Adaptive Binary Arithmetic Coder-Based Image Feature and Segmentation in the Compressed Domain

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Abstract

Image compression is necessary in various applications, especially for efficient transmission over a band-limited channel. It is thus desirable to be able to segment an image in the compressed domain directly such that the burden of decompressing computation can be avoided. Motivated by the adaptive binary arithmetic coder MQ coder of JPEG2000, we propose an efficient scheme to segment the feature vectors that are extracted from the code stream of an image.We modify the Compression-based Texture Merging CTM algorithm to alleviate the influence of overmerging problem by making use of the rate distortion information. Experimental results show that the MQ coder-based image segmentation is preferable in terms of the boundary displacement error BDE measure. It has the advantage of saving computational cost as the segmentation results even at lowrates of bits per pixel bpp are satisfactory.

Keyword：Adaptive Binary Arithmetic coder, Image Feature and Segmentation, the Compressed Domain, JPEG2000,boundary displacement error.