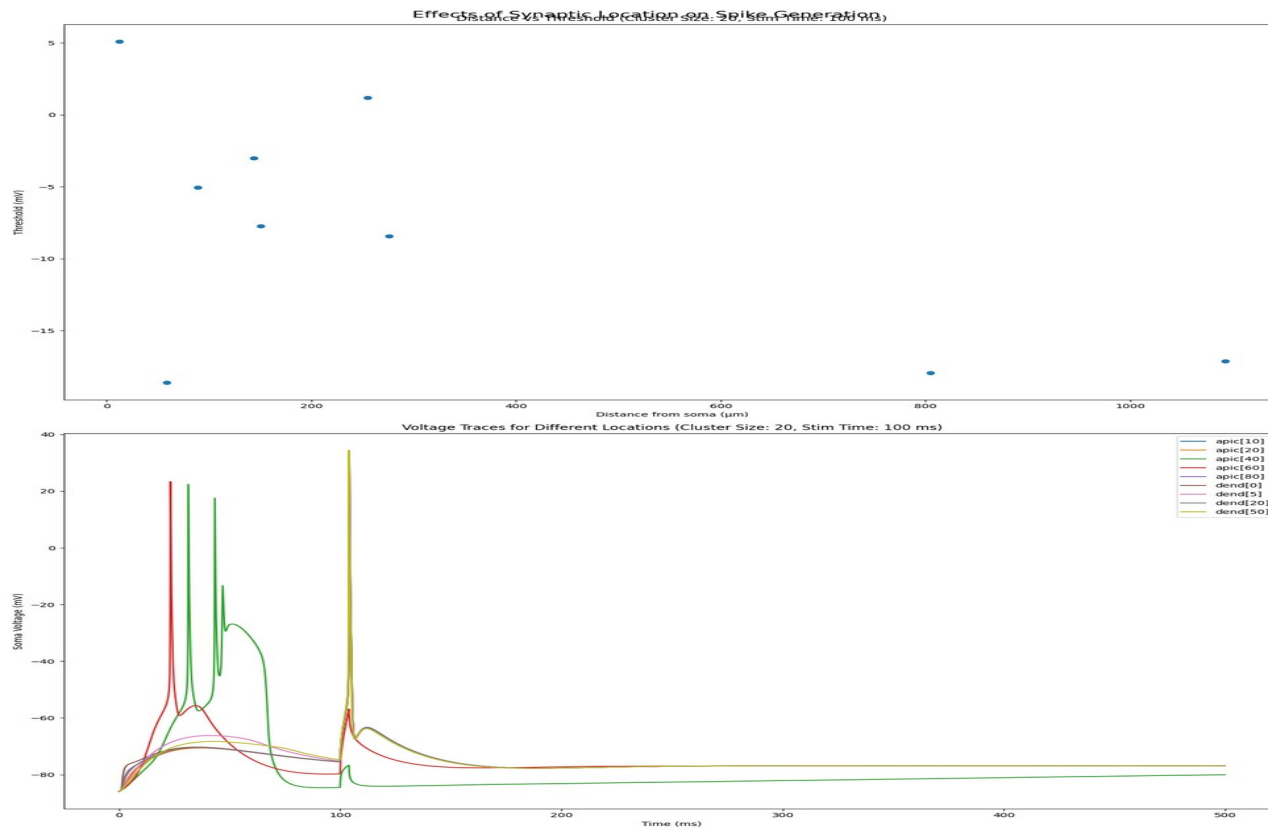
information selectivity

- the influence of calcium channel Ca_HVA and Ca_LVAst



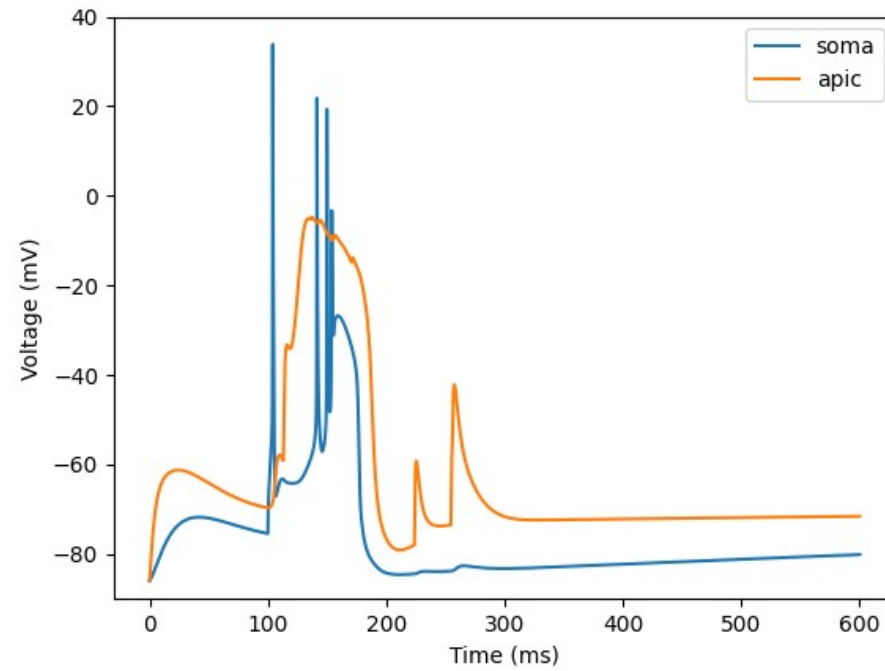
