

ABSTRACT

Dissemination of information and data activity in the Internet today has caused problems in copyright protection of digital audio products. To overcome these problems, we need a reliable technique that is one using audio watermarking techniques. In this study conducted on audio watermarking with the binary image, the image is pasted not expected to interfere with the audio quality and the embedded watermark resistant to attack. Audio watermarking method used is Lifting Wavelet Transform based on the statistical characteristics of the sub-band coefficients proposed.

First of all, the original audio signal is segmented and each segment is divided into two parts. LWT (Lifting Wavelet Transform) is performed on each section, and the synchronization code embedded watermark into the first part and the second part, by modifying the statistical average value of the sub-band coefficients. Genetic algorithms are used to determine the optimal parameters so watermarking audio has good imperceptibility and robustness. To test the quality of the audio file that has been inserted therein binary image assessment BER parameter, PEAQ (ODG), MSE and PSNR. The results obtained during the extraction without using an attack that has a value of BER = 0.

With this method the parameter optimization using Genetic Algorithms embedded watermark is expected to have a better resistance against common signal processing attacks like LPF, noise, resampling, cropping and MP3 compression and generating parameter most optimal audio watermark namely nframe = 244, the value of alpha = 1, and subband at low frequency.

Keywords: Audio Watermarking, Lifting Wavelet Transform, Statistics characteristics, sub-band coefficient, Genetic Algorithm