

## ABSTRACT

The development of digital technology which is going so fast today makes users duplicate and transmit data more easily. Therefore, the data protection system is always needed to avoid data from unauthorized thing. The protection method could be steganography which the original data will be unified with another data. The data that will be unified is called hidden data.

The purpose of this final project is to determine spread technique on steganography using wavelet transform, chaotic random number and spread spectrum to scramble the hidden data signal, and Independent Component Analysis (ICA) to extract the hidden data. It is expected that the comparison of chaotic random number and spread spectrum can bring us to the better method that has a high hidden but still has a high robust on steganography.

Spread spectrum and chaotic random number technique applied into ICA-Wavelet method to produce better hidden image steganography, but still robustly. Chaotic is a dynamic system that has limited behavior. While spread spectrum in communication sector is a process where the narrowband signal has been modulated by the wideband signal that will spread the narrowband signal. For further, the spreader with spread spectrum method is called spreader uniform and with chaotic method is called spreader chaotic.

Based on simulation, the reference optimal mixing coefficients matrix is [0.99 0.01] and high detail image is also recommended. The simulation results demonstrate its good performance of the robustness and invisibility. SNR for image hidden data (512x256 and 64x32) and text hidden data are 40.0394 dB (512x256), 76.1818 dB (64x32), 75.6184 dB (text). Subjectively, The Mean Opinion Score show fine rating, an image have high quality, enjoyable viewing and interference is not objectionable. Spreader uniform and spreader chaotic have almost the same performance but spreader chaotic gives more security than spreader uniform.