

## Abstract

The usage of digital image information through the Internet telecommunication network increased significantly. The digital image information transmission process by telecommunication network needs large amount of bandwidth and storage. To resolve the limitation of bandwidth and storage problem, then it needs to be designed an image compression system that has the optimal performance.

In this final project, conducted research about the implementation of quantization Block Prediction Vector Quantization (BPVQ) in the spatial domain and frequency domain based on DCT transformation. While, the entropy encoding method that be used is Huffman encoding method. Digital image that be used is grayscale image with bitmap format. To find out the system's performance, then the comparison is used with Vector Quantization.

The result obtained of testing is the average value of compression ratio is 46.20%, the average PSNR value is 38.51 dB, compression time is 27.1 seconds and reconstruction time is 1.5 seconds on BPVQ quantization in spatial domain. While, BPVQ quantization in frequency domain obtain the average of compression ratio 66.97%, the average of PSNR is 38.91 dB, compression time 29.5 seconds and reconstruction time 2.1 seconds.

**Kata kunci:** Spatial Domain, Frequency Domain, Block Prediction Vector Quantization(BPVQ), Huffman Encoding, Discrete Cosine Transform