

Abstract

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An adaptive reference frame re-ordering algorithm for H.264/AVC based multi-view video codec

This paper proposes an adaptive reference frame re-ordering for H.264/AVC based multi-view video codecs. The algorithm relies on statistical analysis of block matching among reference frames at low bitrate. The coded macroblocks are statistically analysed and the corresponding order for reference frames is then determined. The adaptive reference frame re-ordering algorithm is evaluated for two scenarios. In the first scenario, the multi-view videos are coded using a prediction structure with a number of reference frames. In the second scenario, a video sequence that contains several scene changes is coded. The proposed algorithm has been tested using two different prediction structures for both scenarios. The measurements were carried out on four standard multi-view datasets in addition to a sequence that contains several scenes changes. Results show that the application of the proposed reference frame re-ordering algorithm significantly saves up to 6.2% of the bitrate when coding a sequence with multiple scene changes and up to 0.2 dB when coding a sequence using multiple reference frames at low bitrate.