

Title: *Hierarchical motion perception as causal inference*

Abstract:

Since motion can only be defined relative to a reference frame, which reference frame guides perception? A century of psychophysical studies has produced conflicting evidence: retinotopic, egocentric, world-centric, or even object-centric. I will present our recent work on a hierarchical Bayesian model mapping retinal velocities to perceived velocities as well as psychophysical data that support critical predictions of our model, and that allow us to infer the subjective set of reference frames used by individual observers. If time permits, I will also present work on the neural basis of our model, both by linking it to divisive normalization, as well as by describing a general method for testing Bayesian models using neural data.