International IEEE EMBS Workshop
on
Advanced NeuroTechnologies for BRAIN Initiatives (ANTBI)

26 August 2014
Sheraton Hotels & Towers, Chicago, USA

Dear Colleagues,

The IEEE EMBS Workshop on Advanced Technologies for BRAIN Initiatives, which will be held on August 26 at the Sheraton Hotel & Towers, Chicago, Illinois, USA, just before the 36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'14). We strongly encourage members of both the Neuroscience and Engineering Communities to attend this highly multidisciplinary workshop.

The workshop will highlight the development of novel electronic and photonic devices and techniques for experimental probing, neural simulation studies, and the design and development of human-machine interface systems, artificial vision sensors, and neural prosthesis have significantly restored and enhanced the impaired sensory functions and motor systems. Furthermore, we highlight these recent technological advances by focusing on advanced technologies that monitor and control brain activities to treat neurological diseases, including Alzheimer's, Epilepsy, Depression, etc., from the molecular to systemic levels.

Invited talks will be presented by internationally well respected researchers. This workshop will provide a unique interactive platform to exchange of ideas in the areas of BRAIN initiatives with leading researchers and medical and industry professionals.

IEEE EMB

Program at a Glance – Tuesday, 26 August 2014

8:20-8:25 AM **Opening Remarks** - Metin Akay

8:25-8:30 AM **Welcome Remarks** - Bruce Wheeler - EMBS President

Keynote Lectures

8:30-9:00 AM Joanne S. Tornow
Assistant Director, SBES, NSF
Co-Chair, the BRAIN Initiative at NSF

9:00-9:30 AM Emery Brown
MIT
Working Group Member, the BRAIN Initiative
Data Analysis and Neural Signal Processing, Pillars of the BRAIN Initiative

9:00-9:30 AM Justin Sanchez
Program Director, DARPA
Funding Opportunities in Advanced Neurotechnologies at DARPA

10:00 -10:30 AM Coffee Break

Plenary Lectures

10:30-11:00 AM Theodore W. Berger
USC
A Cognitive Neural Prosthesis for Memory Function

11:00-11:30 AM Arto Nurmiko
Brown
Road to Fully Wireless Electronic Communication with Brain Circuits

11:30-12:00 Gert Cauwenberghs
UCSD
Reverse Engineering the Cognitive Brain in Silicon

12:00-12:30 Tim Denison
MEDTRONIC
Framing Neurological Disease as a Circuit Problem

12:30-1:30 PM Lunch Break

Plenary Lectures

1:30-2:00 PM	Philip Sabes UCSF *A Learning-based Approach to Artificial Proprioception*
2:00-2:30 PM	Krishna Shenoy Stanford *Neural Dynamics of Reaching: The Need for New Neurotechnologies*
2:30-3:00 PM	Jose Carmena UC Berkeley *Dissecting Neural Circuit Dynamics During Neuroprosthetic Learning*
3:00-3:30 PM	Jose Principe University of Florida *Learning and Exploiting Recurrent Pattern in Neural Data*
3:30-4:00 PM	**Coffee Break**
4:00-4:30 PM	Nitish Thakor Johns Hopkins and NUS Brain Institute *Translating Neuroprosthetics: from Revolutionary to Clinical*
4:30-5:00 PM	Dominique Durand Case Western *Mapping Neural Activity with Micro-Electrodes Arrays Reveals New Mechanisms of Propagation*
5:00-5:30 PM	Elad Alon UC Berkeley *Electronics for Interfacing with the Brain: Challenges, Limits and Opportunities*
5:30-6:00 PM	Maryam Shanechi Cornell *Real-Time Closed-Loop Control Algorithms for Brain-Machine Interface*