
STUDENT DETAILS

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PROJECT TITLE/PROBLEM STATEMENT

Hiding a text inside an image
steganography

AGENDA

Steganography is the practice of concealing information within another message or physical object to avoid detection. Steganography can be used to hide virtually any type of digital content, including text, image, video, or audio content. That hidden data is then extracted at its destination.



PROJECT OVERVIEW

- Understand the principles of steganography and its applications.
- Learn about digital image representation and pixel manipulation.
- Develop a method to encode and decode secret text within an image.
- Implement the Least Significant Bit (LSB) technique for steganography.
- Ensure the imperceptibility of the hidden message to maintain the image's visual integrity.

➤ Methodology :

1. Image Processing Basics
2. Least Significant Bit (LSB) Technique
3. Encoding Process
4. Decoding Process

Various Aspects of Steganography



TYPES OF STEGANOGRAPHY :

Text steganography : It involves hiding information within text files in such a way that the presence of the hidden data is undetectable. Unlike cryptography, which scrambles the message, text steganography conceals the very existence of the message.

Image steganography : It involves hiding information within digital images in such a way that the presence of the hidden data is undetectable to the human eye. The goal is to embed secret messages in the image without altering its visual appearance.

Video steganography : It is the practice of hiding information within digital video files. It leverages the large size and high data redundancy of video files to conceal messages, making it difficult for unintended recipients to detect the hidden data.

Audio steganography : It involves hiding information within audio files. This can be achieved by manipulating audio signals in a way that is imperceptible to human ears but detectable by machines.

WHO ARE THE END USERS OF THIS PROJECT?

ENCRYPTION AND DECRYPTION

Encryption :

Encryption is the process of converting plaintext (readable data) into ciphertext (unreadable data) using an algorithm and an encryption key. The purpose of encryption is to protect the confidentiality of data, ensuring that only authorized parties can access the original information.

Plaintext : "Hello, World!"

Encryption Algorithm : ASE (Advanced Encryption Standard)

Key : A secret key known only to the sender and receiver

Ciphertext :

'u2FsdGVkX19LcN14e5s4V8Up3zfjIfx7iV7dQ=='

Decryption :

Decryption is the process of converting ciphertext back into plaintext using a decryption algorithm and a decryption key. The purpose of decryption is to make the encrypted data readable again, but only to those who possess the appropriate decryption key.

Ciphertext :

'u2FsdGVkX19LcN14e5s4V8Up3zfjIfx7iV7dQ=='

Decryption Algorithm : ASE (Advanced Encryption Standard)

Key : The same secret used for encryption

Plaintext : "Hello, World!"

DIFFERENCE BETWEEN CRYPTOGRAPHY AND STEGANOGRAPHY

Cryptography

- Cryptography is the practice of securing information by transforming it into an unreadable format using mathematical algorithms. The main goal is to ensure the confidentiality, integrity, authenticity, and non-repudiation of data.

Steganography

- Steganography is the practice of hiding information within another non-secret medium in such a way that the existence of the information is concealed. The main goal is to hide the fact that communication is taking place.

YOUR SOLUTION AND ITS VALUE PROPOSITION :

STEPS ARE TO CONVERT THE COVER IMAGE TO SECRET IMAGE

1. Choose an Image

Select an image that has enough pixels to accommodate the hidden text.

2. Encode the Text

Convert the text into a binary format and embed it within the image's pixels using a steganographic algorithm

3. Save the Image

Save the image with the hidden message. It will appear identical to the original image

HOW DID YOU CUSTOMIZE THE PROJECT AND MAKE IT YOUR OWN: THE PROCESS WE DONE TO CONVERT NORMAL IMAGE INTO STENOGRAPHY

Image Steganography

[How it works](#)[How to defeat it](#)

Hide images inside other images.

This is a client-side Javascript tool to steganographically hide images inside the lower "bits" of other images.

Select either "Hide image" or "Unhide image". Play with the **example** images (all 200x200 px) to get a feel for it.

[Hide image](#) [Unhide image](#)

Cover image:

[Choose File](#) 70313-3840...sktop-4k.jpg

Example: N/A



Secret image:

[Choose File](#) spooky-tree-...lg-moon.jpg

Example: N/A



Hidden bits: 1

[Download Full-size Image](#)



Image Steganography

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Select either "Hide image" or "Unhide image". Play with the **example** images (all 200x200 px) to get a feel for it.

[Hide image](#) [Unhide image](#)

Image:

[Choose File](#) download.png

Example: N/A



Hidden bits: 1

[Download Full-size Image](#)



MODELLING

- **Data Security :**

Steganography can be a valuable tool for protecting confidential information. It can hide data in plain sight, making it difficult for unauthorized individuals to detect and intercept the hidden messages

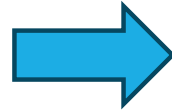
- **Digital Forensics :**

Steganography is also used in digital forensics to uncover hidden evidence or information that might not be immediately apparent.

- **Ethical Considerations :**

However, steganography can also be used for malicious purposes, such as hiding illegal or harmful content. It is essential to use steganographic techniques responsibly and ethically.

RESULTS





LINKS :

GitHub link :



THANK YOU

-Gayathri