information selectivity

- amplifying the stimulus from distal dendrite



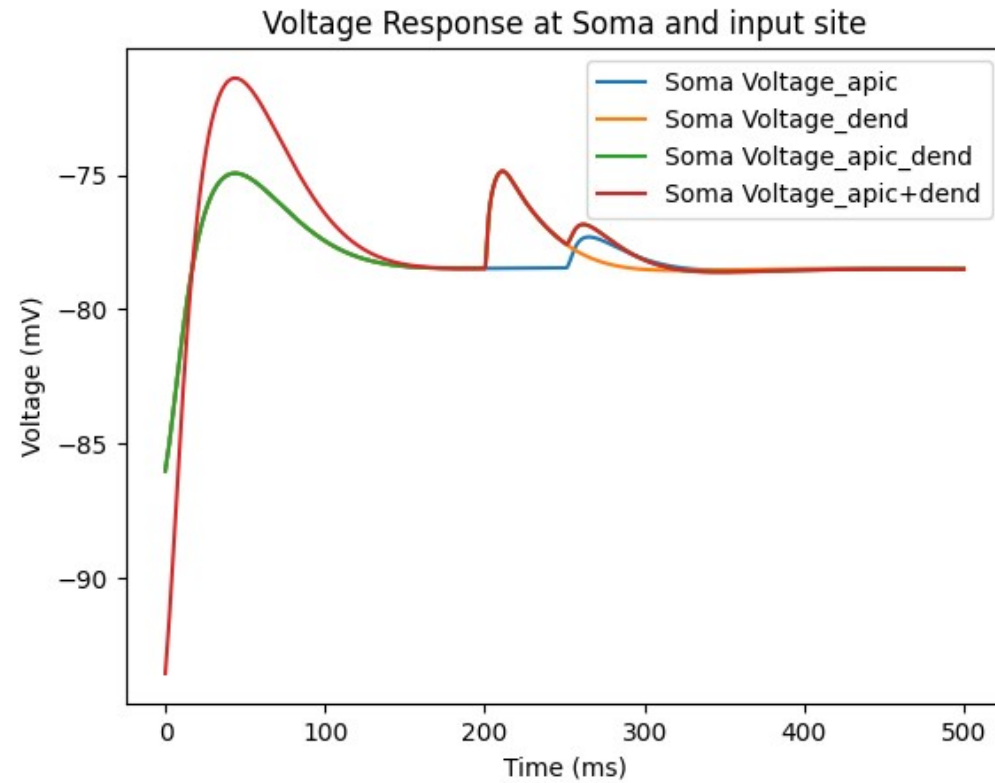
information selectivity

