STATISTICS COLLOQUIUM

WEDNESDAY, FEBRUARY 6, 2013
TALK: 4:15 PM — SCIENCE CENTER RM. 705
RECEPTION: 3:50 PM — SCIENCE CENTER, 7TH FLOOR

"Exploring Image Representation in the Visual Cortex using Encoding Models"

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ABSTRACT

In this talk I will discuss the use of high-dimensional regression models to analyze neurophysiological (neuron firing rates) and imaging (e.g. functional MRI) data from the visual cortex. These encoding models are trained to describe and predict the relations between a stimulus -- an image or a video -- and the response it evokes. Once a model predicts well on novel stimuli, it can be examined to better learn the function of the examined cortical area. Furthermore, these models can be used to identify stimuli from brain activity, a process known as decoding.

I will discuss the choice and development of feature sets for less-understood visual areas; permutation methods for evaluating prediction accuracy compared to oracles; and interpretation of non-linear encoding models in order to learn about the function of the visual areas.

(These are joint works with Julien Marial, Shinji Nishimoto, Bin Yu, and the Gallant Lab in UC Berkeley).