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沖縄科学技術大学院大学

THEORETICAL SCIENCES VISITING PROGRAM

TSVP TALK

Towards Understanding How Animals Hide (From Themselves and Others)

2025
THU. **Jan. 09**
15:00–16:00
HYBRID L5D23, ZOOM

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To produce adaptable behaviors, networks of neurons in multiple brain regions and animal species are thought to form internal models of the world. Internal models correspond to neural representations of predictions and prediction errors of behaviorally meaningful variables, such as incoming sensory stimuli and motor actions. In a typical experiment to probe internal models, an animal learns to predict the presence of a specific stimulus based on a specific motor action. Such experiments can explain, for example, why when we walk on dry leaves we "stop hearing" the predictable sound of leaves crumbling—"hiding" from our own action. Existing models of predictive processing do not generalize to more natural scenarios where many stimulus features are predicted (crumbling leaves, a creaking wood floor, etc.). My talk will describe our work on potential biological mechanisms of high-dimensional predictive coding. I will conclude with remarks on ongoing work attempting to use our model to understand cephalopod camouflage behavior—hiding from others— by recasting this behavior as a high-dimensional prediction.

University of California San Diego
Johnatan Aljadeff

Johnatan (Yonatan) Aljadeff is an assistant professor in the UC San Diego neurobiology department. Aljadeff's lab uses ideas and techniques from physics to study models of neurons and networks. He is interested in a broad set of problems, including: how representations of the outside world are formed and maintained in the brain; and how learning is linked to synaptic plasticity. Aljadeff emphasizes collaboration with experimentalists who investigate diverse animal models, including bats, flies, mice, and fish. Aljadeff earned his BSc in physics from Tel-Aviv University, and his PhD in physics from UC San Diego, where he was Fulbright Scholar. As faculty, Aljadeff received the DARPA Young Faculty Award. His lab's work is additionally supported by grants from the US NIH and Dept. of Energy. Website: aljadeff.ucsd.edu

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