

ABSTRACT

In this globalization era, digital data processing technology has developed rapidly. One application of technology that is watermarking on digital audio. It is necessary to keep the authenticity of the data and also provide copyright protection on the audio digital data. Watermarking principle itself is to insert information into the audio data with a particular algorithm.

In this thesis, will be designed watermark in a digital audio based of Orthogonal Frequency Division Multiplexing (OFDM) using Quantization Index Modulation (QIM) in which method is quantizing the sample of signal host data to a value corresponding to quantizer referred by the watermark. QIM scheme will be implemented in audio watermarking in the frequency domain using Fast Fourier Transform (FFT). To provide more protection against the insertion of data used BCH Code that inserts the data more secure from attack. Provision of this protection during the pre-processing of the message before it inserted into a host audio.

The results of this final task is created based applications matlab scheme QIM which designed system capable of producing watermarked audio with achievement of SNR (Signal to Noise Ratio) > 20 db at $\Delta < 1$, and the value of BER (Bit Error Rate) reaches 0 when $\Delta \geq 1/4096$ to all types of digital audio is being tested. Retrieved ODG value > 1.5 if the value of $\Delta < 1$. For resistance to attack, the designed system can not resistant on LPF (Low Pass Filter) and pitch shifting for BER value van not reach 0, but at $\Delta \geq 1/16$ the program still resistant to attack on noise additon, echo, resampling, and MP3 compression.

Keywords: Audio watermarking, OFDM, QIM, FFT, quantizer, BCH Code