ABSTRACT

The development of digital technology which is going so fast today makes users duplicate and transmit data more easily. Therefore, the data protection is always needed to avoid data from unauthorized thing. One of well known protection method is the cryptography method which transform the original data to protected data called chipertext using some cryptography key. The focus of is a security factor in distributing the data. The other method of protecting data is watermarking. With this watermarking technique, the original data will be unifined with another data called watermark. Watermarking method focuses on protecting the patent of the original data.

The purpose of this final project is to develop audio watermarking system using daubhecies wavelet transform, chaotic random number to scramble the watermark signal, and demixing to extract the watermark data. It is expected that the chaotic signal will be make the watermark signal difficult to detect, so the security of watermark data can be improved.

Based on the simulation result, the optimum audio watermarking performance at SNR (Signal to Noise Ratio) above 40 db for detected audio host with average RMS (Root Mean Square) 1.03% at SNR 40 db and for the detected watermark audio, the optimum audio watermarking performance above 60 db with average RMS 0.181% at SNR 60 db. At noiseless, audio host and audio watermarking obtains RMS 0 %. At encode process with mixer coefficients 0.999 audio watermarking performance obtains RMS 0% and key watermark obtains 75% that means watermark becomes random and hidden. Subjectively, the MOS (Mean Opinion Score) results 4 to 5 that is audio has high quality and noiseless.

Key word : Wavelet Transform, RMS, MOS, Chaotic Random Number, RMS, SNR