

Special Issue

AI-Driven Multimodal Interfaces in XR: Enhancing Human–Computer Interaction

Message from the Guest Editors

This Special Issue explores the convergence of artificial intelligence (AI), multimodal interfaces, and extended reality (XR) technologies to advance human–computer interaction (HCI). As XR environments—spanning virtual and augmented realities—become more immersive, integrating AI-driven multimodal interfaces is essential to enhance intuitiveness, responsiveness, and personalization. This Issue presents interdisciplinary research that leverages speech, gesture, gaze, haptics, motion, and biometric signals to develop adaptive, context-aware systems. AI techniques, including machine learning (ML), natural language processing (NLP), and knowledge graphs (KG), help structure data, interpret input, and reason with knowledge—enabling seamless interactions with virtual environments. Key topics include role-playing simulations, intent recognition, emotion-aware interfaces, real-time modeling, accessibility, and personalization. This Issue also addresses challenges like multimodal fusion, latency, privacy, and adaptability across populations—highlighting pathways to intelligent, inclusive, and engaging XR.

Guest Editors

Dr. Vlasios Kasapakis

Image, Sound and Cultural Representation Lab, Department of Cultural Technology and Communication, University of the Aegean, 81100 Mytilene, Greece

Dr. Konstantinos Kotis

Intelligent Systems Lab, Department of Cultural Technology and Communication, University of the Aegean, 81100 Mytilene, Greece

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Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
ai@mdpi.com

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Editor-in-Chief

Prof. Dr. Kenji Suzuki

Biomedical Artificial Intelligence Research Unit (BMAI), Institute of
Integrated Research, Institute of Science Tokyo, Yokohama 226-8501,
Japan

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