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Call for Papers
IEEE Transactions on Human-Machine Systems
Special Issue on Human-Machine Systems and Digital Twin Technologies

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Scope: This special issue explores the intersection of Human-Machine Systems (HMS) and Digital Twin Technologies (DTT), focusing on their transformative potential across industries and disciplines including autonomous systems, human-technology interactions, system engineering and computer science, and learning sciences. As digital transformation accelerates, integrating HMS with DTT presents new opportunities for enhanced decision-making, optimized human-machine collaboration, and improved system performance. This special issue invites cutting-edge research and insights demonstrating how these domains converge to address complex challenges and opportunities in real-world applications. This special issue is intended to open discussions and set the agenda for future research on the foundational aspects related to reliability, utility, and benefits of HMS-DTT integration for humans as technology users.

Contributors are encouraged to submit high-quality original research addressing critical topics such as frameworks for integration, practical applications, ethical considerations, human factors, augmented reality, and advanced validation methodologies. This issue aims to bridge research gaps and provide valuable guidance for both academia and industry. Contributions may address, but are not limited to, the following topics:

Topics of Interest:

- Frameworks and methodologies for HMS-DTT integration
- Empirical research demonstrating HMS-DTT's successful applications
- Cognitive and behavioral aspects of human-machine interaction in DTT environments
- Validation, verification, and uncertainties quantification for integrated HMS-DTT systems
- Implications for training, education, and skill development
- Cross-disciplinary perspectives on HMS-DTT convergence
- Augmented and virtual reality applications for HMS in digital twins
- Machine learning and AI techniques to enhance HMS-DTT collaboration
- Ethical, social, and interoperability challenges in HMS-DTT systems

Important Dates:

- Manuscript submission deadline: May 31, 2025
- First review notification: August 31, 2025
- Revised manuscript submission: September 30, 2025
- Final review notification: November 30, 2025
- Final manuscript submission: December 31, 2025
- Expected Publication: February 1, 2026

Submission Guidelines:

Manuscripts must be original and aligned with the scope of IEEE Transactions on Human-Machine Systems. Authors should ensure their work includes at least 40% new content beyond previously published materials, along with significant findings. Submissions must adhere to IEEE author guidelines and be made via the online submission system: http://mc.manuscriptcentral.com/thms. Include a cover letter specifying: "This manuscript is submitted for the Special Issue on Human-Machine Systems and Digital Twin Technologies." For detailed submission information, please refer to the "Information for Authors" section at https://www.ieeesmc.org/publications/transactions-on-human-machine-systems/special-issues-2/ .

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