

ABSTRACT

The rapid development of technology is growing so that the exchange of information is easier. But along with mining, the process of piracy and the dissemination of information on the internet is also easier. One effort to protect copyright from an audio-specific data is the Audio Watermarking Technique. Audio Watermarking techniques for inserting information into audio files so humans are not aware of the existence of additional information.

This final project uses audio watermarking techniques using Quantization Index Modulation (QIM) and Spread Spectrum (SS) methods based on Lifting Wavelet Transform (LWT), Discrete Cosine Transform (DCT), QR Decomposition, Cartesian Polar Transform (CPT) with Quantization method Index Modulation (QIM) and Spread Spectrum (SS). In the watermark insertion using the QIM method is carried out at low frequencies while in the high frequency subband the watermark is inserted by the SS method. The test was conducted with audio hosts with the format .wav using 8 audio hosts namely voice.wav, guitar.wav, bass.wav, drums.wav, rock.wav, Country.wav, and Jazz.wav with binary image sizes used as watermark-sized 20 x 40 pixels.

The output in the design of this audio watermarking system is robustness against all attacks carried out and produces an ODG value of -1.48, SNR 32.065, with an average BER of 0.14, C of 172.2653 on a Jazz.wav host and an average MOS value is located at range 3 to 4 which means the watermark feels a little but not annoying. The system has resistance to attacks such as BPF, MP3 compression, etc.

Keywords: Audio Watermarking, Lifting Wavelet Transform, Discrete Cosine Transform, QR Decomposition, Cartesian Polar Transform, Quantization Index Modulation, Spread Spectrum.