DISCRETE WAVELET TRANSFORM BASED EFFICIENT RATE SCALABLE TECHNIQUE FOR IMAGE COMPRESSION

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Abstract

Uncompressed multimedia data requires considerable storage space, transmission bandwidth & computational time. To optimize storage space and the signal transmission bandwidth, coding is used for image data processing. The algorithm used for coding and compression of images should have low computational complexity and high compression efficiency.

This paper describes wavelet based set partitioning embedded block coder (SPECK), imagecoding algorithm. It uses recursive set partitioning procedure to sort subsets of wavelet coefficient by maximum magnitude with respect to threshold. An image block is divided in subblocks of equal size. Information regarding to image is coded according to decreasing order of importance. Because of low complexity & simplicity, this algorithm has very fast encoding and decoding which makes it very efficient in multimedia communication. The numerical results obtained using MATLAB shows that the output image has high value of Peak Signal to Noise Ratio with good compression ratio for low bit rate.

Keywords: Discrete Wavelet Transform (DWT), SPECK, Peak signal to Noise Ratio (PSNR), Mean Square Error (MSE), Compression Ratio (CR).