- selectivity for timing



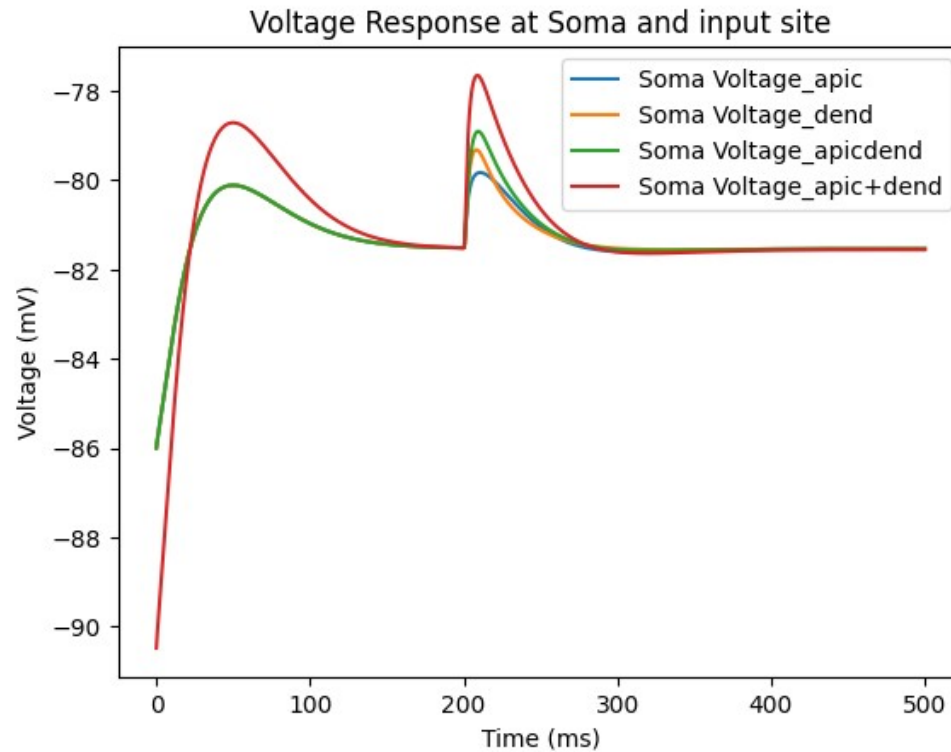
information integration

- integrating stimulus from different time



