ABSTRACT

In this digital era, all information can be obtained easily through the internet. This causes, the ownership rights of an information is no longer guaranteed. Therefore, there is a problem with copyright. The method used to handle ownership issues is watermarking. Watermarking is a method of inserting information into a host in order to protect the copyright of a data.

This Final Project shows the analysis of M-ary Modulation method and QR Decomposition in Audio Wateringing Stereo based on Stationary Wavelet Transform (SWT) with Compressive Sampling (CS). In this Final Project, the author uses M-ary modulation to increase data hiding capacity when without attack and then optimized to be more efficient. Before the watermark is inserted, the author uses the QR method to decompose the audio signal. QR decomposition is a method of decomposition of QR matrix into orthogonal matrix and upper triangular matrix. The author uses the R matrix for the embedding process of watermark because only R matrix has value. Stationary Wavelet Transform (SWT) is the transformation that writer uses to select the sub-band of frequency on the audio host. The author's chosen frequency for watermark insertion is the low frequency with QIM and high frequency insertion method with the m-ary insertion method. To insert a large watermark then the author uses the Compressive Sampling method to compress the watermark size.

The results show good quality audio watermarking by using the best audio host of bass.wav and produce ODG value of -0.054322 which means the audio quality is very good, SNR value exceeds 20 dB of 25.604 dB, BER value of 0, high capacity watermarking of 229.688.

Key Words: Audio Watermarking; Compressive Sampling; M-ary; QR; Stationary Wavelet Transform.