ABSTRACT

Using electronic communications technology is a common thing at this time. Over time, the technology becomes more advanced. However, progress can be utilized also by parties who are not responsible. The problem causes discomfort when performing the communication process because the distribution of information can be disrupted. One solution to give a sense of security is the Steganography process. LSB method is considered as the simplest and efficient to process audio Steganography. But, this method still has shortcomings, namely a secret message can still be detected because the message insertion process is only done at the lowest bit (LSB) in each byte file hosts.

In this final project, designed a process of Steganography that can insert a secret message into a media. In this process, *.wav audio format will be used as a media insertion secret messages and text to be converted into ASCII form as a secret message. Before starting the insertion of information, the first process is do the segmentation (framing) to the audio file, then the specified value range of frequency bands as the reference point of insertion of secret messages with the help of the realization of algorithm Fast Fourier Transform (FFT). The method used during the process of Steganography is the Least Significant Bit (LSB). LSB is the simplest modification techniques and efficient to process audio Steganography. Insertion of confidential information with this method is done at the lowest bit or rightmost in the data that make up the audio file as a media.

By using the LSB insertion method, test some long-frame size and length of the message, as well as an election at some value ranges of frequency band, obtained values of Signal to Noise Ratio (SNR) that is better, which is still above 20 dB. The largest value of Mean Square Error (MSE) is when using the frequency band 300-400 Hz, 128 sample frame length, and message length 280 bits is $1{,}50.10^{-12}$. For every test has been done, Bit Error Rate (BER) value is 0, which means there are no differences between the secret message before embedded and the secret message after extracted. Results of Mean Opinion Score (MOS) were found to have an average total value of 3.84. When the message of the 25% of its capacity obtained average value of 4,2, currently message insertion of 50% and 75% of capacity each have a value of 3,7 and 3,6. The longest computing time is when the message insertion of 280 bits, 128 sample frame length, and the value range of frequency band is 300-550 Hz with embedding time is 1,2 seconds and extraction time is 0,85 seconds.

Keywords : Audio, FFT, Frequency Bands, LSB, Segmentation, Steganography