

ABSTRACT

The use of the internet in this era greatly facilitates everything, one of which is in terms of accessing data. The negative impact of this is copyright abuse. Copyright abuse in digital products is not only about copying and distributing it, but also about ownership labels. Most of these digital products do not include the copyright holder or proprietary information. So that it can easily be claimed by others.

This Final Project research aims to design a reversible watermarking scheme on an image. In the insertion process, the first step is to determine the decomposition level to be used in the Integer Wavelet Transform (IWT). The next stage is to look for estimates on the host image to find out the number of pixels of the watermark that can be inserted. Zero padding will be added to the watermark image in binary form. The estimation results and watermark images enter the Histogram Shifting process. Then enter the inverse Integer Wavelet Transform process. In the watermark image extraction process, it enters the Integer Wavelet Transform process, followed by the Histogram Shifting process and the Integer Wavelet Transform inverse process to produce a reconstructed host image. Furthermore, the reconstructed watermark image enters the K-nearest Neighbor (KNN) process to improve the watermark detection process so as to produce a small BER value.

This study uses 5 different hosts. Testing against various attacks is carried out on each host. The best results for the various attacks tested were the Speckle attack with a variance of 0.00001 which had a reversible PNSR value of 52.7029, the BER value without KNN was 0.4108, the BER value with KNN was 0.2475, the capacity value was 0.0028 and the computation time was 1.3425 seconds .

Keywords: image watermarking, histogram, reversible data hiding, K-Nearest Neighbor