Bonn-Cologne Computational Neuroscience Seminar

Energy efficient learning in neural networks

Prof. Mark Van Rossum

Heads the Neural Computation group at the University of Nottingham. Before coming to Nottingham he lead the UK's first DTC, the DTC in Neuroinformatics at the University of Edinburgh. His research interests include synaptic plasticity and homeostasis, neural coding, and data analysis methods.

He is best known for his work on STDP and the Van Rossum spike distance. His most recent work concerns the metabolic cost of plasticity.

Talk Abstract

The brain is one of the most energy intense organs. Some of this energy is used for neural information processing, however, fruitfly experiments have shown that also learning is metabolically costly. First we will present estimates of this cost, introduce a general model of this cost, and compare it to costs in computers.

Next, we turn to a supervised artificial network setting and explore a number of strategies that can save energy need for plasticity, either by modifying the cost function, by restricting plasticity, or by using less costly transient forms of plasticity. Finally, we will discuss adaptive strategies and possible relevance for biological learning.

Friday, 19 April 2024, 12 pm

In-Person:

University of Bonn, Tchumatchenko Lab,
Seminar room,
Poppelsdorfer Allee 24, 53115 Bonn

Online:
https://uni-bonn.zoom.us/j/8684670586?pwd=TFVXVk00MGtDVFl3RGY2cXBrZFpJQT09

Host

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