



The H.264/MPEG-4 Advanced Video Coding (AVC) Standard and its Enhancement Projects

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Abstract:

The new video coding standard known as H.264/MPEG-4 Advanced Video Coding (AVC), now in its fourth version, has demonstrated significant achievements in terms of coding efficiency, robustness to a variety of network channels and conditions, and breadth of application. The recent fidelity range extensions (FRExt) have further improved compression quality and further broadened the range of applications, and the recent corrigenda have fixed and clarified details of the initially-approved versions of the specification. New work toward the near-term development of scalable video coding (SVC) extensions is also under way. This talk covers high-level design characteristics, the deployment status of the specification, and recent developments in the standardization community. In particular, the scalable video coding work now under way is reviewed as well as other plans for future work in the ITU-T Video Coding Experts Group (VCEG), the ISO/IEC Moving Picture Experts Group (MPEG), and their Joint Video Team (JVT).

Bio:

Gary J. Sullivan is the ITU-T Rapporteur/Chairman of the ITU-T Video Coding Experts Group (VCEG), a Rapporteur/Co-Chairman of the ISO/IEC Moving Picture Experts Group (MPEG), and a Co-Chairman of the Joint Video Team (JVT), which is a joint project between the VCEG and MPEG organizations. He has led ITU-T VCEG (ITU-T Q.6/SG16) since early 1996 and is also the ITU-T video liaison representative to MPEG.

In MPEG (ISO/IEC JTC1/SC29/WG11), in addition to his current service as a co-chair of its video work, he also served as the Rapporteur/Chairman of MPEG video from March of 2001 to May of 2002. In the JVT, he was the JVT chairman for the development of the next-generation H.264/MPEG-4 AVC video coding standard and for the development of its fidelity-range extensions (FRExt), and is now its co-chairman for the development of the scalable video coding (SVC) extensions. He received the Technical Achievement award of the International Committee on Technology Standards (INCITS) in 2005 for his work on H.264/MPEG-4 AVC and other video coding standardization topics.

He holds the position of video architect in the Core Media Processing Team of the Windows Digital Media division of Microsoft Corporation. At Microsoft he also designed and remains lead engineer for the DirectX(r) Video Acceleration API/DDI video decoding feature of the Microsoft Windows(r) operating system.

Prior to joining Microsoft in 1999, he was the Manager of Communications Core Research at PictureTel Corporation (now Polycom), the world leader in videoconferencing communication at the time. He was previously a Howard Hughes Fellow and Member of the Technical Staff in the Advanced Systems Division of Hughes Aircraft Corporation and was a Terrain-Following Radar (TFR) system software engineer for Texas Instruments.

He received the Ph.D. and Engineer degrees in Electrical Engineering from the University of California, Los Angeles, in 1991. He received the B.S. and M.Eng. degrees in Electrical Engineering from the University of Louisville J.B. Speed School of Engineering in Louisville, Kentucky, in 1982 and 1983, respectively.

His research interests and areas of publication include image and video compression, rate-distortion optimization, motion estimation and compensation, scalar and vector quantization, and error/packet-loss resilient video coding.