Blind PSNR estimation of video sequences using quantized DCT coefficient data

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Abstract : This paper proposes a no–reference PSNR estimation method for video sequences subject to lossy DCT–based encoding, such as MPEG–2 encoding. The proposed method is based on DCT coefficient statistics, which are modeled by Laplace probability density functions, with parameter lambda. The distribution's parameter is computed from the received quantized data, by combining maximum–likelihood with linear prediction estimates. The resulting coefficient distributions are then used for estimating the local error due to lossy encoding. Since no knowledge about the original (reference) sequences is required, the proposed method can be used as a no–reference metric for evaluating the quality of the encoded video sequences.