COMPARATIVE ANALYSIS OF IMAGE COMPRESSION TECHNIQUES

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Annotation: Image Compression is a wide area. Compression of Images increasing because the raw images need large amounts of disk space seems to be a big disadvantage during transmission & storage. Even though there are so many compression technique already present a better technique which is faster, memory efficient and simple surely suit the requirements of the user. The work is to explain use of different compression techniques more suitable for particular data compression algorithm based on compression ratio, Bit per Pixel, Mean Square Error and Peak Signal to Noise Ratio.

Keywords: Image Processing, Image Compression, Compression Techniques, CR, BPP, MSE, PSNR.

The Discrete Cosine Transform process is used to compress the image denotes in following figure 1.

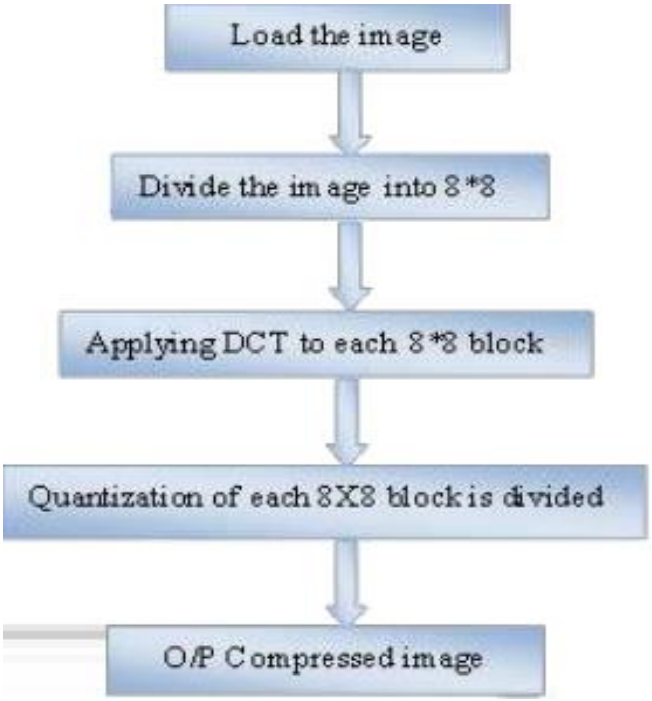


Fig. 1: DCT Image Compression Process

The above figure 1.3.3 shows that first load the image from web repository and It will divides the image into 8*8 blocks then DCT will be apply to each 8*8 blocks. Our 8*8 into block of DCT coefficients is currently prepared for compression by quantization.

The Discrete Wavelet Transform process compresses the image; calculate the CR, BPP, MSE and PSNR to compress the image. This displayed in following figure.

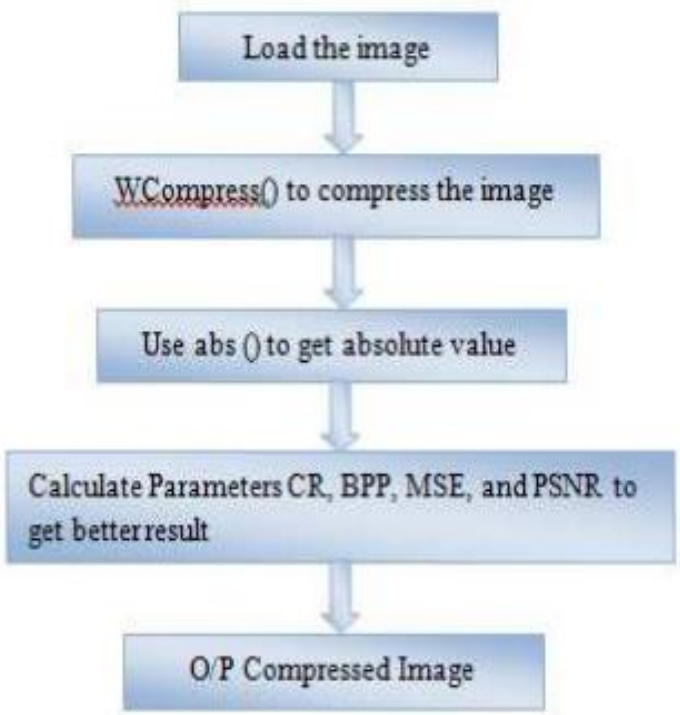


Fig. 2: DWT Image Compression Process

The above figure 1.3.4 denotes that first load the image from web repository and then the WCompress () function is used to compress the image. Sometimes the image contains value in points so use abs () function get the absolute value of matrix. There are four parameters CR, BPP, MSE, PSNR to calculate the ratio of image and after completion of all process compressed image will be given as an output.

There are four performance parameters are used to measure the performance of the image compression algorithms.CR, BPP, MSE and PSNR. PSNR is the amount of the peak error between the compressed image and original image. The superior the PSNR contains better quality of image to calculate the PSNR first of all MSE is computed. Mean Square Error is the increasing difference between the compressed image and original image. Small amount of MSE reduce the error and get better image quality. Further details are explained below:

A. Parameter Description

1) Bit Per Pixel (BPP):

The number of bits of information stored per pixel of an image or displayed by a graphics adapter. The more bits there are, the more colors can be represented, but the more memory is required to store or display the image.

2) Compression Ratio (CR):

Compression ratio indicates the efficiency of compression technique, more the compression ratio, less memory space required. The compression ratio is equal to the size of the original image divided by the size of the compressed image. The compression ratio achieved usually point out the picture quality. Generally, the higher the compression ratio, the poorer the quality of the resulting image.

3) Mean Square Error (MSE):

The MSE is used as part of the digital image processing method to check for errors. It signifies the cumulative squared error between the compressed and the original image. MSEs are calculated and then compared to determine the accuracy of an image.

References:

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