ABSTRACT

STEGANOGRAPHIC ANALYSIS OF ENCRYPTED IMAGES USING RSA AND DISCRETE WAVELET TRANSFORM

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Data security in the digital era is becoming an increasingly crucial aspect, especially in the process of transmitting data via the internet which is vulnerable to the threat of illegal access. One effort to increase the protection of information is to apply cryptography and steganography. Cryptography plays a role in encrypting messages so that they cannot be read by unauthorized parties, while steganography hides messages in digital media to avoid detection. In this research, I developed a data security method by combining the RSA and AES algorithms for the encryption process and the Discrete Wavelet Transform (DWT) technique for steganography.

The RSA algorithm is used in key distribution to ensure the security of encryption key exchange, while AES is applied in the main encryption process because it has high efficiency in handling large data. Next, the encrypted message is inserted into digital media using the DWT method, which is able to maintain the quality of the media without causing noticeable changes that make it more difficult to detect. aims to analyze the effectiveness of the combination of RSA-AES cryptography and DWT steganography in improving information security. Evaluation is carried out by measuring the quality of the media used as a message storage container based on the Peak Signal to Noise Ratio (PSNR) and Mean Square Error (MSE) parameters, as well as analyzing the resistance of the proposed method to attack threats. With this approach, it is hoped that the system developed will be able to significantly increase data security and reduce the risk of unauthorized access to sensitive information.

Key words: Data security, Cryptography, Steganography, DWT, RSA, AES