

ABSTRACT

Steganography is an art and science to embed information into a particular cover medium in order to keep the information remained hidden so that the information would be unnoticed by unrightfully party, although the deliverance is done through public communication means. According to message embedding domain, steganography methods can be grouped as time (spatial) domain method and frequency (transform) domain method. From the view of the performance of steganography against attacks, the performance of the transform domain methods are considered better than that of the time domain methods [11]. Therefore, in this graduation project, it will be implemented an audio steganography system using Dual Tree Complex Wavelet Transform (DT-CWT) to transform audio signal. DT-CWT can produce different resolutions for different frequencies. The data is embedded in singular value matrix that is produced by using Singular Value Decomposition to DT-CWT process' output. As the cover medium, audio file in wave format will be used and message that will be embedded is a text file.

Test and analysis to implementation result was done objectively based on SNR (Signal to Noise Ratio) value and CER (Character Error Rate), and also subjectively based on MOS (Mean Opinion Score). The results show that the quality of audio stego has good quality for SNR value of larger than or equal to 20 dB. SNR value is affected by message size and multiplier coefficient. Meanwhile, extracted message quality is perfect with CER = 0% for any input parameter combination with condition there are not signal processing attacks. The text file is relatively robust against *resampling*, relatively robust against *noise* addition for large message size, and also relatively robust against dequantization with small multiplier coefficient value.

Keywords : dual tree complex *wavelet* transform, singular value decomposition, audio steganography, and data hiding.