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IEEE Transactions on Circuits and Systems for Video Technology
Special Issue on
Emerging Research and Standards in Next Generation Video Coding
(HEVC)

Guest editors

Justin Ridge, Nokia Inc., Texas, USA

Beatrice Pesquet-Popescu, Telecom ParisTech, France

Feng Wu, Microsoft Research Asia, China

Oscar Au, Hong Kong University of Science and Technology, China

André Kaup, University of Erlangen-Nuremberg, Germany

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Motivated by the impressive coding efficiency and phenomenal success of H.264/AVC in industry, ISO/IEC SC29/WG11 (MPEG) and ITU-T SG16/Q6 (VCEG) are working together again to develop a new High Efficiency Video Coding (HEVC) standard. HEVC provides a significantly higher coding performance than H.264/AVC, especially for high-resolution video, and also includes various technologies to enable parallel encoding/decoding and to simplify implementation. Although the modules of HEVC exist in H.264/AVC, almost every one has been re-considered and many new and exciting state-of-the-art coding tools have been introduced. Many ideas behind such tools, whether accepted or not, are novel and inspiring to the research community. HEVC also presents many new challenges, including encoding optimization, mode decision, rate-control, hardware design, and error concealment, especially given its large and hierarchical block structure and significantly increased number of coding parameters.

The goal of this special issue is to present and highlight the latest developments and analysis of HEVC-related technologies, implementations and systems, and to provide readers with a deep understanding of this emerging video coding standard and the related state-of-the-art technologies. Topics of interest include, but are not limited to,

- Large and various shape block processing, e.g. LCU, CU, PU, TU
- Spatial/temporal/inter-color/residual prediction
- Higher order motion models
- Decoder side motion vector/mode/parameter prediction
- Transforms and quantization
- High-efficiency entropy coding
- In-loop filtering
- Interpolation filter
- Coding with increased bit-depth
- Complexity analysis/memory consumption/performance evaluation
- Hardware/software architecture and implementation
- Parallel encoding/decoding, wavefront coding
- Mode decision, rate-control, encoder optimization, fast algorithms
- Error resilience and error concealment
- Bit-stream structure, syntax, transmission and parsing
- Transcoding
- Scalability, multi-view and screen content coding extensions
- Pre/Post-processing, etc.