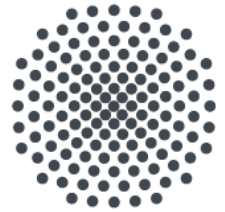Hauptseminar

Multimodal Interaction in Mixed Reality

Mixed Reality (MR) has emerged as a powerful paradigm for blending digital content seamlessly with the real world. While visual and auditory channels are well developed in MR systems, truly immersive experiences rely on the integration of multiple sensory modalities. Multimodal interaction refers to the use of multiple human senses, such as vision, sound, touch, and gesture, in combination to interact with digital content. In MR, multimodal interaction allows users to see and hear elements in their physical environment, feel virtual objects through haptic feedback, use gestures or speech for input, and receive real-time system responses across multiple sensory channels. These capabilities are critical in domains such as collaborative work, education, remote assistance, healthcare, and entertainment, where intuitive and immersive interaction improves performance and engagement.

In this seminar, we will explore different modalities, such as gesture recognition, voice input, haptic feedback, gaze tracking, and spatial audio, and investigate how they can be effectively combined in MR systems. We will examine the latest research, evaluate current interaction technologies, and identify challenges in synchronizing and designing for multimodal input and output. Each student will choose one modality or interaction technique to investigate in depth.

The tasks of the seminar participants include researching relevant literature on a specific topic within the field, preparing a presentation on the chosen subject, presenting it during the seminar, and writing a report summarizing the findings.

Target Group:
Master's students in the field of Computer Science

Language:
German or English (will be decided in the first lecture)

Room/Location:
The seminar room and dates will be announced via C@MPUS. The topics will be assigned to the participants at the beginning of the seminar.

Contact Person:
Dr. Alexander Achberger, Prof. Dr. Michael Sedlmair

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