

STUDENT DETAILS

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INTERSHIP DOMAIN : CYBERSECURITY

INTERSHIP START AND END DATE: 13TH OCT – 26TH NOV 2023



PROJECT TITLE:

Cyber Security(CS)

- Hiding message in an image

PROBLEM STATEMENT:

Problem Statement: The increasing concerns around data privacy and the need for secure communication have led to the exploration of innovative ways to hide sensitive information. Traditional methods may not provide foolproof security, raising the question: How can we enhance the confidentiality of digital information, especially when transmitted through images?



Agenda

1.Introduction

2.Project Overview

3.Target Audience

4.Solution and Value Proposition

5.Customization and Uniqueness

6.Modeling Techniques

7.Results

8.Conclusion



SELECT
A
PHOTO

WRITE
PYTHON
CODE

ENCRYPTION

DECRYPTION

Project Overview:

- Purpose:** Develop a robust method for hiding information within images to enhance data security.
- Scope:** Implement a solution applicable to various file formats and accessible to users with diverse technical backgrounds.
- Objectives:** Ensure secure and inconspicuous storage of information within images without compromising their integrity.

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Python code

Steganography involves hiding information within other data in a way that is not easily detectable. In this example, I'll provide a simple Python code snippet for basic image-based steganography using the popular Python library called Pillow.

Encryption is the process of converting plaintext or any other form of data into a coded form, called ciphertext, to prevent unauthorized access. It uses algorithms and keys to transform the original information into a format that is unreadable without the appropriate decryption key.

ENCRYPTION

DECRYPTION

decryption refers to the process of extracting hidden information or data from a carrier medium, such as an image, audio file, or video, where data has been concealed using steganographic techniques. The goal of decryption in steganography is to reveal the hidden content without altering the carrier medium in a



Who are the End Users

•Target Audience:

- Individuals and organizations with a need for secure data transmission.
- Users seeking an alternative to conventional encryption methods.

•Characteristics and Needs:

- Concerned about data privacy and security.
- Require a user-friendly solution that integrates seamlessly into existing workflows.

Solution and its Value Proposition:

•Solution Overview:

- Embed information within the pixels of an image using steganography techniques.
- Utilize a user-friendly interface for easy implementation.

•Value Proposition:

- Enhanced data security through covert communication.
- Simple and effective method for secure information exchange.
- Versatile application in various domains, including personal communication, business, and data storage.

How did I customize the project and made it my own?

•Customization:

- Integration of cutting-edge encryption algorithms to ensure data security.
- User-friendly design for accessibility.
- Adaptation for use with various image formats.

•Uniqueness:

- Novel approach to combining encryption and steganography in a Python-based tool.
- Focus on providing a versatile solution for different user needs.

MODELLING

Techniques and Methodologies:

- Explanation of steganography and encryption techniques used.
- Demonstration of the algorithmic models employed for information hiding.



Technology Principles

- Python programming for flexibility and accessibility.
- Integration of cryptographic principles for secure data transmission.

```
import cv2
import os
import string

img=cv2.imread("flower.jpg")
msg=input("Enter secret message")
password=input("Enter a passcode")

d={}
c=[]

for i in range(255):
    d[chr(i)]=i
    c.append(chr(i))

n=0;
m=0;
z=0;

for i in range (len(msg)):
    img[n,m,z]=d[msg[i]]
    n=n+1
    m=m+1
    z=(z+1)%3

cv2.imwrite("encryptedImage.jpg",img)
os.startfile("encryptedImage.jpg")

message =""

n=0
m=0
z=0

pas = input("Enter passcode for Decryption")
if password == pas:
    for i in range(len(msg)):
        message = message + c[img[n,m,z]]
        n=n+1
        m=m+1
```

PYTHON CODE OF ENCRYPTION AND DECRYPTION

ORIGINAL PHOTO



ENCRYPTED PHOTO



```
IDLE Shell 3.12.0
File Edit Shell Debug Options Window Help
Python 3.12.0 (tags/v3.12.0:0fbl8b0, Oct 2 2023, 13:03:39) [MSC v.1935 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:\Users\HP\Desktop\steganography\steganography.py
Enter secret message I AM SUPERMAN
Enter a passcodeABCD
Enter passcode for DecryptionABCD
Decryption message I AM SUPERMAN
>>>
```



EXECUTD RESULTS

Results:

•Quantitative Data:

- Demonstration of successful information hiding and extraction.
- Metrics on the efficiency of the encryption and steganographic processes.

•Qualitative Feedback:

- User testimonials on the ease of use and effectiveness of the solution.

•Effectiveness:

- Highlighting the success of the project in achieving its objectives.

LINKS:

GITHUB LINK:

<https://github.com/MdAbdulKalam-creat/CYBERSECURITY-HIDING-DATA-IN-A-IMAGE>

The background features a light gray field with a network of thin, dashed gray lines forming various triangles. Overlaid on this are solid geometric shapes: a dark blue horizontal bar with a triangular cutout on its left side, a yellow horizontal bar below it, and a yellow vertical bar in the top right corner. The text 'THANK YOU' is centered in the dark blue bar.

THANK YOU