

ABSTRACT

The presence of digital devices and the internet has made information and communication technologies increasingly rapidly expanding. Security and confidentiality related technologies are still much complained of by many to date, while technology has brought enormous benefits to the interests of individuals and groups, in this case security and confidentiality are very necessary addressed. Therefore, steganography is one solution of the problem.

In this study, a steganography audio system was designed with the DCT-SWT encrypted method of RC4. Messages before being inserted first performed the encryption process with the RC4 algorithm to increase the level of message security. DCT changes the signal at the time domain into the domain of frequency and the SWT decomposition the signals into low and high frequency sub-bands. The performance of the steganography audio system is analyzed and measured based on quality parameters, and the process optimization of the parameters after the entire attack is conducted by evaluating the high BER value.

The optimal parameter when without attack with nframe 64, nbit 1, and sub-band low has average quality value $SNR = 55.048$ db, $MSE = 0.015$, $ODG = 0.193$, capacity = 6.6667, and $BER = 0$. Optimization parameters with Nframe 64, Nbit 1, and low sub-bands show considerable improvement to BER value after testing the entire attack. Before the optimization process average BER value = 0.205, after the process of optimization showed considerable improvement with the average value of $BER = 0.154$. On average the overall MOS value = 3.935, the system is resistant to LPF, BPF, Resampling, TSM, and LSC attacks.

Messages with RC4 and without RC4 have a similar quality value, which means that RC4 does not inhibit the quality value and performance of a steganography audio system significantly. Many character messages greatly affect the performance of a steganography audio system, the more the character of the message, the less the quality and the performance of a steganography audio system.

Keywords : Steganography, DCT, SWT, and RC4.