Call for Papers
IEEE Transactions on Human-Machine Systems
Special Issue on "Featured Research from the IEEE SMC Workshops on Brain-Machine Interface (BMI) Systems"

Brain machine interface (BMI) systems were conceptualized as assistive, adaptive, and rehabilitative technologies for neurodegenerative and psychiatric diseases to replace, restore, enhance, supplement, "inform," or improve natural central nervous system output, allowing individuals to interact smoothly with their external or internal environment. These clinical and non-clinical systems, combined with the latest Artificial Intelligence (AI) techniques, have been designed to understand brain mechanisms and decode, modulate, or reconstruct brain activity to develop more practical cognitive and affective open- and closed-loop BMI solutions.

Over the years, several BMI-based communication solutions have been proposed to translate the brain activity of non-verbal individuals and enable complex communication without requiring them to generate language. Examples include the P300-based BMI spellers and the conversational brain-artificial intelligence interfaces for locked-in individuals and elderly people. Alternative BMI control solutions have also been integrated to enhance locomotion through BMI-controlled exoskeletons and to enable voluntary control of walking in individuals with spinal cord injuries using stimulation neurotechnologies. Today, BMIs are being integrated into virtual reality headsets, headphones, and eyeglasses; they are being used for disease diagnosis, rehabilitation acceleration, and human performance enhancement. With advances in wearable soft sensors and pre-trained models on large-scale datasets, what comes next for BMIs?

The IEEE SMC Workshop on Brain-Machine Interface (BMI) Systems is an annual event that is part of the flagship conference of the IEEE Systems, Man, and Cybernetics (SMC) Society. In each edition, the Workshop provides a forum for researchers to present recent findings, as well as foster interaction and intellectual exchange between researchers, developers, and users of BMI and other neurotechnologies. The presented papers showcase recent innovations developed worldwide that aim to answer the central question posted above: what is next for BMIs?

In this Special Issue, high-quality and significant extensions of contributions to previous IEEE SMC BMI Workshops are being sought. **As per THMS requirements, 30% new results, inferences, and conclusions are needed compared to the presented BMI Workshop paper.** Relevant submissions are also welcomed that fall within the scope of THMS as well as within the general scope of BMIs and their applications, *but that were not presented at previous IEEE SMC BMI Workshops*. These can include, but are not limited to, topics covering the latest advances, innovations, and applications in BMIs and neurotechnologies, including the integration of BMIs with virtual/augmented reality, affective BMIs, hybrid BMIs, deep learning for BMIs, Neuro-GPT, brain-to-text communication, speech-brain recognition, mental image reconstruction, new neuro-imaging modalities and sensor technologies, serious BMI gaming, ethical aspects of BMIs, as well as emerging neurotechnology applications in clinical and nonclinical domains.

Important Dates:
Manuscript initial submission: March 31, 2026
Notification of first round of reviews: June 30, 2026
Revised manuscript submission: August 1, 2026
Notification of final decision: August 31, 2026
Final manuscript submission: September 30, 2026
Expected publication: December 2026

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