

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



Initiative Co-Chair Paul Sajda and Workshop Chair Metin Akay with Keynote Mark Chevillet, Facebook



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

