World Wide

NeuRise

Talks by rising stars of neuroscience

Inferring brain-wide interactions using data-constrained recurrent neural network models
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Behavior arises from the coordinated activity of numerous distinct brain regions. Modern experimental tools allow access to neural populations brain-wide, yet understanding such large-scale datasets necessitates scalable computational models to extract meaningful features of inter-region communication. In this talk, I will introduce Current-Based Decomposition (CURBD), an approach for inferring multi-region interactions using data-constrained recurrent neural network models. I will first show that CURBD accurately isolates inter-region currents in simulated networks with known dynamics. I will then apply CURBD to understand the brain-wide flow of information leading to behavioral state transitions in larval zebrafish. These examples will establish CURBD as a flexible, scalable framework to infer brain-wide interactions that are inaccessible from experimental measurements alone.

Event link:
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