

EINLADUNG

Zeit: 05.02.09, 09:00 Uhr
Ort: Seminarraum E.11 des Rechen- und Kommunikationszentrums, Dienstgebäude Seffenter Weg 23

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Titel: Low Latency Technology for Immersive Virtual Environments

Abstract:

Virtual Reality (VR) environments define computer simulated worlds. The users' interaction with these worlds should be as intuitive as possible, using the visual, aural and haptic senses and natural body movements. In order to achieve this goal, VR software systems have to process inherently parallel but heterogeneous tasks under real-time conditions. The time for signal processing and reproduction is constrained by human perception thresholds. The reproduction systems often suffer from unavoidable latency, which leads to a violation of the real-time constraints and thus to perception perturbations. If the reproduction system suffers from unavoidable latency, compensation algorithms have to be used. In order to be effective, the compensation must be combined with efforts to minimize the VR system overhead.

This talk presents a comprehensive approach to lower the overall VR system latency by a concurrent device and data processing architecture and its embedding in a generalized interaction concept. Low latency history recording and data exchange for multi-modal data types are among the key concepts of the approach. The architecture is presented in the context of the "Virtueller Kopfhörer" system, which is a representative of a demanding multi-modal environment that was developed as a joint research project between the Institute of Technical Acoustics and the VR Group at RWTH Aachen University. The reproduction environment is discussed with respect to its interface and latency as a distributed architecture. An adaptive tracking approach is presented for latency compensation. Finally, event-interleaved master/slave rendering is outlined as a low latency data- and swap-locking approach for CAVE-rendering based on commodity PC clusters.

Es laden ein: Die Dozenten der Informatik