**A picture containing text, vector graphics, silhouette

Description automatically generated**

**Steganosaurus User’s Guide**

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CMSC 495: Current Trends and Projects in Computer Science

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Due: April 5, 2022

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**About This Application**

Steganography is the practice of concealing a secret message in something that is not secret. It is a simple yet powerful technique for safeguarding and transmitting secret information.

***Steganosaurus*** allows you to explore the realm of information-hiding in images which is the fundamental concept of steganography.

This software allows you to choose and upload any image from your computer, encode that image with your own personal secret message that will then be encrypted, and then finally save the encoded image to your computer. The end result will be an image that looks identical to the original image. However, unbeknownst to the naked eye, deep within the pixels of the image will be your embedded secret message which has also been encrypted using a special encryption key, making the message that much harder to detect and decipher.

Steganosaurus also has the capability to detect, retrieve, decrypt, and display an encrypted message from an image that has been previously encoded. Additional utilities such as deleting and resetting the image to its original state are also included in this application.

**Getting Started**

I don’t know if we want to include a getting started section with things like “installation” and “setup” procedures in the case that we package our code into an executable that can be installed on the user’s computer. For example, does the user need to have Python installed and if so are we going to include python installation steps for those who don’t have it? Or can grandma who doesn’t know what a computer is use this application easily without additional setup?

**Choosing Image**

(GUI STUFF Zhihua)

* Download the Steganosaurus.zip file.
* Unzip the Steganosaurus.zip file.
* Use an IDE with Python 3.9 or newer version, import all the project Python files.
* Click the main.py file to open the file and run the file.
* GUI window displays.
* Click the “Open Image” button.

(I/O STUFF) When the “Choose Image” button is selected, the default File explorer will be opened. Here is where you navigate to the image file that is stored on your computer that you want to use for your steganography. Make sure that the file you select is of a proper image file type. If you accidentally attempt to open a non-image file type, a pop-up window will be displayed alerting you to the error. You may exit out of that pop-up window and retry.

**NOTE:** the file should end with an image file extension. Example:

image1.**png** or

image1.**jpg**

**Encoding Image**

(GUI STUFF Zhihua)

* An image should be uploaded after “Choosing Image”.
* Enter the text message in the text field (No warning message should appear on the GUI window).
* Click the “Encode Image” button.

Enter your secret message in the text box after selecting an image. The number of characters remaining along with the number of characters allowed will be displayed.

**NOTE:** The length of the allowed message will be limited by the size of the selected image.

Press the “encode” button when you are ready to encode the message into the image.

Next, you will be able to either save the image with the encoded message or revert it back to the original image and enter a new message.

Once saved, you can send your secret message as an attachment to an email, text message, or social medial post.

**Decoding Image**

(GUI STUFF Zhihua)

* An image with the encoded text message should be uploaded after “Choosing Image”.
* Click the “Decode Image” button.

Select the image you wish to decode. The message will be displayed in the text window next to the image.

**NOTE:** You may see a garbled message which does not make sense due to no message being encoded. Choose another image if this happens.

**Saving Image to Computer**

(GUI STUFF Zhihua)

* An image should be successfully encoded or decoded after “Encoding Image” or” Decoding Image”.
* Click the “Decode Image” button.

(I/O STUFF) When the “Save Image” button is selected, the default File Explorer will again be opened. You may now navigate to the file location on your computer where your encoded image is to be saved. Alternatively, you may also rename and save the image immediately after opening it before you begin the encoding process in order to make a copy and preserve the original image file.

Congratulations! You have successfully encoded and encrypted an image using steganography! You may now decode this image to reveal the secret message or encode more images by repeating the above steps.

**Resetting Steganography**

(GUI STUFF Zhihua)

* An image should be successfully encoded after “Encoding Image”.
* Click the “Reset Image” button.

(I/O STUFF) When the “Reset Image” button is selected, any secret messages that you have encoded onto the image will be erased, and the image will be restored to its unaltered original form from the time it was uploaded.

**Function below is on hold, please check the “App Expansion Note.docx”.**

**Deleting Image**

(GUI STUFF Zhihua)

(I/O STUFF) When the “Delete” button is selected, the secret message along with the entire image file will be deleted.

**WARNING:** Selecting the delete button will permanently delete this image and all of its data. After selecting this option, a final pop-up warning window will be displayed to you asking if you really want to delete this image. If you select yes on this window, the deletion process will start.

If you select no, the deletion process will be cancelled, and you will return to the main page of the application with your image in the same state as it was before you selected this option.