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Improved Block Truncation Coding Using Optimized Dot Diffusion

Abstract:

Block truncation coding (BTC) has been considered a highly efficient compression technique for decades. However, its inherent artifacts, blocking effect and false contour, caused by low bit rate configuration are the key problems. To deal with these, an improved BTC, namely dot-diffused BTC (DDBTC), is proposed in this paper. Moreover, this method can provide excellent processing efficiency by exploiting the nature parallelism advantage of the dot diffusion, and excellent image quality can also be offered through co-optimizing the class matrix and diffused matrix of the dot diffusion. According to the experimental results, the proposed DDBTC is superior to the former error-diffused BTC in terms of various objective image quality assessment methods as well as processing efficiency. In addition, the DDBTC also shows a significant image quality improvement comparing with that of the former ordered-dither BTC.