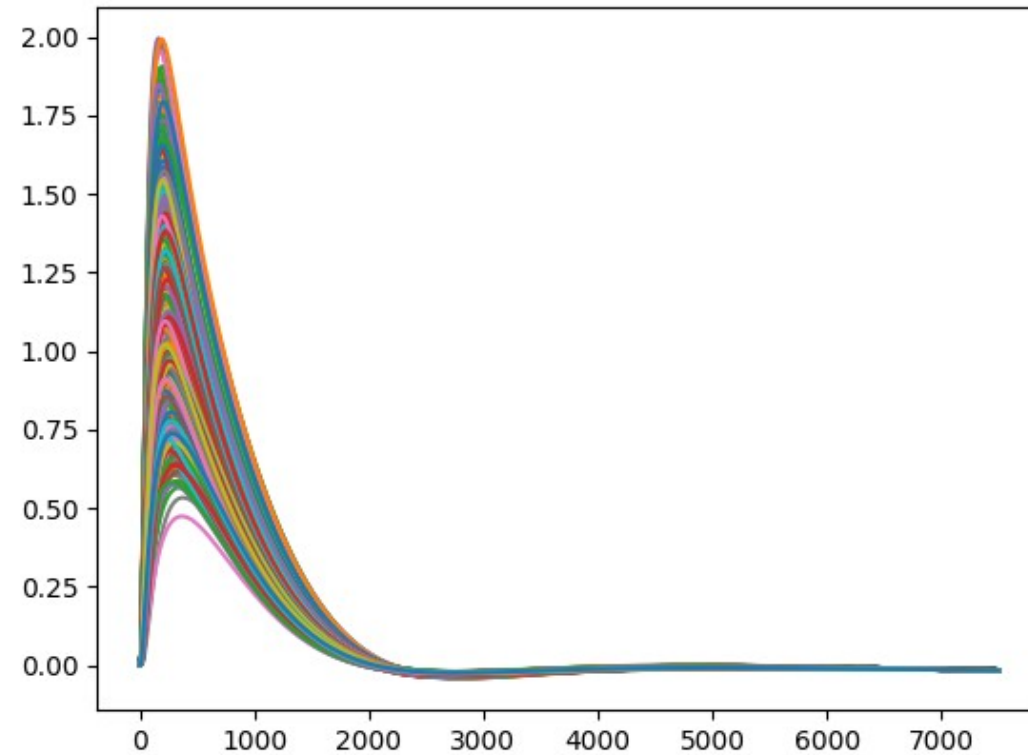
information integration

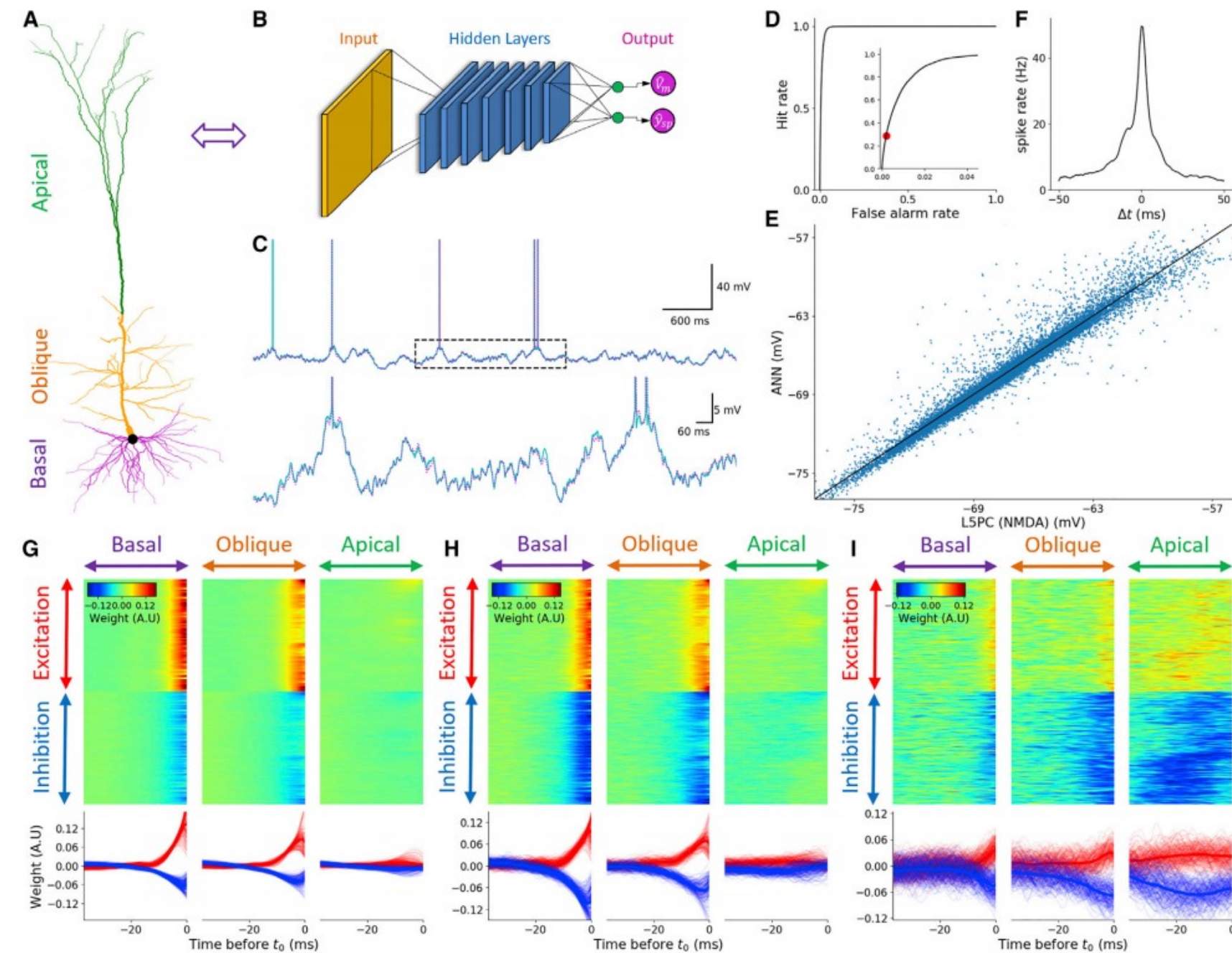
- integrating stimulus from different position



