

CASES 2006 Keynote

Dances with Multimedia — Embedded Video Codec Design

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Abstract

The rapid progress of semiconductor technology enables the rising and flourishing of digital multimedia. Fancy terms such as ubiquitous multimedia, mobile multimedia, embedded video, etc., and hot products such as iPod, Camera phone, Portable Multimedia Player, etc., mark our colorful life, now and future. In this talk, I attempt to review the past and present developments of video coding, and to explore some future trends. Then, this talk will discuss the challenging optimization tasks that video codec architects have to face under the stringent time-to-market pressure for applications ranged from low-power mobile multimedia to high definition video. Design issues, optimization techniques, and case studies are presented. What we have learned is that multimedia SOC design is a beautiful but challenging dance among video codec HW/SW designers, transistors and video bits.

Categories and Subject descriptors: B. Hardware

B.7 INTEGRATED CIRCUITS

B.7.1 Types and Design Styles

Algorithms implemented in hardware

General Terms: Design

Bio

Dr. Liang-Gee Chen is IEEE Fellow since 2001. He is the Professor of the Department of Electrical Engineering, National Taiwan University. From 2004, he joined the ITRI (Industrial Technology Research Institute), Taiwan and serves as the VP & General Director of ERSO (Electronics Research and Service Organization). He has served as an Associate Editor of IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS FOR VIDEO TECHNOLOGY, IEEE TRANSACTIONS ON VLSI SYSTEMS, and IEEE TRANSACTIONS CIRCUITS AND SYSTEMS II since 1996, 1999, and 2000, respectively. He has been the Associate Editor of the Journal of Circuits, Systems, and Signal Processing since 1999, and a Guest Editor for the Journal of Video Signal Processing Systems. He has been the Associate Editor of the PROCEEDINGS OF THE IEEE. He was the General Chairman of the 1999 IEEE Workshop on Signal Processing Systems: Design and Implementation. He is the Past-Chair of Taipei Chapter of IEEE Circuits and Systems (CAS) Society and is a member of the IEEE CAS Technical Committee of VLSI Systems and Applications, the Technical Committee of Visual Signal Processing and Communications, and the IEEE Signal Processing Technical Committee of Design and Implementation of SP Systems. He is the Chair-Elect of the IEEE CAS Technical Committee on Multimedia Systems and Applications. From 2001 to 2002, he serves as the Distinguished Lecturer of IEEE Circuits and Systems Society. He will be the TPC chair of 2009 IEEE ICASSP. He has over 350 publications and 20 patents, and his current research interests are DSP architecture design, video processor design and video coding system.