

ABSTRACT

The development of technology using digital data at this time have grown fairly rapid. Ease of exchange and accessing digital data, making it vulnerable to misuse of copyright. Copyright abuse will be detrimental to many parties, especially the actual copyright owner. Therefore, it is necessary for an action to protect the copyright of a digital data.

One way to protect the copyright of a digital data is to insert watermark data into digital data or can be called by digital watermarking. Digital watermarking is one authentication technique for copyright protection that can be used on a variety of digital data. Digital data that can be hosted data to be inserted watermark data is data such as images, audio, and video. Digital watermarking technique chosen because it has three advantages in data security such as resistance (robustness), not seen/felt by human senses (imperceptibility), and security (safety).

In this final project, the digital watermarking technique that used is audio watermarking. Audio watermarking is the technique of insertion or implantation of an information / data watermark into an audio file. The method applied in this final project is a spread spectrum (SS) with lifting-based wavelet transform (LWT) which is optimized by a genetic algorithm (GA).

The result of the watermarking audio system after the optimization shows a better robustness results than before optimized with BER results from 0 to 0,25. The imperceptibility of the produced watermarked audio is quite good with the value of Objective Difference Grade (ODG) is close to 0 and Signal to Noise Ratio (SNR)value is more than 20 dB. Those results are obtained from several types of attacks such as Time Scale Modification, pitch shifting, resampling, and mp3 compression.

Keywords : *Audio Watermarking, Lifting Wavelet Transform, Spread Spectrum, Genetic Algorithm.*