

ABSTRACT

Audio Watermarking is a technique of inserting information into an audio signal without altering or destroying the original form of its audio host. Watermarking techniques are usually used to protect the intellectual rights of a work in the form of songs, secret recordings and others in order to avoid piracy, destruction and so forth by irresponsible person. Audio watermarking technique itself has two stages of embedding and extracting. The extracted audio signal must withstand multiple attacks such as noise, filtering, compression, modification and speed change.

In this research, we will use scheme with main method of Dual-Tree Complex Wavelet Transform (DT-CWT), Singular Value Decomposition (SVD) and Compressive Sensing (CS) to get a good robustness based on assessment parameters such as PSNR, BER, ODG and MOS. DT-CWT is a refinement technique from DWT. The way DT-CWT works is to decompose images that generate different frequency ranges. SVD works by exposing its geometric structure, so it can know some important properties of the matrix. While the purpose of CS is to obtain a sparsity of a signal and reconstruct the original signal through a reconstruction algorithm. It is expected that in this study the quality of the audio host can withstand the various noise provided.

The result of this final project is an audio watermarking system that has a quite good level of robustness and imperceptibility with average value of $MSE = 0.1188$ then $BER = 0.2068$ and an average value of $SNR \geq 20$ dB.

Key words: *Audio watermarking, Dual Tree-Complex Wavelet Transform, Singular Value Decomposition, Compressive Sensing.*