ABSTRACT

The Development of Internet technology from year to year continues to progress. Whereas the development of this technology, everyone can easily access a variety of information, in the form of text, image, audio and video. But the development of this technology is not balanced with the security of data access. Often someone who is not responsible for misuse can easily claim the copyright of other people, so it needs a technique or method for protecting the authenticity of the digital data copyright. One technique that is often used to protect a copyright of digital data is a watermarking technique. The basic principle of this watermarking is to insert a bit of information in the form of copyright in the digital data without affecting quality.

There are many methods and techniques of watermarking that have been researched. In this final project, we used audio as host and image as watermark data. The audio based on Lifting Wavelet Transform (LWT) in frequency domain using Fast Fourier Transform (FFT) is embedded with an image using Spread Spectrum (SS) method. After that, it will be optimized with Genetic Algorithm.

The result of this final project is a watermarked audio that have good quality and high robustness. The good quality can be seen from Objective Different Grade (ODG) value that should near to 0, and Signal to Noise Ratio (SNR) value that at least 20 dB.. Beside that, the robustness of watermark can be seen from Bit Error Rate (BER) value that should near to 0.

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