

IEEE SMC 2021 WORKSHOP ON BRAIN-MACHINE INTERFACE SYSTEMS

OCTOBER 17-20, 2021
(VIRTUAL)

BMI WORKSHOP COMMITTEE

Honorary Chair

Michael H. Smith, UC Berkeley, USA

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Javier Minguez, Bitbrain, Spain

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Sarah Breinbauer, br41n.io, Austria

Web

Liviu Ivanescu, INRS-EMT, Canada

KEYNOTE SPEAKERS

Yannick Roy, NeuroTechX, Canada –
NeuroTechX: Training the Next-Generation of Neuroenthusiasts

Douglas Weber, CMU, USA – *Title TBD*

Natalie Mrachacz-Kersting, University of Applied Sciences and Arts, Germany – *BCIs for replacement and restoration of lost motor function in patient populations*

PANEL

Neurotechnology innovations amidst a global pandemic

Confirmed panelists:

- Javier Minguez, Bitbrain, Spain
- AJ Keller, Neurosity, USA
- Graeme Moffat, System2 Neurotech, Canada
- Mavi Ruiz-Blondet, Neuroable, USA
- Alexey Khalezov, Impulse Neiry, Russia

BR41N.IO BCI HACKATHON COMMITTEE

General Co-Chairs

Christoph Guger, g.tec, Austria
Tiago H. Falk, INRS-EMT, Canada
Andi Partovi, Univ. of Melbourne, Australia

CALL FOR PAPERS

The IEEE SMC **11th Workshop on Brain-Machine Interface (BMI) Systems** will be held **virtually** from October 17-20 as part of SMC 2021, the flagship annual conference of the IEEE Systems, Man, and Cybernetics Society. The goal of the Workshop is to provide a forum for scientists to present research results, facilitate the interaction and intellectual exchange between researchers, developers and consumers of BMI technology. We invite contributions reporting the latest advances, innovations and applications in BMIs. The BMI Workshop is organized by the IEEE SMC Technical Committee on Brain-Machine Interface Systems. Participation is free to all registered SMC 2021 attendees. The theme of this year's Workshop is:

Current Innovations in Neurotechnology, Human-Machine Systems, and the "Internet of Minds"

BMIs were originally conceptualized as an assistive technology allowing locked-in individuals to communicate via P300 spellers. Over the last decade, innovative applications have emerged, including the control of exoskeletons to improve locomotion, as well as spinal cord stimulation neurotechnologies that enable voluntary control of walking in individuals with spinal cord injury. Alternate paradigms (SSVEPs, ErrP) have also been perfected to improve communications for non-verbal individuals and new applications in affective computing and neuroergonomics have emerged. What will the next decade bring? BMIs are being integrated into virtual reality headsets, headphones, and eyeglasses; being used to diagnose disease; speed up rehabilitation; and for human performance enhancement. How far off are we from the *Internet of Minds*?

Call for Papers

We invite contributions reporting the latest advances, innovations, and applications in all fields related to BMI, including new neuroimaging modalities and sensor technologies, interfaces, protocols, signal enhancement and multimodal fusion, integration of BMIs with virtual/augmented reality, affective BMI, hybrid BMI, deep learning for BMI, neurorehabilitation, serious gaming, and emerging applications. These topics offer tremendous opportunity for collaborative and multi-disciplinary research, involving not only peers with expertise in the field of BMI and other neurotechnologies, but also those with expertise in systems engineering, human-machine systems, cybernetics, neuroscience, robotics, and artificial intelligence, to name a few. The four-day Workshop will feature a series of **panels**, a **virtual brain-computer interface hackathon**, prominent **invited industry/academia speakers**, presented **contributed papers**, and the **ceremony of the International 2021 BCI Award**.

This is the sixth year that the IEEE SMC BMI Workshop will host a **br41n.io Brain-Computer Interface Hackathon** with several cash prizes. It will be the second time it will take shape **virtually!** The BCI Hackathon is a brainstorming and collaborative marathon designed to rapidly produce fully functional BCI prototypes with team members spread out across the globe. The Hackathon will take place on October 17-18; participation is free for all SMC 2021 attendees. Learn more about the IEEE SMC 2021 BCI Hackathon projects and teams, how to form/join one, and how to register at <https://www.br41n.io/IEEE-SMC-2021>.

Important Dates

Paper submission due: April 5, 2021

Notification of paper acceptance: May 24, 2021

Final manuscript due: July 12, 2021

Conference website: http://musaelab.ca/bmi21/smc2021_bmi.html

Papers

Prospective authors are invited to submit full-length papers electronically through the conference website. Author instructions and paper templates are available on the conference website.

Note: Accepted papers not presented at SMC 2021 will be excluded from IEEE proceedings.