Special Guest Lectures

Haptic Data Compression and Communication

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Abstract:
During the last decade, audio-visual communication has shaped the way humans interact with technical systems or other humans. During the next decade, haptic communication has the potential to further augment human-to-human and human-to-machine interaction. With recent advances in Virtual Reality, Man-Machine Interaction, Telerobotics, Telepresence, and Telemanipulation, the processing and communication of haptic signals are rapidly gaining in relevance and are becoming an enabling technology for many novel fields of application. In particular, in so-called telepresence and teleaction systems, the haptic channel plays a central role. They allow us to locally immerse into a remote and/or virtual environment that can for example be distant, inaccessible, scaled to macro or nano-dimensions, or hazardous for a human being. To enable telemanipulation across rate-limited communication channels, sophisticated methods for compressing and efficiently communicating haptic signals are of great importance. In this talk, methods for perceptual data reduction of haptic signals with single or multiple degrees of freedom are presented. Furthermore, to enable networked haptic interaction across unreliable communication channels, methods for error-resilient haptic data communication are discussed.

Speaker's Bio:
After working at the Audio and Multimedia Group at Fraunhofer Institute for Integrated Circuits IIS, he joined the Media Technology Group at the Technische Universiaet Muechen in May 2006, where he is working as a member of the research and teaching staff. His current research interests are in the field of haptic communication with focus on perceptual coding of haptic data streams. He is a member of the interdisciplinary research cluster on "High-fidelity Telepresence and Teleaction" which is funded by the German Research Foundation DFG.

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