

Project: Computational Neuroscience

Learning in networks of spiking neurons with nonlinear dendritic integration.

Description:

Recent data suggests that neurons are not simple linear units, but their output is determined by complex nonlinear computation in their dendritic trees. Recently, we have shown that simple biologically plausible synaptic plasticity mechanisms enables such neurons to learn complex nonlinear functions autonomously. It has however not been investigated how these learning rules behave in small networks of neurons. In this project we will perform simulations of small networks of neurons with nonlinear dendritic integration in order to investigate how synaptic plasticity leads to a self-organization of computation in these networks.

Your tasks:

Simulations in Python; Software is available but has to be adjusted.

Prerequisites:

- Lecture Neural Networks B.
- Programming skills in Python are not necessary; C++ would be good.

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