PROJECT REPORT

ON

IMAGE STEGANOGRAPHY

Submitted in partial fulfillment of the Degree of

Bachelor of Technology

In

Computer Science Engineering

Submitted To-

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1. INTRODUCTION

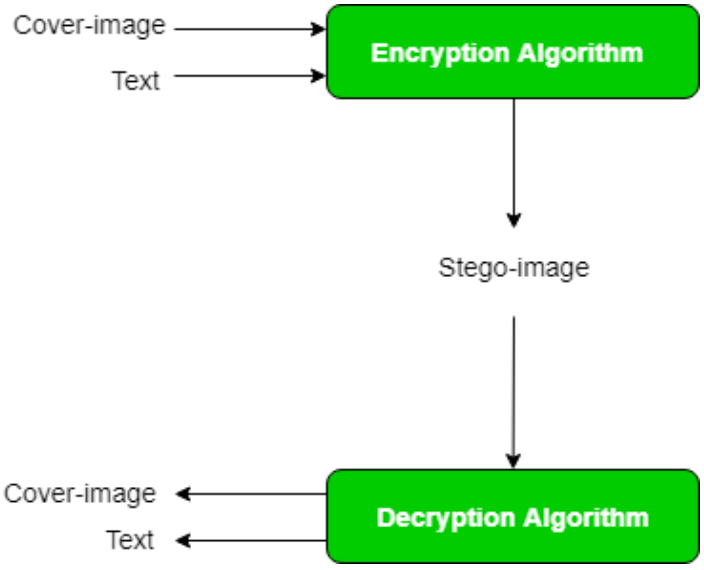
Steganography is the use of various methods to hide information from unwanted eyes. Steganography works by hiding information in a way that doesn't arouse suspicion.

Image Steganography refers to the process of hiding data within an image file. The image selected for this purpose is called the **cover image** and the image obtained after steganography is called the **stego image**.

How is it done?

An image is represented as an N*M (in case of greyscale images) or N*M*3 (in case of color images) matrix in memory, with each entry representing the intensity value of a pixel.

In image steganography, a message is embedded into an image by altering the values of some pixels, which are chosen by an encryption algorithm. The recipient of the image must be aware of the same algorithm in order to know which pixels he or she must select to extract the message.



Detection of the message within the **cover image** is done by the process of **steganalysis**.

2. DESIGN OF PROJECT

In this the user will be given two options: encode and decode. By clicking the encode button secret user have to upload the name of the file and the enter their secret text for encryption. After uploading the file the image will be encoded. By clicking the decode button user have to upload the file to be decoded and the hidden text will be displayed on screen.

Libraries Used-

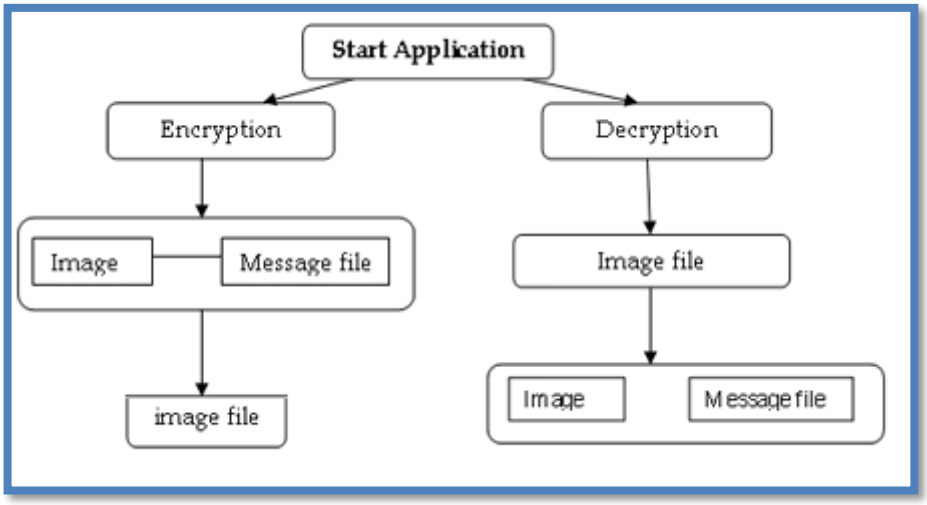
- ✓ **Tkinter :** It is the Graphical user interface package.
- ✓ **tkinter.filedialog :** This module offers a set of classes and functions that can be used to work with files.
- ✓ **PIL:** It helps to save many different formats of images.
- ✓ **Stegano:** It's the python steganography module.
- ✓ **Messagebox:** It is used to display the message boxes.

Functions-

- ✓ **Tk():** Main window is created with the help of Tk().
- ✓ **b. title():** The title on the main window is displayed with the help of this function.
- ✓ **c. geometry():** The geometry of the screen (length,height,width) is set with the help of this function.

