Abstract

With the introduction of diverse variety of display transmission and resolutions channel capacities, the Joint Video Team (JVT) has developed the H.264/SVC as an extension of
H.264/AVC. In fact, it provides a single compressed bit-stream with several scalability levels. Such a dataflow needs to be analyzed. Consequently, this paper is the first that decorticates and investigates the H264/SVC bit-stream in order to highlight its contribution from one hand and to analyze deeply the different sub bit-stream modules in terms of size and importance on the other hand. Results of a first analysis shows that multicast coding using H264/SVC standard provides an average bit rate reduction of 18% compared to simulcast. Second analysis demonstrates the importance of inter layer prediction. Then a third study illustrates two best combinations for two network bandwidth limitation. Finally, analysis of different subfields that constitute H264/SVC bit stream shows the importance of the residual module which can form up to 72% of the total data output. Results also illustrate the significance of the inter-layer prediction. In fact, base layer information takes the lion's share of bit consumption mainly for B frame.

References

- Thomas Wiegand, Heiko Schwarz, Anthony Joch, Faouzi Kossentini, and Gary J. Sullivan “Rate-Constrained Coder Control and Comparison of Video Coding Standards”, IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS FOR VIDEO TECHNOLOGY, JULY 2003
- Yih Han Tan, Wei Siong Lee, Jo Yew Than, Rahardja,S , Kin Mun Lye, “Complexity Scalable H.264/AVC Encoding” IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS FOR VIDEO TECHNOLOGY, septembre 2010.
- J. Reichel, H. Schwarz, and M. Wien, "Joint Scalable Video Model (JSVM) 2.0 Reference Encoding Algorithm Description", ISO/IEC JTC1/SC29/WG11 N7084, Busan, April 2005

Index Terms

Computer Science

Signal Processing

Keywords

Scalable Video Coding

Bit-stream

Complexity

Inter-layer prediction