Interdisciplinary Data Sciences Consortium

* IDSC Seminar Series *

April 7, 2017 2:00pm-3:00pm

Location: CUTR 102

Presents

Dr. Chad Dube,
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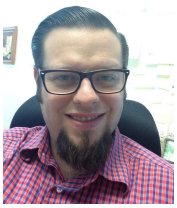
University of South Florida

Title: A Normalized Poisson Model for Recognition Memory

Abstract: Decision-making in recognition memory is often described using variants of Signal Detection Theory (SDT), a model that makes its first appearance in Fechner's Elements of Psychophysics. The application of SDT to memory suggests that familiarity is homomorphic to magnitude perception, yet few assessments of the model's predictions for psychophysical data in memory exist beyond its prediction that the receiver operating characteristic (ROC) should be curvilinear for above-chance performance. I will detail several findings from the literature on summary statistical representation in visual psychophysics and computational neuroscience to highlight some properties that memory strength should have in an SDT model. The ideas are combined with several ideas from the memory literature in a new model referred to as the Normalized Poisson Model (NPM). New data demonstrating Fechner-Weber law saturation and magnitude averaging in participants' assessments of their own long-term memory strength for words are consistent with the NPM. I argue that the NPM represents an advance over SDT in its generalizability, its lack of an edge correction requirement, and in its ability to provide a principled account of Fechner-Weber law behavior, Fano factors, ROC curves, mirror effects, and magnitude averaging in item recognition.

Biography: Dr. Chad Dubé received a Bachelor of Science in Psychology from Eastern Michigan University in 2006, and obtained a PhD in Cognitive Psychology from the University of Massachusetts Amherst in 2011. From 2011-2013 he was a Postdoctoral Research Fellow at Brandeis University's Volen Center for Complex Systems. He is currently an Assistant Professor in the Psychology Department at USF. Chad is interested in human memory and perception, with a particular focus on overlapping perceptual and memory mechanisms in the decision-making stage of recognition memory. He uses a variety of behavioral, neural, and computational modeling techniques to understand these mechanisms. Current projects involve the integration of biologically-plausible neural computations in models of cognitive processing, and the statistical computations involved in the perception of visual features and their role in decisions based on the internal perception of memory strength.



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