



SMC2015 BMI Workshop

CALL FOR PAPERS

WORKSHOP CO-CHAIRS

IEEE SMC TC on BMI Systems:
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INVITED SPEAKERS

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PANEL

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<http://www.smc2015.org>

IEEE reserves the right to exclude a paper from distribution after the conference (e.g., paper will not be published in IEEE Xplore®) if the paper is not presented at the conference.

IEEE SMC 2015's 5th **Workshop on Brain-Machine Interfaces Systems** will be held October 9-12, 2015 in Hong Kong. SMC2015 is the flagship conference of the IEEE Systems, Man, and Cybernetics Society. This workshop is co-organized by the *IEEE SMC TC on Brain-Machine Interfaces systems* and *IEEE SMC TC on Shared Control*. The main theme of this year's workshop is:

The Human-in-the-Loop Workshop: BCI, Haptics, Big Data, and Shared Control

Brain-Machine Interfaces (BMI) systems offer the possibility of a new generation of multidisciplinary technologies that allow users to directly control devices via the nervous system. Successful realization of such approaches requires seamless interaction of the human and the machine, involving not only the decoding of the (neural) control signals but also efficient means to provide information back to the user (e.g. haptics). Furthermore the use of shared control principles, allowing the cooperation between the adaptive intelligent systems and the user greatly improves the system performance. The goal of this workshop is to facilitate the interaction and intellectual exchange between all researchers, developers and consumers of this technology. This international forum is a unique opportunity for reporting the latest advances, innovations, and applications in these fields. Of particular interest will be the report and evaluation of complete systems considering aspects such as multidimensional performance metrics reflecting decoding accuracy, task performance, human factors, decoding algorithms, feedback, etc. Furthermore, along with SMC2015's main theme of Big Data Analytics for Human-Centric, a particular focus will be put on the use of big data approaches to advance the state-of-the-art of brain-machine interfacing systems. These topics represent both challenges to the field and a tremendous opportunity for collaborative and multidisciplinary research, involving not only peers with expertise in the field of BMI, but also expertise in systems engineering, human-machine systems, and/or other disciplines.

Like previous workshops there is a focus on practical applications of BMI theory and methodologies leading to tangible systems, products, and service technologies. As such, all submitted papers should include a section on how their topic can translate into practical applications. At the core of Brain-Machine-Interface systems is the coordination of sensing, computation, communication, control, and actuation of dynamic systems. Experts from many research areas within SMC and from outside are needed if reliable real-world BMI systems are ever to have significant and lasting impact on people. Advances in IEEE SMC's fields of interest as they relate to BMI are expected to empower future systems to achieve this goal. This workshop will be of special interest to those experts in the topics listed below who are interested in learning how their research areas can be applied to solving of various problems necessary for the development of real-world invasive and non-invasive BMI systems. Besides presentations of accepted papers, this 3 day workshop will feature panels, discussions with the audience, and a number of prominent invited speakers from industry and academia.

Systems Science & Engineering:

Discrete Event Systems and Petri Nets
Distributed Intelligent Systems
Industrial Applications
Intelligent Control Systems
Medical Mechatronics
Robotic and Autonomous Systems
Self-Organized & Multiagent
Sensor Systems
Systems
System of Systems Engineering
System Modeling and Control
Neuroscience Systems

Human-Machine Systems:

Adjustable Autonomy
Assistive Technology
Brain-Machine Interface Systems
Architectures
Haptics and Teleoperation
Human Centered Design
Human-Computer Interaction
Human-Machine System Design
Human-Robot Interaction
Kansei (sense/emotion)
Engineering
Smart Prosthetic/Orthotic
Technology
Teleoperators
Virtual and Augmented Reality
Systems

Cybernetics:

Awareness Computing
Biometrics and Bioinformatics
Computational Life Science
Data & Information Fusion
Intelligent Multimedia Comm.
Knowledge Acq. in Intelligent
Systems
Knowledge-based Systems
Machine Learning
Machine Vision & Image
Processing
Medical Informatics
Natural Language Processing
Pattern Recognition
Soft Computing

Important Dates

April 15, 2015:

June 1, 2015:

July 20, 2015:

Deadline for submission of full-length papers

Acceptance/Rejection notification

Final camera-ready papers due in electronic form

(If you would like to organize a session for the BMI workshop, please contact m.h.smith@iecc.org)



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Special sessions

Like previous years, the workshop will be composed of multiple special sessions. This is the current list of sessions (some may be added later). You can see the specific descriptions of the sessions here: http://www.smc2015.org/special_sessions

- BMI and advanced interaction for automotive applications. Contact: Ricardo Chavarriaga, EPFL <ricardo.chavarriaga@epfl.ch>
- Computational intelligence and machine learning for BCI. Contact: Dongrui Wu, GE Global Research USA <drwu09@gmail.com>
- Multimodal Brain Computer Interface and Physiological Computing. Contact: Vinod Prasad, Nanyang Tech U, Singapore <ASVinod@ntu.edu.sg>
- Real World Applications of Brain-Computer Interface Systems. Contact: Vinod Prasad, Nanyang Tech U, Singapore <ASVinod@ntu.edu.sg>
- Robotic exoskeletons with bioinspired Skills. Contact: José M. Azorín, Miguel Hernandez University Elche, Spain <jm.azorin@umh.es>
- Robotics, Human Machine Interface, and Haptics. Contact: Saeid Nahavandi, Deakin U., Australia <saeid.nahavandi@deakin.edu.au>
- Shared control. Contact: Tom Carlson, UCL, UK <t.carlson@ucl.ac.uk>
- User training in EEG-based Brain-Computer Interfaces. Contact: Fabien Lotte, Inria Bourdeaux <fabien.lotte@inria.fr>

Submission

Manuscripts should be submitted through the SMC submission system. Please pay attention to clearly indicate which session your paper is intended for. Papers submitted to a Special Session should NOT be submitted in duplication to any other regular or special session. We would appreciate if you contact the organizers for arrangement of submission in the first instance and ease organizational issues.

All submitted papers will undergo the same review process (three completed reviews per paper). The technical reviewers will be members of the SMC 2014 Program Committee and qualified peer-reviewers to be nominated by the organizers. Accepted papers will be published in the proceedings of the SMC 2015 conference and indexed in IEEEExplore.

Important Dates

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