

ABSTRACT

Along with the rapid development of technology and multimedia together with internet access that is so easy, anyone can easily publish and also consume his work in digital form (audio, video, images, etc.). It is in this ease that crimes in multimedia such as piracy and illegal distribution are a problem that exists today. In this case the need for copyright protection of works in digital form. Watermarking is one way to provide copyright protection in digital form by inserting additional information on the work without significantly changing the quality.

In this study, an audio watermarking system was based on Lifting Wavelet Transform (LWT) with the Hybrid Discrete Sine Transform (DST) method, Quantization Index Modulation (QIM) and Statistical Mean Manipulation (SMM). By using the Lifting Wavelet Transform (LWT) method there will be a signal decomposition process into two parts, namely low frequency subband and high frequency subband. In the Discrete Sine Transform (DST) process there will be a change in the low frequency subband domain from time to frequency. In the low frequency subband, there will be an embedding process using Quantization index Modulation (QIM) and high frequency subband, there will be an embedding process using Statistical Mean Manipulation (SMM).

The results of this study show good results with an average SNR value of 24.2320, ODG value of 3.88, BER value of 0.104528571, and MOS that has a range of 4. The results also show that audio is generally resistant to several attacks with minimum BER in attacks LPF, BPF, Resampling, Equalizer, Echo, MP3 Compression, AAC Compression and MP4 Compression.

Keywords: Watermarking, Audio Watermarking, Lifting Wavelet Transform, Discrete Sine Transform, Quantization index Modulation, Statistical Mean Manipulation