- ✓ **d. config():** It helps to access the attributes of the object after initialisation.
- ✓ **e. bg:** It sets the background colour of the screen.
- ✓ **f. Button():** It creates the button on the screen.
- ✓ **g. place:** It is used to set the position and size of a window.
- ✓ **h. relx:** It is the fraction of the width of the parent widget.
- ✓ **i. Rely:** It is the fraction of the height of the parent widget.
- ✓ **destroy():** It is used to destroy the widget.
- ✓ **b. StringVar():** It holds a string.
- ✓ **c. askopenfilename():** The selected file name is returned by this function.
- ✓ **d. reveal():** It is used to reveal the hidden message.
- ✓ **f. Label():** It specifies the container box where the text can be placed.
- ✓ **Entry():** Single line text strings are accepted by this function from the user.
- ✓ **b. askyesno:** It shows a dialog box for confirmation from the user.
- ✓ **c. showinfo():** It is used to display an appropriate message.
- ✓ **d. showwarning():** It displayed the warning message to the user.
- ✓ **e. mainloop():** In tkinter, the event loop is runned by this function.

3. FLOW CHART



On starting the application user have to select between the two given options:

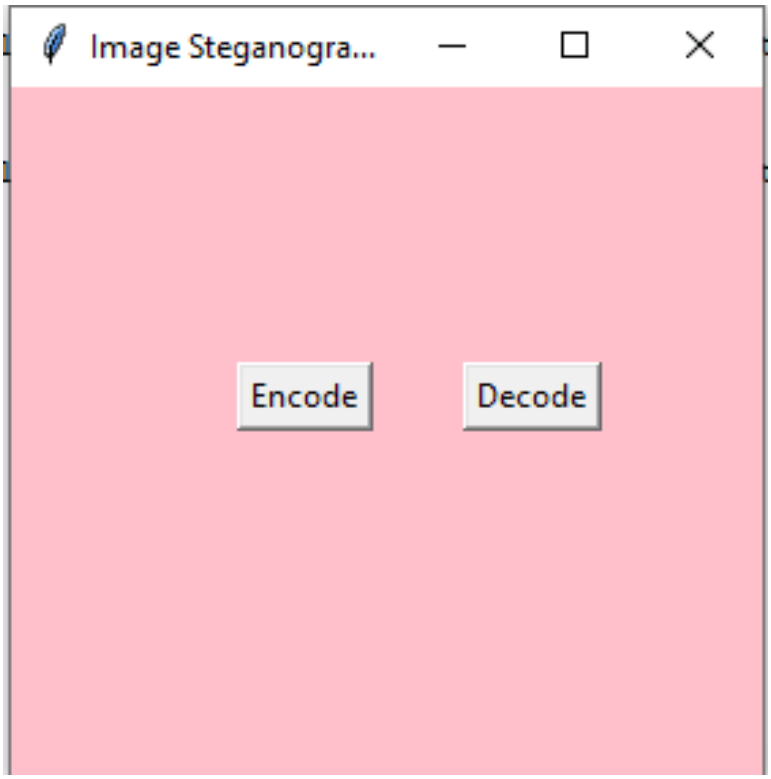
a).Encode

b).Decode

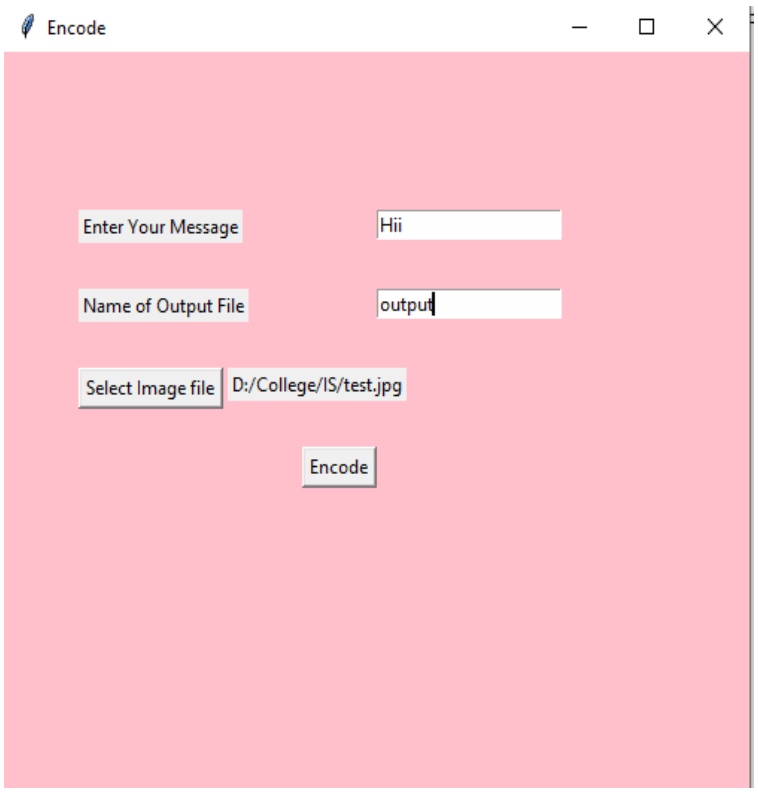
If user selects Encode then he/she has to provide the message and the image file and on clicking the encode button the message will be successfully encoded in the given image.

