

Programming 1 - Programming project
Steganography - user's manual

Introduction

Steganography is a way of concealing a file within another file. My programme can cipher messages in a text file (.txt) to an image in PNG format and decipher it back. The message is divided into small parts which are incorporated to pixels of the image in a way that the change of the colour of a pixel is not noticeable by the human eye. It is done by changing the last two bits of a byte representing a colour channel (RGB) to two bits of the message.

Requirements - External libraries

- PIL
- numpy
- os

Text message

Message to cipher must be in a text file (.txt). It should contain only ASCII characters and there can't be more than 5 consecutive dots in the text (.....) as they are used by the program to indicate the end of the text when deciphering.

Image

Image to which the text is ciphered must be in PNG format. It is recommended to use a picture without continuous stretches of colour - like text on a coloured background - because it is possible that the subtle changes of pixels will be visible on such an image.

Image size - you can estimate the number of bytes of text that will fit into the image by calculating: (width of image * height of image * $\frac{3}{4}$). The size of your input text file shouldn't be bigger than that. However, the programme will count this for you and warn you if the image is too small to fit the text.

User Interface

The programme is using a text user interface in console.

Ciphering

- 1) Run the programme. It will ask you if you want to cipher or decipher. Type c (for cipher) and press Enter.

- 2) Type in the file name of the input text file (if it is in the same folder as the code) or the full path to it.
- 3) Repete with the file name of the image you want to cipher into.
- 4) The size of the image is checked. If the image is too small for text, try again with a bigger image file. If the size is ok, the ciphering should start immediately.
- 5) When ciphering is finished the resulting image will pop up for you to review it. It will be saved in the same folder as the input image as *input_image_name.cipher.png*
- 6) Consider changing the name to attract less attention.

Deciphering

- 1) Run the programme. It will ask you if you want to cipher or decipher. Type d (for decipher) and press Enter.
- 2) Type in the file name of the image to decipher (if it is in the same folder as the code) or the full path to it.
- 3) Deciphering should start immediately.
- 4) The deciphered text will be saved in the same folder as the input image as *input_image_name.result.txt* .