



2015 Summer Institute in Cognitive Neuroscience

Week 1: Computational and Methodological Cognitive Neuroscience Course Director: Brian Wandell (Stanford University)

Brain imaging has, within two decades, revolutionized the study of the human brain. The hardware for measuring and the software for analyzing the measurements are complex and rapidly evolving. The innovation in neuroimaging tools has opened the door for new discovery, and cognitive neuroscientists must keep pace with the quickly evolving issues in brain imaging. This Summer Institute will provide views of brain imaging from those shaping the field, and do so within the context of cognitive neuroscience research. Therefore, this Summer Institute is rich with cognitive neuroscience theory, methods, and data from those applying imaging tools to probe the human mind. The perspective will be a critical one, as we challenge the fellows to understand the strengths, limitations and interpretive challenges of integrating information from imaging data with that from other physiological methods.

Monday (6/22): Functional Signals and systems

8:30-9:00	Breakfast
9:00-9:30	Introductory Remarks – Brian Wandell (Stanford) and Ron Mangun (UC Davis)
9:30-10:45	James Haxby (Dartmouth) – <i>Analyzing distributed perceptual and cognitive representations</i>
10:45-11:00	Break
11:00-12:15	Kalanit Grill-Spector (Stanford) – <i>Imaging to reveal cortical representations and computations in visual recognition</i>
12:15-1:45	Lunch
1:45-5:00	Lab Session: – Neuroanatomy LOCATION: Physical Sciences Building North (PSBN), Rms. 2664 and 2666 http://www.aw.id.ucsb.edu/maps/ucsbmap.html (in D5, next to Chemistry).
5:00	Adjourn

Tuesday (6/23): White Matter Pathways and Networks

8:30-9:00	Breakfast
9:00-10:30	Brian Wandell (Stanford) – <i>Diffusion MRI and tractography</i>
10:30-10:45	Break
10:45-12:15	Jason Yeatman (Univ. of Washington) – <i>Quantitative neuroimaging of human brain development</i>
12:15-1:45	Lunch
1:45-5:00	Lab Session: – Neuropsychology (Mosher Alumni House – the same room as lectures)
5:00	Adjourn

Wednesday (6/24): Integrating MRI with other Modalities

- 8:30-9:00 Breakfast
- 9:00-10:30 Jonathan Winawer (NYU) – *Integrating measurements of human visual cortex from multiple methods*
- 10:30-10:45 Break
- 10:45-12:15 Rainer Goebel (Maastricht University) – *Modeling and neuroimaging to understand cognition*
- 12:15-1:45 Lunch
- 1:45-5:00 Lab Session:– Functional neuroimaging methods
- Section A: fMRI fundamentals (Barry Giesbrecht)**
Psychology East 2839
- Section B: Multivariate methods (Ben Turner)**
Psychology East 2822
- Section C: Diffusion Imaging (Matt Cieslak)**
Mosher Alumni House
- 5:00 Adjourn

Thursday (6/25): Modeling Neuroscience

- 8:30-9:00 Breakfast
- 9:00-10:30 Wei Ji Ma (NYU) – *Modeling memory and decision systems*
- 10:30-10:45 Break
- 10:45-12:15 Jack Van Horn (USC) – *Story telling with neuroimaging connectomics*
- 12:15-1:45 Lunch
- 1:45-3:10 Danielle Bassett (Penn) – *Network science and the human brain*
- 3:15-3:30 Break
- 3:30-5:00 Debate Preparation (no lab)
- 6:30-8:00 **DEBATES** (fellows will be organized into teams during week 1)
LOCATION: Loma Pelona Center

Friday (6/26): Plasticity and Brain Function

- 8:30-9:00 Breakfast
- 9:00-10:30 Nikos Logothetis (Max Planck) – *Measuring interactions between brain systems*
- 10:30-10:45 Break
- 10:45-12:15 Rebecca Saxe (MIT) – *Cognitive development and the human brain*
- 12:15-1:45 Lunch
- 1:45-3:15 Heidi Johansen-Berg (Oxford) – *Measuring neural plasticity in the human brain*
- 3:15 Adjourn
- 5:30 **BBQ at Goleta Beach (walking distance from campus – see map)**