A Novel Prioritised Concealment and Flexible Macroblock Ordering Scheme for Video Transmission

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Abstract

Video compression standards such as H.264/AVC and H.265/HEVC are widely used in applications such as video conferencing, streaming and television broadcasting. These compression standards have been ubiquitously adopted due to their high compression performance as compared to previous standards. However, compressed video may suffer from severe degradation during transmission over unreliable channels due to packet losses which can result in low Quality of Service (QoS). In this paper, a new Space Time Flexible Macroblock Ordering (ST-FMO) scheme is proposed which considers both spatial and temporal re-mapping of Macroblocks(MBs) within a Group of Pictures (GOP). Moreover, a new prioritisation method to determine the concealment order of lost blocks is proposed. The new method uses the autocorrelation function as a measure to determine which blocks should be concealed first. The combined application of the novel ST-FMO and prioritisation scheme provides average gains of over of 2.34 dB over a conventional scheme and 1.11 dB over an existing FMO and prioritisation scheme.
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References


Index Terms

Computer Science

Image Processing

Keywords

Video Compression, ST-FMO, Prioritisation, Concealment.