Dr. Lucy Robinson  
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will speak on

**Functional Clustering and Change Point Estimation in FMRI Studies**

**Time:** 3:00 – 4:00 PM  
**Date:** Wednesday, March 2, 2011  
**Place:** Alter Hall 748

**Abstract**

Functional neuroimaging studies present a number of challenges in capturing variability in brain activity across subjects and across regions of the brain. We present two new methods for analyzing functional magnetic resonance imaging (fMRI) studies which address these challenges. First, we propose a flexible approach for modeling and spatially clustering functional response curves for multi-subject fMRI data. Our goal is to segment the brain into regions with similar response curves over levels of a stimulus, and to estimate these region-wide curves and their variability at the levels of subjects and of spatial locations. We apply functional data analytic modeling techniques to response functions to model differences across subjects and across space, and employ a model-based unsupervised spatial clustering algorithm to estimate regions with homogeneous response profiles. Second, we propose a technique for flexibly modeling data with uncertain timing of brain activation. We use change point detection techniques to infer subject-specific timing of brain activity, and estimate population densities of timing parameters.