



**The Center for Control, Dynamical Systems, and Computation  
University of California at Santa Barbara  
Winter 2007 Seminar Series  
Presents**

## **Identification of Brain Changes with Skill Learning Based on State Space Models: Applications in Human Neuroimaging**

**Scott Grafton**

**University of California, Santa Barbara**

**Friday, February 2nd, 2007 3:00pm-4:00pm ESB 2001**

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### **Abstract:**

Human brain imaging based on magnetic resonance imaging provides a non-invasive method of identifying neural systems associated with learning and memory. The method is highly limited in temporal and spatial resolution. Nevertheless, the relative linearity and reproducibility of responses as well as the ability to examine the entire brain allows for a number of interesting modeling problems and opportunities to capture brain dynamics. Using simple visually guided tracking, the human “as controller” can be investigated and different sources of performance can be dissociated and linked to specific brain circuits. Current work focuses on disentangling performance gains associated with improvements in feedback control policy from those related to generation of a predictive internal model.

### **About the Speaker:**

Scott Grafton received BA's in Mathematics and Psychobiology from the University of California at Santa Cruz and his MD degree from the University of Southern California. He completed a Neurology residency at the University of Washington and a residency in Nuclear Medicine at UCLA. He was a research fellow in Neuroimaging at UCLA where he developed methods for mapping human brain activity using positron emission tomography. His first tenure track position was at University of Southern California. He subsequently held positions at Emory University and Dartmouth College, where he was director of the Brain Imaging Center. He joined the UCSB faculty in 2006 and is director of the UCSB Imaging Center. Professor Grafton is the author of more than 115 publications. He is action editor for the journal *NeuroImage* and is on the editorial board of *Annals of Neurology*, *Clinical Neurophysiology*, *Experimental Brain Research* and the *Journal of Cognitive Neuroscience*. He is a member of the Board of Scientific Counselors of the NIH intramural branch and has served as an NIH study section member.

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