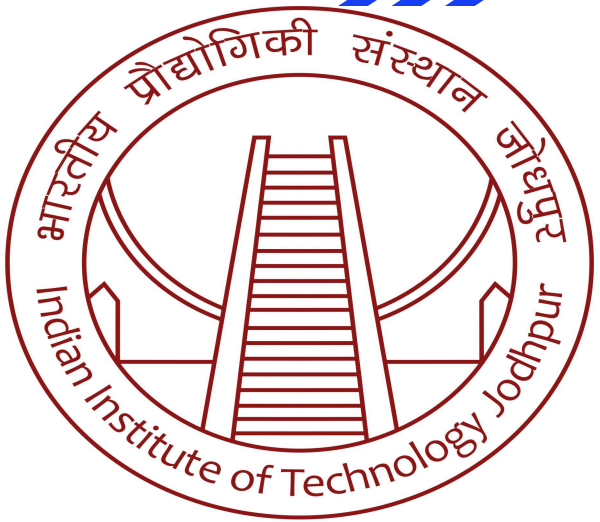

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Security and its applications

Project

Image Encryption and Decryption

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Introduction

In today's digital era, the transmission and storage of sensitive information over an insecure network has become a major concern. The digital images, which contain crucial information, are vulnerable to various cyber attacks, leading to data theft and other security breaches. Thus, there is a need to develop an efficient and robust image encryption and decryption system that can provide confidentiality, integrity, and authenticity to digital images.

The proposed system will enable the secure transmission and storage of digital images,which is crucial in various applications such as medical imaging, military, and government communications.

By providing confidentiality, integrity, and authenticity to digital images, the proposed system will prevent unauthorized access and tampering of sensitive information.

AES algorithm is widely used due to its high security and efficiency. Several research works have been carried out in the field of image encryption and decryption using AES algorithm.

The most commonly used approach is to convert the image into bit streams and then apply the AES algorithm to encrypt the data.

The encrypted data is then transmitted or stored, and the decryption process is carried out at the receiver end using the same key.

The system will take an input digital image and convert it into bit streams. The AES algorithm will then be applied to the bit streams to encrypt the data.

The encrypted data will be transmitted or stored, and the decryption process will be carried out at the receiver end using the same key.

The decrypted data will be converted back into the original image format.

Verification and Evaluation

1. Security: The security of the system will be evaluated by analyzing the encryption and decryption process using AES algorithm.

2. Performance: The performance of the system will be evaluated in terms of encryption and decryption time, memory usage, and computational complexity.

3. Image quality: The quality of the encrypted and decrypted images will be evaluated using various image quality metrics such as peak signal-to-noise ratio (PSNR), structural similarity index (SSIM), and mean square error (MSE).

Conclusion

The proposed system for image encryption and decryption using the AES algorithm and comparison with other algorithms is a comprehensive evaluation of different encryption techniques.

The system provides confidentiality, integrity, and authenticity to the image data and can be applied to various applications such as medical imaging, military,e-commerce, and personal privacy. The comparison of different algorithms can help in choosing the most suitable algorithm for a specific application.