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Inspiring Minds

November 2022

Studying the brain, one neuron at a time.

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Citation of this paper:

Martin, Erwan, "Studying the brain, one neuron at a time." (2022). *Inspiring Minds – A Digital Collection of Western's Graduate Research, Scholarship and Creative Activity*. 274.
<https://ir.lib.uwo.ca/inspiringminds/274>

There are many different classes of neurons in the central nervous system. Each has different properties and function in the cognitive process. One of the methods used to study the brain at the scale of neurons is called patch clamp electrophysiology. We send a current into one individual neuron to measure its electrical properties, based on those measurements we classify the neuron into one of the many different types. This method has led to numerous breakthroughs over the last decades. My project aims to bring this even further by taking advantage of the recent advances in computer models of neural networks. Using spiking neural networks, we will be able to inject each neuron with a much more complex stimulation that better mimics the signal received by the neurons in vivo. This could help better understand how biological networks might be dysregulated in conditions like ADHD or depression.