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Information Security Department

Morning Study

Image Encryption

A Graduate Project Submitted to the Department of Information Security of the College of Information Technology, University of Babylon, in Partial Fulfilment of the Requirements for the Bachelor's degree in Information Security of Information Technology.

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ABSTRACT

Image encryption plays a crucial role in securing visual data transmission over insecure communication channels. This project focuses on the development and implementation of an efficient image encryption system using advanced cryptographic techniques. The proposed system aims to enhance the security and confidentiality of digital images by encrypting them before transmission and decrypting them upon reception.

The encryption process involves converting the pixel values of the image into a scrambled form using a robust encryption algorithm. This algorithm employs key-based encryption mechanisms to ensure that only authorized users with the correct decryption key can access the original image. Additionally, the system integrates various encryption techniques such as symmetric key encryption, public key encryption, and hybrid encryption to achieve a high level of security.

Furthermore, the project addresses key challenges in image encryption, including maintaining encryption efficiency, preserving image quality, and resisting cryptographic attacks. Extensive testing and evaluation are conducted to assess the performance and security of the proposed encryption system. Performance metrics such as encryption speed, decryption speed, and image quality preservation are analyzed to validate the effectiveness of the system.

Overall, the developed image encryption system provides a reliable solution for safeguarding sensitive visual data during transmission. By incorporating advanced cryptographic techniques and addressing key encryption challenges, the system offers enhanced security and confidentiality