ABSTRACT

The development of information technology caused the rapid dispersion of digital data. Behind the ease to get all kinds of digital information there arise a problem towards the ownership of copyrights of that particular information, for example inside the multimedia industry. Many creations in form of multimedia especially music is prone to piracy because the data could be easily copied-pasted, re-recorded, and circulated back into the internet after changing the name of the original owner into the pirate name. One of the way to face this piracy problem especially in music industry is by using audio watermarking technique. Audio watermarking is a technique used to embed digital information into an audio file. Information that is being embedded will act as an originality mark from that audio file.

This final project design an audio watermarking scheme based on digital modulation technique that change information bits to a code sequence, and multiplies it with output of modulation (symbol sequence). The code sequence must be know in embedding and extraction process. In this scheme, there is a series of convolutional code and interleaver which is used as an error correction code. Information that will be embedded into the audio file is a binary image (black and white).

System is tested with some parameter such as SNR, BER, SSIM and MOS. This final project resulting an audio watermarking scheme that robust to Time Scale Modification (TSM) attack in MPSK and MQAM modulation that almost in 5 different tempo obtaining BER = 0 and SSIM = 1, and stereo to mono attack in MPSK modulation that obtaining BER = 0 and SSIM = 1 in 5 types of audio, but not robust to Low Pass Filter (LPF) attack in both of modulation that obtaining extraction result which is unrecognized.

Keywords : copyrights protection, audio watermarking, digital modulation, code sequence, convolutional coding