Priority Pyramid Based Bit Allocation for Multiview Video Coding

ABSTRACT

In Multiview Video Coding (MVC), Hierarchial B Pictures (HBP) structure is adopted to remove the redundancy of multiview videos. It makes the rate control of MVC more difficult with respect to accurate bit control and good compression efficiency. The existing rate control algorithms of MVC are based on those of monoview video coding standards, which didn’t exploit the correlations of multiview video frames fully. In this paper, a Group of pictures from multiple views (called GoGOP) are rearranged in the form of a pyramid. The top layer of the pyramid containing anchor frames receives the highest priority in bits consuming. And the next layer is inferior to it but superior to others in bits consuming. Secondly, a matrix of weighting factors is further introduced to perform the bit allocation for MVC. Thirdly, the parameter updating is handled in a vector operation, which is somewhat robust and has a low level of computational complexity. The experimental results demonstrate that our proposed bit allocation cooperating with the conventional rate-distortion (R-D) model in H.264/AVC is efficient in rate control of MVC. The coding performance of the proposed algorithm is comparable to that of hierarchical quantization scheme (HQS) of MVC. Meanwhile, a small bit control error is obtained by our algorithm.

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All are welcome!