

EU H2020 NEURONN: Two-Dimensional Oscillatory Neural Networks for Energy Efficient Neuromorphic Computing

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Abstract:

Neuro-inspired computing employs technologies that enable brain-inspired computing hardware for more efficient and adaptive intelligent systems. Mimicking the human brain and nervous system, these computing architectures are excellent candidates for solving complex and large-scale associative learning problems.

The EU-funded NeurONN project will showcase a novel and alternative neuromorphic computing paradigm based on energy-efficient devices and architectures.

In the novel neuro-inspired computing architecture, information will be encoded in the phase of coupled oscillating neurons or oscillatory neural networks. The VO₂ metal insulator transition devices will emulate biological neurons and are expected to be 250 times more efficient than the state-of-the-art digital CMOS based oscillators.