

**University of California, Irvine
Statistics Seminar**

“Latent Variable Modeling for Neural Data Analysis”

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**4 p.m., Thursday, October 22, 2020
Join via Zoom: <https://uci.zoom.us/j/99193076115>**

In this talk, I will discuss an ongoing project aimed at understanding the neural basis of complex behaviors and temporal organization of memories. More specifically, I will focus on a unique electrophysiological experiment designed to address fundamental and unresolved questions about hippocampal function. Our goal is to elucidate the neural mechanisms underlying the memory for sequences of events, a defining feature of episodic memory. To this end, we have used high-density electrophysiological techniques to record neural activity (spikes and local field potentials) in hippocampal region CA1 as rats perform an odor sequence memory task. Importantly, this nonspatial approach allows us to determine whether spatial coding properties (thought to be fundamental to hippocampal memory function) extend to the nonspatial domain. To answer this question, we have developed a set of deep learning techniques for latent representation learning of neural data, and a set of Bayesian latent variable models for identifying the dynamic structure of neural patterns. Our findings could lead to unprecedented insight into the neural mechanisms underlying memory impairments.