ABSTRACT

The ease in getting the digital data can easily cause individual to copy, distribute and or modify the content of that digital data. To overcome the problem, it requires a technique which can be used to protect the copy right label namely watermarking technique. Watermarking is a technique to hide or input data or some certain information to another digital data for decided purpose. There are two kinds of watermarking, they are visible watermarking and invisible watermarking. In this final project, the kind of watermarking that used is invisible watermarking, which is human cannot identify the presence of the result of watermarking process and its competent facing the digital signal processing to some certain step.

In this final project the digital image process is using the domain frequency, where the pixels will be transformed within the domain frequency using the discrete wavelet transform (DWT). The next step is looking for insertion using zerotree method. Zerotree method is a method which design especially to handle an image which has already been transformed with wavelet transformation and it can make coefficient wavet location mapping which insignificant to be inserted watermark bits. The Zerotree method works with paret-child principal, which charted the parents and children relationship between the higher subbudang coefficient with the lower subbudang coefficient. Before the insertion, the Citra logo/watermark in advanced encoded using BHC codes. This method is used as a security code for the watermark. The result of the encoding process will be codes whic will be inserted to the insertion coding zerotree result. BCH decoding process performed at the time the extraction correct the error watermark bits.

The research says, watermarking system with Zerotree and BCH codes give the good impercepebility performance seen from MSE and PSNR. The highest PSNR value generated from this system of 58.1742 and MSE of 0.099007 to the image host Labib256.bmp logo inserted with image size 16x16 pixels. However, the embedding process in watermarking system with image size 512x512 pixels host takes 4 orders of magnitude longer than the time of the insertion system on a small image host is 30.9597 seconds.

Key word : watermarking, copyright label, discrete wavelet transform, BCH Codes, Zerotree