

---

# **CAPSTONE PROJECT**

## **SECURE DATA HIDING IN IMAGE USING STEGANOGRAPHY**

**Presented By: Godson Sojan**  
**Student Name : Godson Sojan**  
**College Name & Department : LBS College of Engineering, CSE**

---

## OUTLINE

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

---

# PROBLEM STATEMENT

Traditional encryption methods store secret messages in text or binary formats, making them easily detectable. This project implements image-based steganography, where a message is hidden within an image by modifying pixel values. The goal is to securely encode and decode text messages without altering the visual appearance of the image.

---

# TECHNOLOGY USED

- **Programming Language:** Python

- **Libraries:**

- **OpenCV (cv2)** – For image processing (reading, modifying, and saving images)
- **NumPy** – For handling pixel data and numerical operations
- **OS** – For file handling and opening images

---

# WOW FACTORS

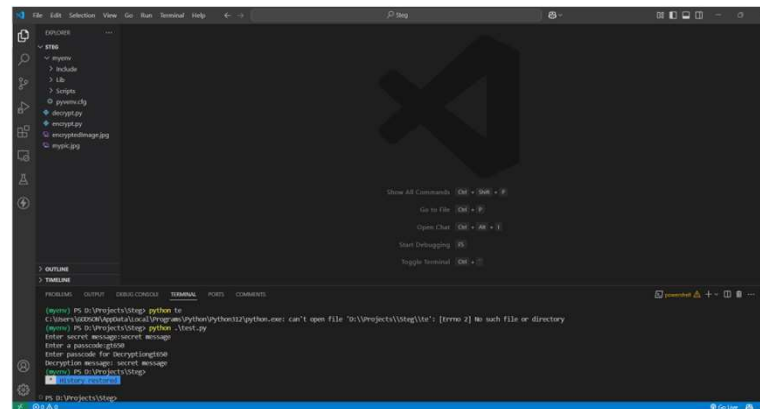
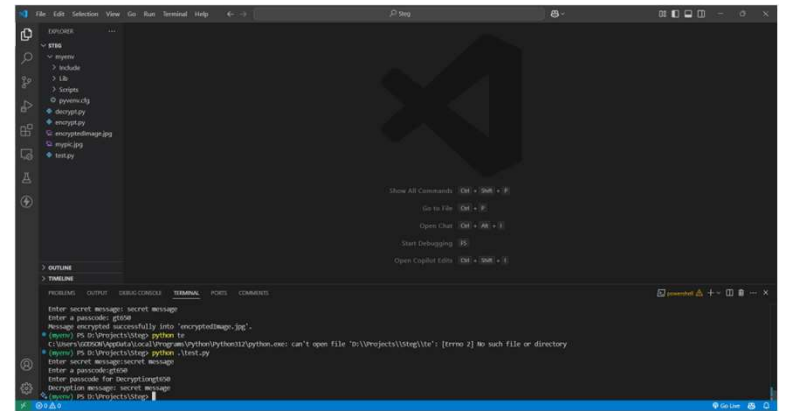
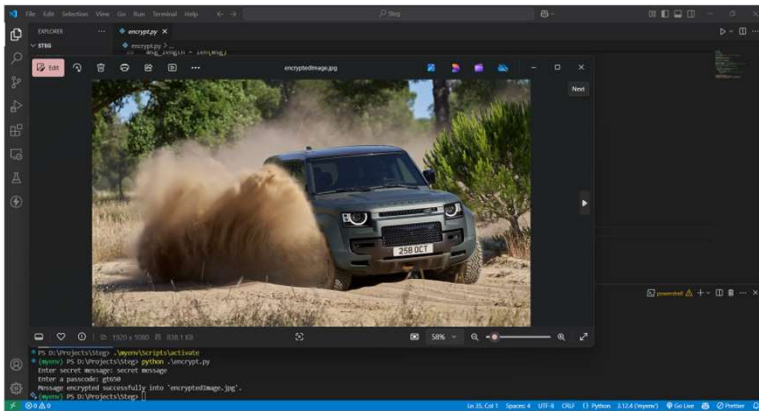
- **Stealthy Data Hiding** – The message is embedded in pixel values, making it visually undetectable.
- **Automatic Message Length Encoding** – No need for manual input, the length is stored within the image itself.
- **RGB Channel Utilization** – The message is spread across different color channels (Red, Green, Blue) to enhance security.
- **Password-Protected Decryption** – Ensures that only authorized users can retrieve the hidden message.
- **Minimal Image Distortion** – Embedding the message does not significantly alter the image, preserving its original appearance.

---

## END USERS

- **Cybersecurity Professionals** – For secure communication and data hiding.
- **Journalists & Whistleblowers** – To secretly share sensitive information.
- **Government & Intelligence Agencies** – For covert operations and classified data transmission.
- **General Users** – Anyone looking for a simple yet effective way to hide private messages within images.

# RESULTS



---

## CONCLUSION

This project implements image-based steganography to securely hide messages within images. It ensures confidentiality through pixel manipulation and password protection while keeping the image visually unchanged. This method provides a discreet and efficient way of secure communication.



---

## GITHUB LINK

<https://github.com/Godson1117/Steganography/tree/main>

---

**THANK YOU**