ABSTRACT

Today violations of copyright labels on digital audio data are increasing. One way to protect copyright is to insert or hide certain information with audio watermarking techniques. This audio watermarking functions to mark digital audio data from copyright so that it is safer if the data is spread.

In this final project, the authors propose a Compressive Sampling (CS) procedure on the watermark, while in the host audio the Quantization Index Modulation (QIM), Discrete Sine Transform (DST) and QR methods are performed. The CS procedure is performed to get the results of the compression of the watermark bit to then be inserted into the audio host. In the DST process, the host audio signal is transformed from the time domain to the frequency domain, followed by the QR process to convert the signal into a square matrix, then divided into Q and R matrices. Next, the R matrix will be used to insert the watermark bit using the QIM method.

The results of designing an audio watermarking system after being given an attack on each audio obtained an average value of BER of 0.2091. Whereas, the best parameters are generated by guitar.wav audio with SNR of 33.0399 dB, ODG is -1.7883, and C is 787.5 bits per second using Nframe = 64 and nbit = 1. The final result of this research is to protect the data on the audio host so that it can withstand after an attack. This research has good resistance to attacks such as Low Pass Filter, Resampling, and Linear Speed Change.

Keyword: *Audio watermarking, Compressive Sampling (CS), Quantization Index Modulation* (QIM), *Discrete Sine Transform (DST), QR, BER, SNR, ODG, C.*