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.
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

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