Abstract: Encoder rate estimation for distributed video coding based on adaptive frame coding mode decision

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Abstract

Distributed video coding (DVC) is a new video coding solution based on two information theories (Slepian-Wolf and Wyner-Ziv theorems). Most paradigms in the literature use a feedback channel to adjust the bit-rate that the system needs. More recently, there are more and more researches turning their directions to DVC without feedback for real-time or off-line requirements. This paper proposes a rate estimation algorithm at the encoder that takes advantage of the conditioned entropy between the data of Wyner-Ziv frame to be encoded and the side information estimation at the encoder. In addition, in order to advance the encoding efficiency further, adaptive frame encoding mode decision processing module which is based on inter-frame correlation is introduced. This approach enhances the stability of reconstruction frames’ quality while reducing the bit-rate effectively. Compared with existing methods, the proposed method obtains a rate-distortion performance gain of 1-2.2dB for some different video sequences.