

ABSTRACT

The problem that often occurs in the freedom of internet access is a violation of copyright that is often misused. Some digital content such as audio, image and video are often used as piracy objects which can harm the owner of the digital content. Therefore a technique that serves as a marker of digital content is required as a precautionary measure against a variety of unwanted frauds.

Audio Watermarking is a technique of insertion of data or certain information into an audio file. The main purpose of the audio watermarking technique is to provide copyright to the owner's audio file. The results of the audio watermarking output must also be resistant to various attacks and also to various types of digital signal processing so as not to damage the quality of audio and the watermark data. In this final project will discuss about "Design and Analysis of Audio Watermarking based on Modified Discrete Cosine Transform (MDCT) with Stationary Wavelet Transform (SWT) and Centroid Methods". SWT is used to decompose signal into low and high frequency without change between the input and the output samples value, so the capacity will have bigger value. MDCT is a transform that used 50% overlapping to reduce distortion between frames and can perfectly reconstruct the signal. And the centroid methods for determine the center of the signal to embed the bit watermark, so it help the system for being robust.

The results of this study were ODG = -3,7976, SNR = 27,9387 dB and capacity = 21,5332 bps also the average MOS = 4,046. Watermarked audio was also tested with various attacks such as low pass filter, band pass filter, noise, resampling time scale modification, linear speed change, pitch shifting , equalizer, echo, mp3 and mp4 before optimized with average BER value = 0,4382 and after optimization obtained the average BER value = 0,2550.

Keywords : Audio Watermarking, SWT, MDCT, Centroid, QIM