Data Hiding Using Image Processing

K. Pravallika[1], L. Naga Surekha[2], K. Madhan[3], G. Sai Karthik[4]

B.Tech Students, Department of Information Technology[1,2,3,4]

Prasad V. Potluri Siddhartha Institute of Technology, Vijayawada, Andhra Pradesh, India

Abstract: *The data hiding using image processing can be done by steganography. The word "steganography" means covered in hidden writing. Using steganography information can be hidden in carriers such as images, audio files, text files, videos etc. In this study, we proposed a new framework of an image steganography system to hide a text in an image.*

Keywords: Tkinter, Image Steganogtraphy, PIL

I. INTRODUCTION

Communication is basic in all areas. Every person wants to keep their conversation or data away from third party. Steganography is the concept in which we hide the confidential data into cover images, audio files, video files etc, and the intermediate observer will not be able to notice with naked eyes. Steganography is about hiding the existence of messages. The goal of steganography to the hide information that is to be transmitted. Steganography will not show what communcation is happening between two or more persons to the third party. Johannes Tri the mius was the first to use the term in his STEGANO-GRAPHIA thesis .

II. PROPOSED SYSTEM

In this project we primarily concentrated on the data security issues when sending the data over the network using the steganographic techniques .The main objective is to produce security tools based on steganography techniques. To explore techniques of hiding data using encryption module of this project and to extract techniques of getting secret data using decryption modules and we also show the size of the image after encryption and decryption

III. TECHNOLOGIES USED

3.1 Python
We can prefer both python and java programming languages but we give most priority to python language. Python is an interpreted language, which means the source code of a program is converted into bytecode that is then executed by the Python virtual machine. In Python we can find a step-by-step of the hide and reveal process using the python code. Python contains the inbuilt libraries like Tkinter and PIL which we can create applications and models in a variety of fields.

For instance, image and data classification can be done. Python has more predefined methods which we can reuse the already present code in the system libraries for the error free code. Python is a free and open source where it is easy to code and it has many extensible features. In this project, we need a Graphical User Interface(GUI) support and python is having the libraries which support GUI. Python takes care of the memory management which is crucial in programming. So, Python is a dynamically typed language.

3.2 Python Libraries
There are several libraries that are used for image processing in python. The Tkinter is used to create the Graphical User Interface(GUI) in python. The Python Image Library(PIL) is a free and open-source additional library for the python programming language and it supports opening, manipulating, and saving many different file formats. The OS library provides the facility to establish connection between the user and the operating system

3.3 Data

The Image and the text is taken as the data for the input to do the encryption. The image can be in png or in jpeg formats and these images are received as an output after the encryption has done and for the decryption only the image will be given as an input.

IV. IMPLEMENTATION AND RESULTS

The two modules that are used in steganography are:
1. Encryption
2. Decryption

4.1 Encryption

The encryption module is used to hide the information into the image; no one can see that information or file. This module requires an image and message and gives only one image file in the destination.

In the below figure 1.1, the image which is in png, jpeg and jpg formats are selected and the text or message which we want to send to the receiver secretly has been taken. In the text message there can be numbers, alphabet's or special characters.

The below figure 1.2, is the output for the encryption where the text or message is inserted in the image. While saving this image it can be saved only in the png format. The data is present inside the image where the message or text is not visible to the naked eye. There are some changes in the pixels values of the image when we insert the text inside it.

4.2 Decryption

The decryption module is used to get hidden image in an image file. It takes the image file as an input an gives the message that is hidden in the image as an output

The encrypted image file is taken as an input where the hidden text is present. The image has been sent to the receiver where he/she can know that it is an encrypted image. There may be small change in pixels as the images manipulation has been done.

The encrypted image will be taken to perform the decryption module.

Fig 4.1 Input for the encryption

Fig 4.2 Data inserted into an image

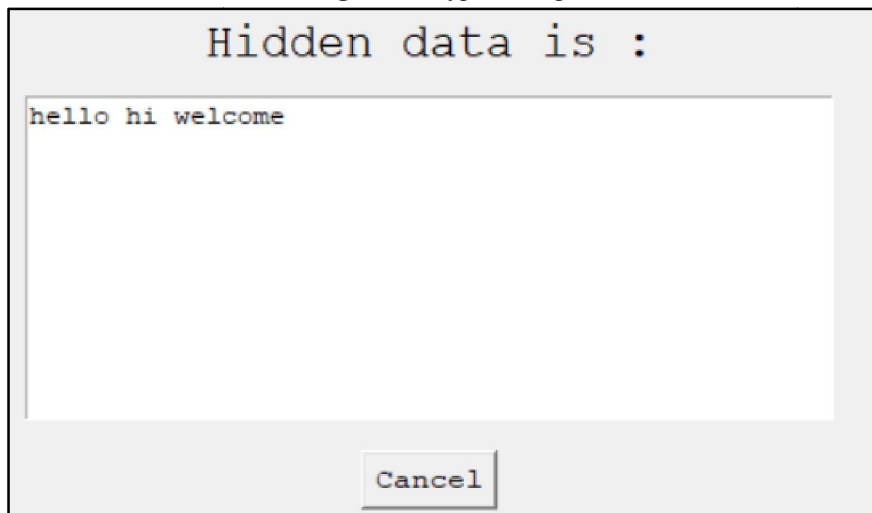**Fig 4.3** Encrypted image

Fig. 4.4: Hidden data or text inside the image

In the above figure, When the encrypted image has been given as an input in the decryption module the text that is present inside the image will appear as an output in the decryption.

V. SCOPE OF FUTURE USE

The Steganography techniques will be lying in the field of digital watermarking in the future. Some providers try to provide their copyrighted works against the illegal distribution and watermarks provide away of tracking the owners of these materials. Many criminals are using these techniques to communicate with others. The use of steganography techniques is uploading secret communication on the web to avoid transmission.

VI. CONCLUSION

Therefore, Image steganography can be used to send the secret message from one person to another using the image and data is highly secured. In future, steganography will become very popular as it cannot be known to the third party members whenever there is a data transmission.

REFERENCES

[1]. https://www.geeksforgeeks.org/image-based-steganography-using-python/
[2]. https://www.mygreatlearning.com/blog/image-steganography-explained