

Abstract

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Quality Estimation Of Video Transmitted Over An Additive WGN Channel Based On Digital Watermarking and Wavelet Transform

This paper presents an evaluation for a wavelet-based digital watermarking technique used in estimating the quality of video sequences transmitted over Additive White Gaussian Noise (AWGN) channel in terms of a classical objective metric, such as Peak Signal-to-Noise Ratio (PSNR) without the need of the original video. In this method, a watermark is embedded into the Discrete Wavelet Transform (DWT) domain of the original video frames using a quantization method. The degradation of the extracted watermark can be used to estimate the video quality in terms of PSNR with good accuracy. We calculated PSNR for video frames contaminated with AWGN and compared the values with those estimated using the Watermarking-DWT based approach. It is found that the calculated and estimated quality measures of the video frames are highly correlated, suggesting that this method can provide a good quality measure for video frames transmitted over AWGN channel without the need of the original video.