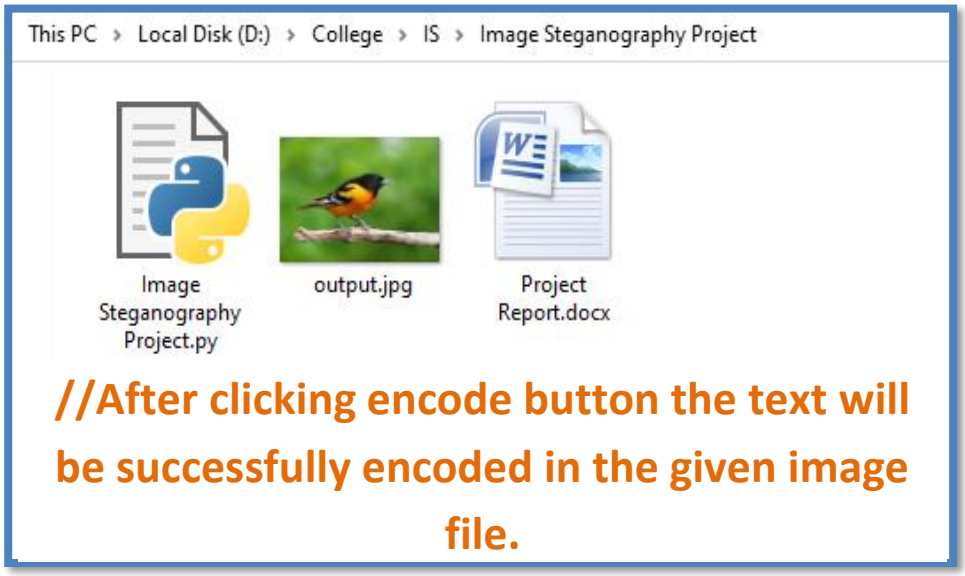
If user selects Decode then he/she has to provide the encoded image file and on clicking the decode button the message will be displayed on the screen.

4. RESULTS



Main Window

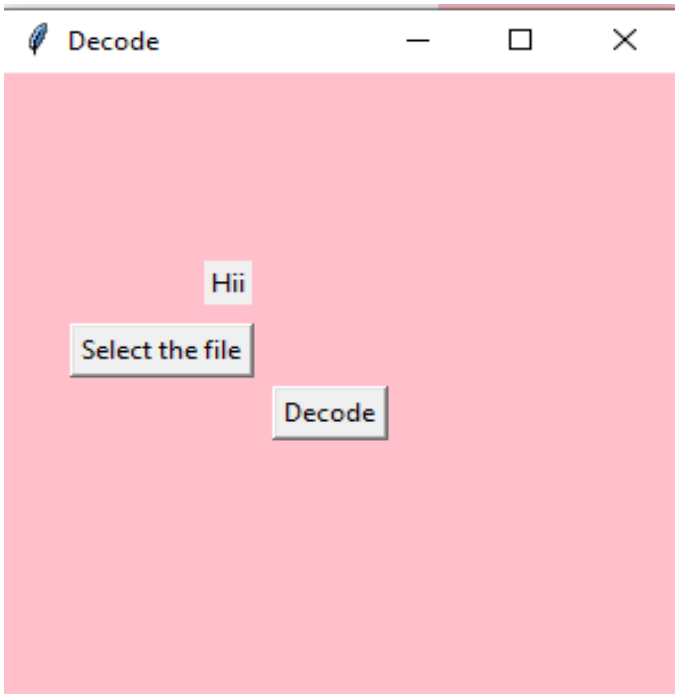




//After clicking encode button the text will be successfully encoded in the given image file.

Original Image

Stego Image



5. CONCLUSION

- Steganography is the nascent stage of development.
- Through steganography is not implemented in wider ways but it can be the best security tool.
- The main problem of today's world is to secure their data confidentially, the techniques used currently are not considered the best which can be only replaced by steganography.
- We have successfully created a GUI interface for Image Steganography for data encryption and decryption.

6. REFERENCES

- https://www.geeksforgeeks.org/image-based-steganography-using-python/
- https://www.tutorialspoint.com/image-based-steganography-using-python
- JIIT Classroom Slides