

## ABSTRACT

The development of technology, especially in the field of the internet, makes it easy to exchange data in the form of softfiles, whether it be audio, image or video media. This ease of data exchange causes many digital crimes such as piracy or data retrieval. This can be overcome with one of them using a watermark. However, the watermark is still lacking in terms of security especially for the watermark which is considered to need more privacy.

The technique used in this final project is a combination of advanced encryption standard (AES) and discrete wavelet transform (DWT) algorithms where the first plaintext is encrypted using the AES algorithm and the results are inserted on the image media using DWT. Later the result of the insertion image will be searched for the encrypted PSNR and extracted plaintext will be compared with the original plaintext to find the BER value. This experiment was carried out in each subband both on level one or two DWT and used 32 and 64 character input variations.

In the results of the PSNR trial, it was found that the PSNR value in all trials had a good score of  $> 50$  dB while for BER from the trial it was found that without attack there was no BER while the rotation attack was 0.5 because the AES avalanche effect was affected. The best test is obtained at 32 characters on the first level DWT where BER is not found. While the best image media in the homogeneous and worst type image on CGI type images.

**Keywords: Cryptography, AES, DWT, watermarking**