

ABSTRACT

Data theft and misuse are very common as technology develops. By utilizing informatics technology today, it can facilitate humans in copying, distributing and archiving multimedia data. The development of digital communication networks, can facilitate digital data accessed and widely distributed by the public through the internet network. Many internet users who exchange data with other users, can allow data exchange to be done illegally. To protect the security and confidentiality of data owners and their data, a technique is needed to guarantee the security of this. Watermarking is a technique that can be used to hide messages or mark messages. By using techniques in various types of digital media data, it is expected to prevent copyright infringement on works of art and intellectuals.

In this thesis, the author designed a watermarking system with the aim of inserting an information message in the form of an image (.jpeg) in an image (.jpeg). By combining the Discrete Cosine Transform (DCT) algorithm and the Standard Data-Encryption (DES), where the plaintext is a secret image. In the system process that is designed to run will look for the value of *PSNR* and *MSE* when embed-ding and the value of *BER* when extraction and decryption.

The result of this final project research is a system that can insert an information message in the form of an image (secret image) into an image (host image). In the DES avalanche effect test results, the data values obtained show that DES can change the message content by as much as 50% if the input *key* is changed to 1-bit. *PSNR* results obtained have a value of $> 30\text{dB}$, making the message inserted invisible to human vision. The best test is done when the secret image is 32×32 pixels, where the average value of *BER* $\ll 0.03$.

Key words: *Watermarking*, *Cryptography*, *Discrete Cosine Transform*, *Data-Encryption*
Standar