A Rate-Distortion-Based Merging Algorithm for Compressed Image Segmentation

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Abstract

Original images are often compressed for the communication applications. In order to avoid the burden of decompressing computations, it is thus desirable to segment images in the compressed domain directly. This paper presents a simple ratedistortion-based scheme to segment images in the JPEG2000 domain. It is based on a binary arithmetic code table used in the
JPEG2000 standard, which is available at both encoder and decoder; thus, there is no need to transmit the segmentation result. Experimental results on the Berkeley image database show that the proposed algorithm is preferable in terms of the running time and the quantitative measures: probabilistic Rand index (PRI) and boundary displacement error (BDE).

Keyword：JPEG2000 image segmentation, wavelet, rate-distortion slope, Mean-shift, CTM