Abstract

Distribution of multimedia data ilegally in all media is a problem that should be handled seriously, especially for audio files. Looking at the problem, copyright protection for audio files is needed. Protection technique, like encryption, is not enough in protecting intellectual property of audio files. Therefore, audio watermarking technique comes to improve the existing protection technique.

In this final task, a system which can protect the copyright of audio files using watermarking based on Discrete Wavelet Transform (DWT) and Singular Value Decomposition (SVD) is analysed and implemented. DWT is used to decompose audio, host or watermark, to get the approximation coefficient. This approximation coefficient will be transformed using SVD to get the singular matrix. This singular matrix will be processed for watermarking and extraction in the system.

Based on the testing result, this system has good inaudibility and robustness. Inaudibility is measured by using Signal to Noise Ratio (SNR). Whereas robustness is measured by using SNR and Bit Error Rate (BER). The average SNR from this watermarking system is 45.31dB. Whereas the average SNR and BER from the extraction system are more than 43.68dB and 65.22%. However, this system is not robust against distortion attack.

Keywords : **audio watermarking, singular value decomposition, discrete wavelet transform, robust, inaudible.**