

## **ABSTRACT**

*Ease of spread of digital data over the internet has a positive and negative side, especially for the original owner of the digital data. The positive side of ease of deployment is that the owner of the data quickly spreads digital data files to various address sites in the world. While the negative side is that if there is no copyright that serves as a protector of data that is distributed, then this digital data will be very easily recognized by other parties. Scattered digital data can be text, images, sound, or video. An overly feared deployment process will lead to the acquisition of digital data everywhere by some unauthorized parties, where copyright on a work is difficult to prove if there is no characteristic of the creator of the work on the digital data. Therefore, a technique for digital works is required for the authenticity of the work to be maintained. One of the techniques used is watermarking.*

*In this final project is given analysis of audio watermarking implementation using Discrete Wavelet Transform (DWT) and Spread Spectrum (SS) method optimized by genetic algorithms as data processor. DWT technique will transform signal from spatial domain into wavelet domain and with spread spectrum method the watermark signal is distributed evenly on each frequency domain, the use of this method is intended to increase robustness and invisibility watermark level. Watermarking performance on this final task is obtained by testing the files that have been inserted watermark. With the testing of both the insertion and extracting process, it is expected that the watermark audio resistance reaches the maximum against the attacks such as Low Pass Filter, Band Pass Filter, Noise, Resampling, Time Scale Modification, Speed Change, Pitch Shifting, Multi-band Equalization, and MP3 compression.*

*This research produced an audio watermark with BER value approaching 0, SNR > 20, and ODG value approaching 0. Some non-resistance audio such as Time Scale Modification, Speed Change, and Resampling yielded BER value < 0.64 after optimized BER value < 0.09.*

*Keywords : Watermarking, DWT, spread-spectrum, genetic algorithm*