

# Research on Key Technologies for Scalable Video Coding and Massive Video Data Analysis

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## Abstract

The emerging standards such as High Efficiency Video Coding (HEVC) improve coding efficiency by adopting more complex coding technologies, which in turn greatly increase the computational cost. In many application scenarios, however, the computational resources for encoder are usually limited and the amount varies. Examples include mobile devices and many real-time visual communication devices. Different from conventional profiles in those emerging video coding standards and related optimization methods, we will focus on building the algorithms which are optimally scalable under the constrained and varying computational capacity to ensure the functions and satisfy the above restrictions. This talk will present a video coding framework based on priority order, and give some new ideas of designing algorithms based on cost-performance of computational cost and coding efficiency gain as priority. The algorithms are designed to address challenges in the real-world problems of optimally allocating computational capacity without affecting the ultimate compression efficiency. The other interesting part of this work is that the key issues of the problem solution are similar to feature extraction of images or video sequences. We observe some interesting and important video features that are applicable in some abnormal event detection in the compression domain.

## About the speaker

Dr. Hongyang Chao is a full professor and the Associate Dean of the School of Software at Sun Yat-Sen University (SYSU) in Guangzhou, China. She received her Ph.D. degree in Computational Mathematics from Sun Yat-Sen University in 1987. She was awarded by the “Hundred Talents Program” in 2004. Her current research interests include image and video compression, image and video processing, massive multimedia data analysis and understanding, content based image (video) retrieval, etc. Her research works have been funded by many agencies including US Navy, NSFC, and National 863 High Tech Program of China. From June 1994 to May 1995, she was a visiting researcher at Department of Computer Science in Stanford University. From 1996 to 2003, she worked at Infinop Holdings, Inc. (later acquired by Vianet/ESPRE) in Denton, Texas, where she was also a co-founding researcher. During the same period, she was a visiting professor in the Department of Computer Science at University of North Texas. She has published extensively in the area of image/video processing (including TMM, PR, TCSVT, ECCV2010, SigGIS2010, etc.) and holds 3 US patents and 1 China patent. She currently serves as committee members for several National Talent and Rewarding Programs.