RE-THINKING PARALYSIS:
BCIS AND FES FOR MOVEMENT RESTORATION IN PERSONS WITH SPINAL CORD INJURY

Abstract: Cortically controlled neuroprostheses have long been posited as the “holy grail” for intracortical brain-computer-interfaces (iBCIs). The efficacy of iBCIs has advanced to the point where a small number of laboratories around the US are now involved in iBCI trials involving humans with chronic paralysis. As part of the Braingate2 Clinical Trial, we at Case Western Reserve University are investigating using iBCIs to control Functional Electrical Stimulation (FES) systems for restoring functional arm movements to persons with chronic high cervical spinal cord injury. This lecture will highlight a number of our clinical, technological, and scientific advances towards developing an iBCI controlled FES arm neuroprosthesis. Additionally, this lecture will discuss the efficacy of non-microelectrode recording techniques for extracting movement related information from cortical signals. Specifically, we have used arrays of DBS-style depth electrodes to record from cortical areas not accessible by traditional microelectrode or electrocorticography (ECoG) arrays, such as deep within sulci walls of primary (M1), dorsal premotor (PMd), and insular cortices. We show grasp related cortical modulation useful for control of hand neuroprostheses. Finally, this lecture will briefly discuss hurdles towards development of chronically implanted clinically viable iBCI neuroprosthetic systems.

Wednesday, February 20  ■  9:00 am – 10:00 am
EE-IV Shannon Room #54-134
420 Westwood Plaza - 5th floor
Los Angeles, CA

A. Bolu Ajiboye, PhD
Assistant Professor
Dept. of Biomedical Engineering
Case Western Reserve University

Biomedical Engineering Research Scientist
Louis Stokes Cleveland VA Medical Center
Rehabilitation R&D Service
FES Center of Excellence

Dr. Ajiboye's main research interest is in the development and control of brain-computer-interface (BCI) neuroprosthetic technologies for restoring function to individuals who have experienced severely debilitating injuries to the nervous system, such as spinal cord injury and stroke.

To RSVP, or if you have any questions, please contact: Nadia Hashoush
nhashoush@mednet.ucla.edu or 310-206-9187. Food will be served.