

MASTER'S THESIS PRESENTATION

Deep Learning with Feedback Alignment and Randomized Layerwise Learning

WHEN

April, 30th, 2021
2:00 PM, CDT

WHERE

Via ZOOM

ZOOM information will be provided in the email announcement for this seminar.

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Artificial neural networks are inspired by the brain and in return experiments have found similarities between visual cortex and convolutional neural networks. While it remains unknown how changes are made to the brain neural network during learning, multiple efforts are made to achieve biologically plausible artificial neural networks, including feedback alignment (Lillicrap et al. 2014) and greedy layerwise learning (Belilovsky et al. 2019). Here we established a new mechanism for biologically plausible neural networks by combining the feedback alignment update and the layerwise learning. Furthermore, with the randomized layerwise learning we proposed, we show that convolutional neural networks can be trained without end-to-end or even sequentially layerwise training. The new mechanism not only avoids the weight transport problem brought by the back-propagation, but also unlocks the time constraint on updating weights and is more computationally efficient. It provides a new possibility for biologically plausible neural networks.

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