

2016 IEEE International Conference on Systems, Man, and Cybernetics (SMC2016)

9-12 October 2016 | Hotel Intercontinental | Budapest, Hungary

The SMC 2016 provides an international forum for researchers and practitioners to report up-to-the-minute innovations and exchange ideas and advances in all aspects of systems science and engineering, human machine systems, and cybernetics.

SMC 2016 BMI Workshop: Sessions on Standards will be 8:30-12 and 1-5pm on Sunday, 9 October 2016.

In this standards workshop, part of the SMC 2016 BMI Workshop, the use of neurotechnologies for invasive and non-invasive practices will be discussed. How this technology is implemented for surgery, Augmented Reality (AR)/Virtual Reality (VR), or wearables, and how standardization of the technology is needed to support integration and help accelerate the translation of these devices to commercialization.

See back for **proposed Agenda**.

Other topics to be discussed:

- What is a BMI standard?
- Should there be a separate set of standards for clinical and non-clinical applications?
- What would a framework for standards on diverse topics, plus their interoperability look like?
- What are the biggest challenges to using these technologies?
- What are the highest priorities or the biggest challenges that can be addressed by standards?
- Which needs be addressed in the next 3 years?
- Is there a need for standards on the reliability of these systems in terms of performance? S
- Should standards be set to protect from third-party access?
- Is it the role of standards to define which information should or not stored? or whether encryption/anonymization is required.

The outcome of this workshop will be used to drive establishment of the standards committee on Neurotechnologies.

Proposed Agenda

8:30 AM	Welcome by Michael H. Smith, Chair, SMC2016 BMI Workshop. Opening Remarks and Moderation by Ricardo Chavarriaga
8:45 AM – 9:30 AM	Presentation/panel1
9:30 AM – 10:15 AM	Brain Behavior and AR/VR /panel2
10:15 AM – 10:30 AM	Break
10:30 AM – 11:15 AM	Presentation/panel3
11:15 AM – 12:00 PM	Presentation/panel4
12:00 PM – 1:00 PM	Lunch
1:00 PM – 2:30 PM	<p>Why do Standards Matter?</p> <ul style="list-style-type: none"> • Bill Ash – Moderator <ul style="list-style-type: none"> ○ Carole Carey - Standards & Brain Initiative Overview ○ <u>Banu</u> - Brain Behavior and AR/VR ○ May - Needs and gaps in Standards ○ FDA – Why Standards are needed in Medical Devices and the FDA approval process ○ Walter <u>Besio</u>
2:30 PM – 3:00 PM	Break
3:00 PM – 4:30 PM	<p>Roundtable Discussions: Clinical and Non-clinical</p> <p>BMI systems are composed of several interconnected devices (e.g., EEG acquisition, AR/VR headsets, etc.).</p> <ul style="list-style-type: none"> • How would BMI-related standards address the interoperability of these (heterogeneous) devices? • How are the technologies that are difference able to be integrated? Is there a need to set standards on how to store the information gathered during BMI experiments and operation? • Current data formats (e.g., EDF) were conceived for storing data in “open loop” settings. <p>BMI data can be composed of multiple streams from different sensors or actuators, not necessarily recorded at the same frequency.</p>
4:30 PM – 4:45 PM	Readouts from the tables
4:45 PM – 5:00 PM	Wrap up