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Image Compression Using Adaptive Multilevel Block Truncation Coding

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Abstract

The block truncation coding (BTC) algorithm for image compression has the advantages of low computation load and less memory requirement. In this paper, an adaptive image compression algorithm using multilevel BTC is proposed. An input image is partitioned into blocks with variable sizes, and the gray values of each block are adaptively quantized to be one, two, or four levels according to local image statistical characteristics. Depending on the amount of detail or variation among the pixels, an appropriate number of bits are allotted to code the block under the constraint of producing no larger than a given mean square error value. Experimental results show that the proposed method is comparable in computation time with the standard BTC and the absolute moment BTC methods, and the resulting images are much better, being less distorted and having higher compression ratios.