

# Is There Anything Left in Advanced Video Coding?

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There has been a significant progress in video coding techniques in the last two decades. Many standards have been established along the way, including MPEG-1, MPEG-2, MPEG-4, H.261, H.263 and H.264. It is fair to say that the video coding research field has reached a certain degree of maturity, and “Is there anything left for advanced video coding?” has been often asked. There is no easy answer to this question. There has been some preliminary effort to explore the possibility of a new video coding standard, H.265, with an objective to reduce the bit rate by 50% while keeping video quality about the same. The slow start of the H.265 standard activity reflects the difficulty of identifying major break-through video coding technologies. However, from the market viewpoint, there is still a strong driving force to reach a higher coding gain especially for high definition (HD) video content. There exist quite a few differences between HD and SD (simple definition) contents, which could be potentially exploited. Several new research directions will be pointed out in this talk. It includes: more modes for rate-distortion optimization, joint encoder-decoder optimization based on the context information, analysis-by-synthesis (or model-based) texture coding, new distortion measurement tools, etc.

## **Biography of Dr. C.-C. Jay Kuo**

Dr. C.-C. Jay Kuo received the Ph.D. degrees from the Massachusetts Institute of Technology in 1987. He is now with the University of Southern California (USC) as Director of Signal and Image Processing Institute and Professor of EE, CS and Mathematics. His research interests are in the areas of digital media processing, multimedia compression, communication and networking technologies, and embedded multimedia system design. Dr. Kuo is a Fellow of IEEE and SPIE. Dr. Kuo has guided about 90 students to their Ph.D. degrees and supervised 20 postdoctoral research fellows. Currently, his research group at USC consists of around 30 Ph.D. students (see website <http://viola.usc.edu>), which is one of the largest academic research groups in multimedia technologies. He is a co-author of about 150 journal papers, 750 conference papers and 9 books.

Dr. Kuo is Editor-in-Chief for the Journal of Visual Communication and Image Representation, and Editor for the Journal of Information Science and Engineering, LNCS Transactions on Data Hiding and Multimedia Security (a Springer journal), the Journal of Advances in Multimedia (a Hindawi journal) and the EURASIP Journal in Advanced Signal Processing (a Hindawi journal). He was on the Editorial Board of the IEEE Signal Processing Magazine in 2003-2004. He served as Associate Editor for IEEE Transactions on Image Processing in 1995-98, IEEE Transactions on Circuits and Systems for Video Technology in 1995-1997 and IEEE Transactions on Speech and Audio Processing in 2001-2003.