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Informatik-Sonderkolloquium

VORTRAGENDER: **DR. PAUL BAO, SCHOOL OF COMPUTER ENGINEERING, NANYANG TECHNOLOGICAL UNIVERSITY, SINGAPORE**

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ORT / ZEIT: HÖRSAAL HS C, 16.00 UHR

LOW BITRATE VIDEO CODING AND ITS COMPARISON WITH MPEG-4 / H.264

Abstract:

The MPEG-4 H.264/AVC technology emerged in 2003 has achieved at average a bi-trate gain of 40-50% over the previous low bitrate coding technologies, namely H.263, H.263+, H.263++ and H.26L but at the same time has seemingly pushed the block-based motion compensation video coding to the limit in rate-distortion performance. However the incessant advancement of the conversational and non-conversational multimedia communication applications is demanding the continuing improvement of the video coding in bitrates and visual quality. In this presentation, we present a novel video coding scheme based on the generalized finite automata (GFA) representation of video sequences in wavelet domain bitplane model adaptive to its statistic characters. The proposed video coding scheme significantly outperforms the H.26X series coding schemes in rate-distortion performance. It could achieve bitrate ranges at 4-5 Kbps and 15-18 Kbps for QCIF 10 Hz and QCIF 30 Hz sequences, respectively, a target un-achievable by even the newly emerged H.264 standard. Numerous multimedia com-munication applications, previously unpractical, would be envisaged with these super low bitrate ranges. At the H.264 bitrate ranges, the proposed scheme also outper-forms H.264 by 0.5-1dB for the benchmark sequences.

In the presentation, we will highlight the main techniques of the proposed video codec and impact on low bitrate video coding and streaming applications in comparison with MPEG-4 H.264/AVC technologies. We will draw a comprehensive picture on the appli-cations of the proposed multimedia coding in networked, wireless and mobile multi-media communication systems.