Spring 2018 Report

Jose L Contreras-Vidal
Cullen Professor
Electrical and Computer Engineering
Director, NSF UH IUCRC BRAIN Center
(http://brain.egr.uh.edu/)
University of Houston

RA Representative to IEEE Systems Council
SC/RA Representative to IEEE BRAIN Initiative

April 26, 2018
IEEE Brain Initiative

• Global efforts, across government, academia, and industry, focusing on brain research and new technologies to transform our understanding of the brain to treat diseases and to improve lives

• IEEE Brain (b. 2015) is an IEEE wide effort to complement and support these worldwide Brain Initiatives efforts and neuroscience programs
  • IEEE brings innovative technologies (systems of systems) and tools to the field of neuroscience
  • IEEE provides unbiased technology directions that can help guide budget and funding decisions
  • IEEE facilitates cross disciplinary collaboration and coordination bringing solutions that address the entire technology chain to accelerate commercialization
Activities – Annual IEEE Brain Workshop

IEEE Brain Initiative Workshop on Advanced Neurotechnologies

- Launched in 2016 as a satellite event prior to the annual SfN Conference
- 2018 event will be held in San Diego, Nov 1-2
  - Include a Poster Session
  - More details to follow
IEEE Brain - Activities - Standards

• IEEE Industry Connections Group – NeuroTech for BMI

• Monthly telecons with face-to-face meetings, currently 75-80 members (open to anyone)

• Working document addressing 5 areas
  • Sensors and interoperability
  • **Effectors** (Jose Contreras-Vidal is the working group leader)
  • Data representation, storing, and sharing
  • Performance assessment and benchmarking
  • User requirements – clinical and non-clinical BMIs

• **Standards Roadmap to be released mid-2018 for review and comment**
  • Provide an integrated overview of all standards activity that is related to BMI neurotechnologies
  • Identify gaps in existing standards and provide a plan to address these gaps

Powered exoskeleton
- Activities – Sessions/ Panels/ Workshops

http://bcisociety.org/meetings/bci-2018-welcome/

WS 24: Standards for Neurotechnologies and Brain-Machine Interfacing

WS 25: Lower-limb brain-machine interfaces and their applications

http://www.werob2018.org/

WeR10. Smart human-machine systems for lower-limb assistance and rehabilitation after paralysis
IEEE Brain - Upcoming Activities relevant to Systems Council

• June-July 2018: Standards Roadmap on Neurotech for BMI to be released for review and comment
• Oct 7-10, 2018: Meeting of Global Current and Emerging Brain Initiatives, as part of SMC 2018 in Miyazaki, Japan
• Nov 1-2, 2018: IEEE Brain Initiative Workshop on Advanced NeuroTechnologies, San Diego
• Planned Document Development
  Ethical guidelines for technologists working in neurotechnology and applied neuroscience
  Encyclopedia BRAIN: Convergence of Engineering, Technology and Neuroscience for Revolutionizing Mental and Neurological Healthcare.
  Technology Roadmap on Neurotechnology for Closed-loop Control of Brain Activity