learning the relation between stimulus and spike

- encoding the stilmulus from different position





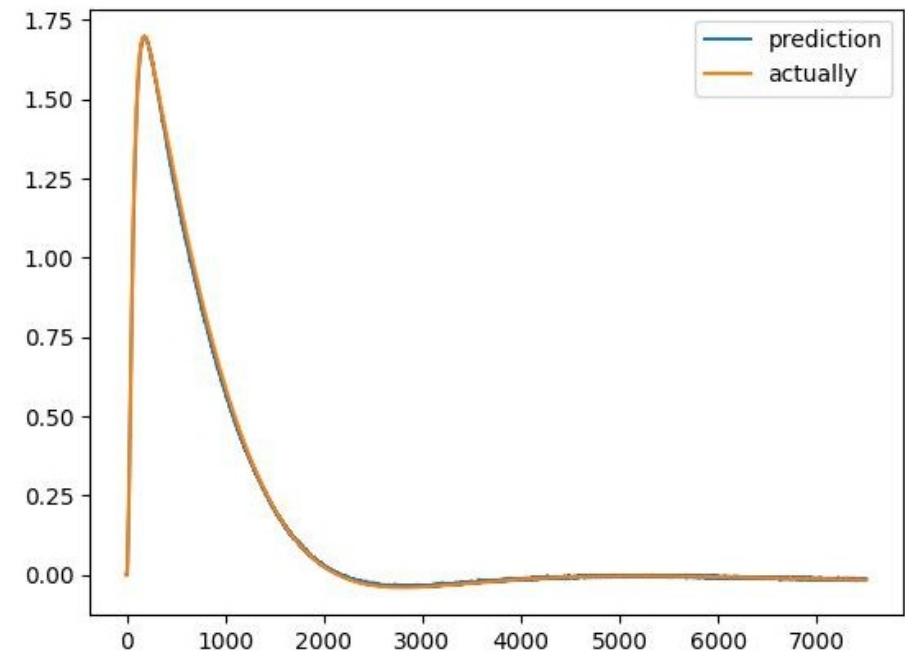
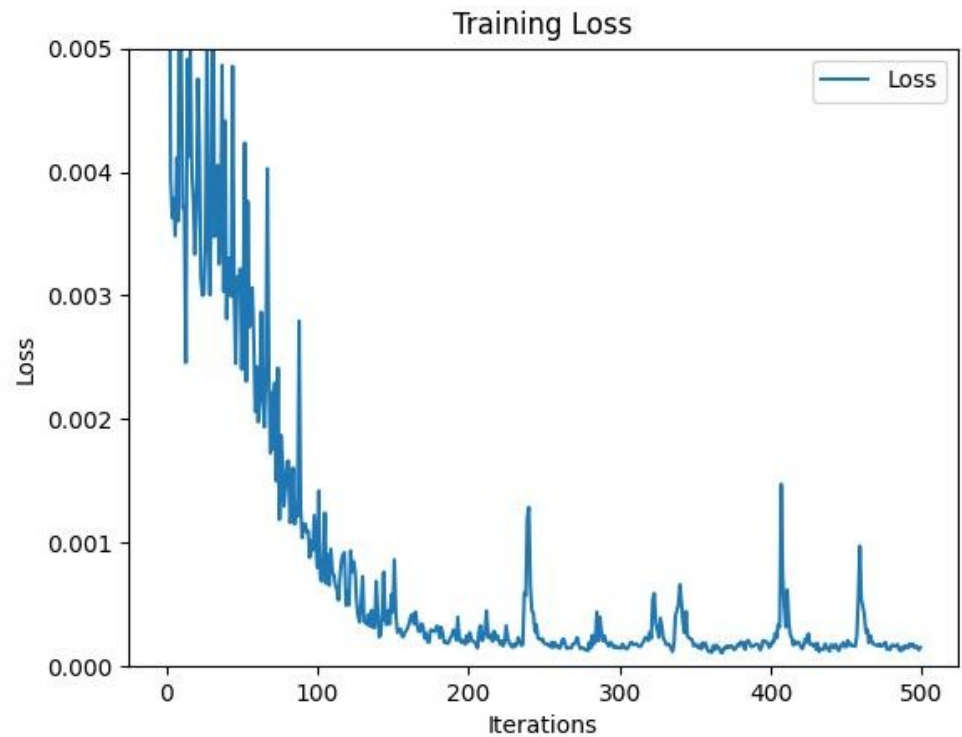
利用神经网络模拟锥体细胞

