Image Encryption Tool

Project Synopsis Submitted

to

MANIPAL ACADEMY OF HIGHER EDUCATION

For Partial Fulfillment of the Requirement for the

Award of the Degree

Of

Bachelor of Technology

in

Computer and Communication Engineering

by

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August 2025

Objective:
To design and develop a secure, web-based image encryption and decryption platform that uses the AES-128 encryption standard to protect digital images from unauthorized access and tampering.

Scope:
The system will enable users to upload an image, encrypt it using AES-128, and download the encrypted file. It will also allow users to decrypt previously encrypted images by providing the correct key. The platform will focus on usability, cross-browser compatibility, and secure client-server communication.

Need for the Application:
With the rapid growth of digital data sharing, especially images, there is a pressing need to safeguard sensitive visual content from cyber threats. Traditional storage or transmission methods leave images vulnerable to interception. AES-128 encryption offers strong security while maintaining computational efficiency, making it suitable for web-based applications.

Project Description:
This project addresses the problem of unauthorized access to personal and confidential images during transmission or storage. We propose an interactive website where users can encrypt and decrypt images using AES-128 encryption. The system will feature:

- Image upload and preview before encryption/decryption.
- AES-128 encryption to securely transform image data into an unreadable format.
- Decryption functionality to restore the original image using the correct key.
- Secure key handling to ensure the encryption key is never exposed to unauthorized parties.
- Responsive interface for ease of use on desktops and mobile devices.

Hardware Requirements:
- Standard personal computer or laptop with at least 4 GB RAM.
- Stable internet connection.

Software Requirements:
- Frontend: HTML, CSS, JavaScript, Streamlit
- Backend: Node.js / Python Flask / Streamlit (for AES implementation)
- AES-128 encryption library
- Web server environment
- Modern web browser

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