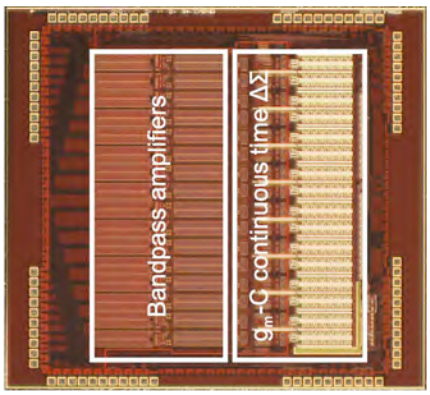
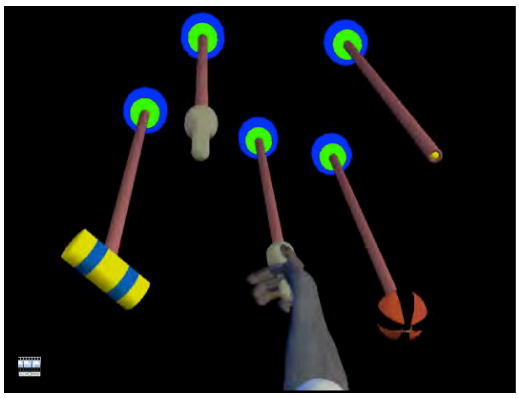
Neuroengineering Seminar

Integrated Cortical Interfaces for Analysis and Control of Dexterous Hand Movements



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Monday, October 10, 2011
4:00-5:00pm
Fung Auditorium, Powell-Focht Bioengineering Building
University of California San Diego

Upper arm movements ranging from simply grasping a pen to playing a piano require the collective activation of thousands of neurons in motor cortex. Understanding how the brain encodes these movements holds tremendous implications for neural control of prosthetic devices. Such devices require a system to record electrical activity from the brain in an untethered fashion, as well as models to relate the neural activity to the kinematics of the upper arm. In this talk, I will present a low-noise low-power multichannel integrated system for wireless recording of neural activity. We employed this system in primates performing dexterous reach to grasp movements. I will then present models that we have developed to study the distribution of neural activity over primary motor cortex (M1) during these movements and their relationship to underlying somatotopic organization of M1. I will conclude my talk by showing that we can reconstruct the 21 degrees of freedom of upper arm movements with high accuracy from M1 neural activity.

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