An improved image compression technique using large adaptive DCT psychovisual thresholds

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ABSTRACT

High quality multimedia requires high bandwidth and data transfer rate to transmit multimedia data in communication networks. Image compression is one of solutions to reduce the storage of multimedia data which in turn allows an efficient transmission through networks. An adaptive image compression technique through customized quantization tables based on user preference has been widely used in many applications. Scaling quantization table can significantly influence the reconstruction error and compression rate. This paper proposes an adaptive psychovisual threshold for customizing large quantization tables to improve image compression. An adaptive psychovisual threshold is computed based on a smooth curve of the absolute reconstruction error by incrementing the DCT frequency order. Experimental results show that the performance of adaptive large DCT psychovisual threshold achieves high image quality and minimum average bit length of Huffman code. The proposed method also demonstrates that boundary effects do not appear when the compressed image is zoomed in to 400%.