CAPSTONE PROJECT

SECURE DATA HIDING IN IMAGE USING STEGANOGRAPHY

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OUTLINE

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- **Future scope**

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PROBLEM STATEMENT

- Introduction:

  ▪ Cyberattacks and data breaches are on the rise.

  ▪ Sensitive information is vulnerable to interception and hacking.

- Challenge:

  ▪ Need for innovative methods to securely transmit data.

  ▪ Traditional security methods (e.g., encryption) are often vulnerable to attacks.

- Solution:

  ▪ **Steganography:** Hiding data within images to prevent unauthorized access.

TECHNOLOGY USED

- Steganography Techniques:

  ▪ **Least Significant Bit (LSB):** Embedding data in the least significant bits of an image.

  ▪ **Discrete Cosine Transform (DCT):** Hiding data within the image's frequency domain.

- Image Processing Tools:

  ▪ OpenCV (Python) or PIL (Python Imaging Library) for image manipulation.

- Encryption (Optional):

  ▪ AES Encryption for securing data before embedding.

- Programming Languages:

  ▪ Python (preferred for simplicity and versatility).

WOW FACTORS

- **Invisible Data:** Data hidden in an image without visible changes.

- **Two Layers of Security:** Combination of steganography and encryption.

- **Real-World Use Cases:** Secure communication, digital watermarking, and private data storage.

- **Increased Privacy:** Provides a more secure alternative to conventional data transmission methods.

END USERS

- Corporate Sector:

  ■ Securely send sensitive business documents.

- Government Agencies:

  ■ Protect confidential communications, especially in intelligence operations.
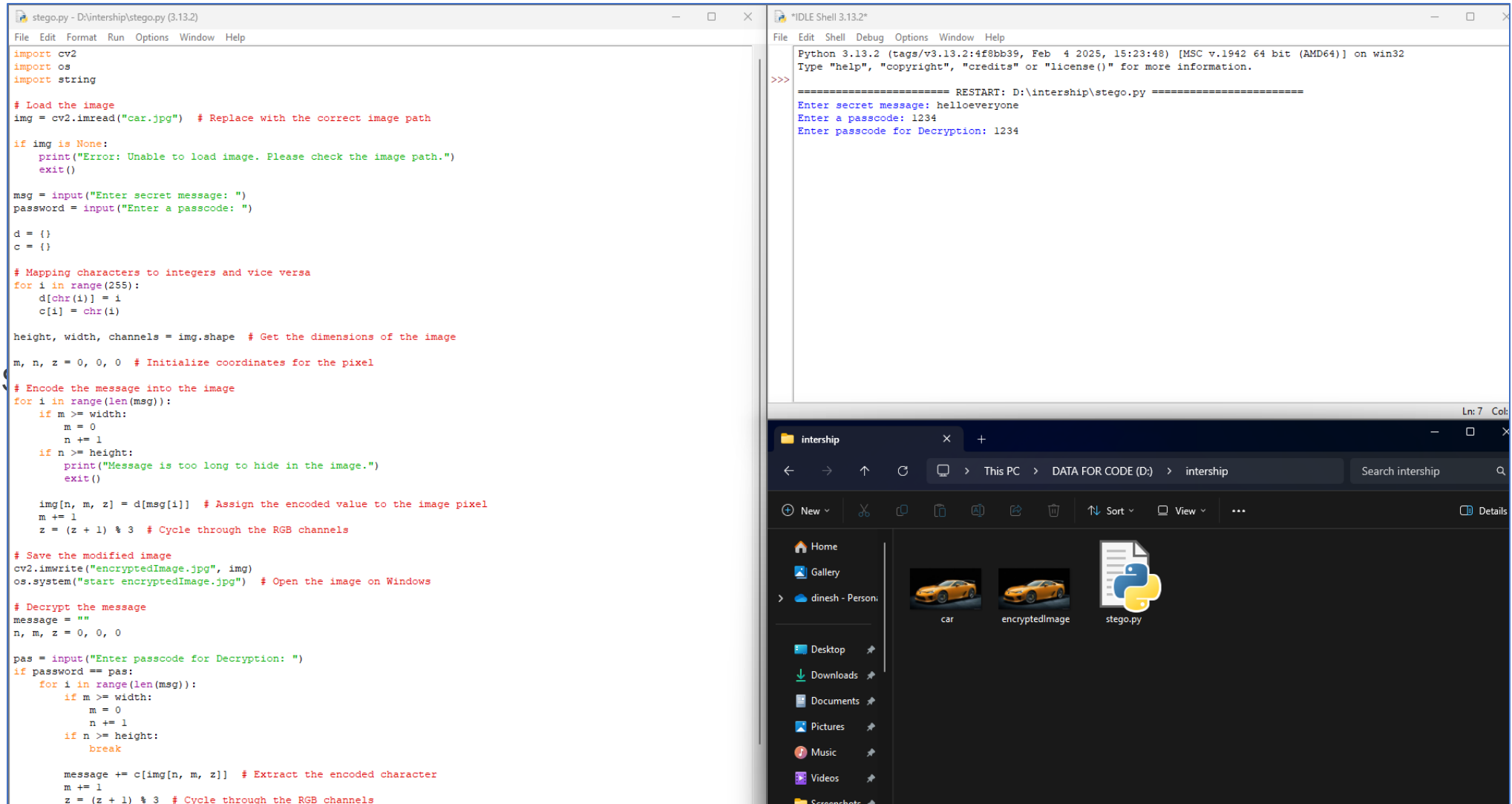
- Individuals:

  ■ Secure personal data (photos, documents) shared online.

- Cybersecurity Professionals:

  ■ Use in secure data exchanges and to detect hidden threats.

RESULTS

CONCLUSION

- **Effective Security Solution**: Steganography provides a unique and effective method to protect data.

- **Combining Encryption and Steganography**: Enhances security and privacy.

- **Practical Use**: Offers real-world applicability for secure data transmission.

- **Scalability**: Adaptable for various domains such as secure messaging, digital watermarks, and file protection.

GITHUB LINK

- GITHUB LINK

- HTTPS://GITHUB.COM/DINZS01/MY_PROJECT_01.GIT

FUTURE SCOPE(OPTIONAL)

- Advanced Algorithms:

  - Development of more robust algorithms that withstand attacks.

- AI Integration:

  - Use of AI to detect steganography or improve its detection.

- Real-Time Applications:

  - Implementations in secure communication apps or file-sharing platforms.

- Multimedia Data:

  - Hiding complex data like audio and video in addition to images.

THANK YOU