ABSTRACT

In telecommunication, bandwidth and capacity are important thing when digital image being transmitted and stored. To solve that problem, the author develop digital image compression technique to minimize the bits sum which represent the digital image which still contain information from the data before compression process.

In this final project, the author also develop a simulation of image compression using arithmetic coding based on DWT-SVD. Arithmetic coding is a algorithm of data compression which is developed from huffman coding, work based on the data statistic. DWT (*Discrete Wavelet Transform*) is a technique to decomposite an image into four subbands i.e. diagonal subband, horizontal subband, vertical subband, and approximation subband. SVD (Singular Value Decomposition) is a process to decomposite a matrix into three matrix components i.e. singular values, left singular vector, and right singular vector. Meanwhile quantization which is used is vector quantization, early by doing division to input data become the input vectors and made quantizator is called codevector. Gathering of Codevector will make the codebook. Result of vector quantization is codevector index most appropriate by input vector. The hybrid of these methods is a lossy compression. The performance of this system is known by count PSNR (Peak Signal to Noise Ratio) and compression level.

Based on the simulation results, compression using arithmetic coding based on DWT-SVD for real image and image with noise has a good performance. The average PSNR are 53,56 dB & 23,017 dB and the average compression level are 93,2198 % & 93,2186 %.

Keywords : *Image compression, lossy compression,arithmetic coding, DWT, SVD, vector quantization, PSNR, compression level*.