接近于 5-8 层!

Figure 2. A detailed model of an L5 cortical pyramidal neuron with AMPA and NMDA synapses is faithfully captured by a TCN with seven hidden layers consisting of 128 feature maps per layer and a history of 153 ms

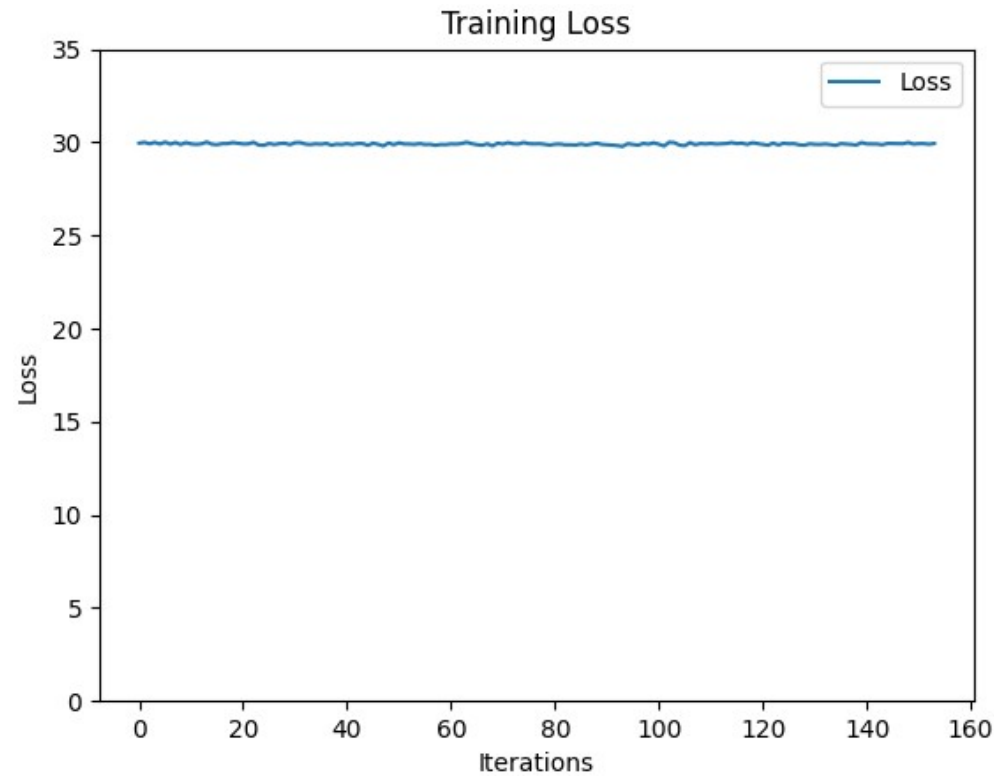
learning the relation between stimulus and spike

- simulating the relation using multi-layer perceptron



learning the relation between stimulus and spike

- using two-layer LSTM for inverse prediction



长时程增强

Before long-term
potentiation



Population EPSP

After long-term
potentiation



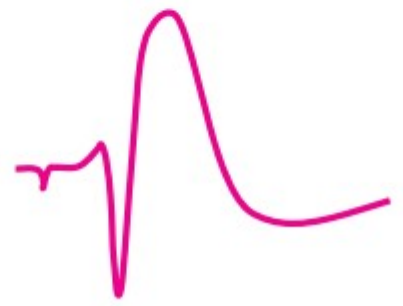
1 hour



24 hours



48 hours



72 hours



96 hours

