Abstract

Digital image compression is a method that used in image processing to reduce storage size of image by reduce it information (lossy) or remain to maintain it (lossless). Information reduction were done by linear transformation that change the representation or domain of digital image from spatial domain to frequency domain, and then followed by eliminating higher frequency, quantization, and entropy encoding. In this final task, has developed a digital image compression method that combining Discrete Cosine Transform (DCT) and Singular Value Decomposition (SVD). The DCT is used to transform those image block that show a high correlation between their pixel, conversely SVD is used to decomposition those image block that show a low correlation between their pixel. A statistic method standard deviation (STD) of 8x8 image sub block is used to choose which transform should be used on each block. Graph based quantization is used for the result of the DCT transform, otherwise scalar and vector quantization are used for the result of SVD transform. Huffman coding also used in the encoding process. A Linde Buzo Gray (LBG) algorithm is used to produce codebook for vector quantization. Then, the result of image compression in this sytem is compared to JPEG compression. Based on testing, the result is not better than JPEG compression.

Keywords: discrete cosine transform, singular value decomposition, standard deviation, vector quantization, graph based quantization, Huffman encoding