CAPSTONE PROJECT

PROJECT TITLE

MANSWINI DC
BE CSE
SNS COLLEGE OF TECHNOLOGY

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OUTLINE

- Problem Statement
- Technology used
- Wow factor
- End users
- Result
- Conclusion
- Git-hub Link
- Future scope

PROBLEM STATEMENT

- Need for Secure Communication: In an era of digital communication, sensitive information needs protection from unauthorized access.
- Limitations of Traditional Encryption: Standard encryption methods can be easily detected or blocked.
- Solution: Steganography enables embedding messages within images, making the data invisible to unintended recipients.
- Objective: This project hides a secret message inside an image and allows decryption with a passcode.

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TECHNOLOGY USED

- **Programming Language:** Python

- **Libraries Used**:
  - OpenCV (cv2): Image processing
  - os: File handling
  - string: Character mapping for encryption

- **Platform:** Runs on Windows/Linux/Mac

WOW FACTORS

- Steganography-Based Encryption: Message is embedded within image pixels.
- Passcode Protection: Only users with the correct passcode can decrypt the message.
- Simple and Lightweight: Works without external servers or databases.
- Quick and Efficient: Message embedding does not significantly alter image quality.

END USERS

- Cybersecurity Enthusiasts: Learning encryption methods.
- Journalists & Whistleblowers: Securely sharing sensitive information.
- Government & Military: Covert communication without suspicion.
- General Users: Protecting personal and private messages

RESULTS

Encryption Process:

- User inputs a secret message and a password.
- Message is embedded within an image using pixel modification.
- The modified image is saved as encryptedImage.jpg.

Decryption Process:

- User inputs the passcode.
- The script extracts the hidden message.

CONCLUSION

- This project demonstrates how image steganography can be used for secure communication.
- It provides a simple yet effective method for hiding messages without attracting attention.
- Future improvements can enhance security, capacity, and automation.

GITHUB LINK

MY GITHUB LINK

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FUTURE SCOPE(OPTIONAL)

- Advanced Encryption: Combine steganography with cryptographic techniques (AES, RSA).
- Better Image Handling: Improve pixel modification to make detection impossible.
- GUI Implementation: Develop a user-friendly interface for non-programmers.
- Cross-Platform Support: Implement as a mobile/web-based tool for wider usability.

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THANK YOU

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