

## ***ABSTRACT***

Photography is an activity of documenting an important moment or event. as the times developed, the technology used is increasingly sophisticated. This makes the documentation process faster and produces better image quality. The better quality of image obtained, the larger file size of an image, it affects the amount of bandwidth needed to store data, so that it is more efficient in storing large amounts of data, it needs compression techniques.

Compression can be done by various methods. The method used in this research is a combination of 2-dimensional Discrete Cosine Transform algorithm (DCT-2D) with Huffman Coding algorithm and L1 Magic as a Compressive Sensing method. in this research will be performed on the type of image compression is RGB, Grayscale, and BW image types. Each type of image has five measures of resolution. The compressed image is returned to resemble the original image (the decompression process) then the performance calculation is performed using the compression ratio parameter, MSE, PSNR and SSIM after the data is reconstructed..

This Final Project the compression process is done using Compressive Sensing and without Compressive Sensing then the result from compression are compared to find out the effect of Compressive Sensing on the compression process. Compression systems that contain Compressive Sensing are more optimal, because the image is more compressed. The optimal results obtained in this Final Project are, in RGB images the size is 256x256 pixels. has PSNR 40.27 dB, MSE 6.15, and SSIM 96.92%, on Grayscale images the size of 256x256 pixels has a PSNR 40.3 dB, MSE 6.06, and SSIM 96.94%, and in the picture BW Size 256x256 pixels. has a PSNR value of 5.28 dB, MSE 0.29, and SSIM 25.46% in a compression system that uses Compressive Sensing.

***Keywords : Compression, 2D-DCT, Huffman Coding, Compressive Sensing, LI MAGIC***