EncStego:
An Encrypted Steganography App

Instruction Manual

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1. Loading the App

1.1. Software Requirement

You must have MATLAB R2017a or later installed to be able to use the program.

1.2. Installation Directory

The .zip file containing the app and its required functions can be unzipped in the user's desired folder. After running the app for the first time, the necessary folders will be created in the said folder.

2. Using the App

2.1. Hide Media
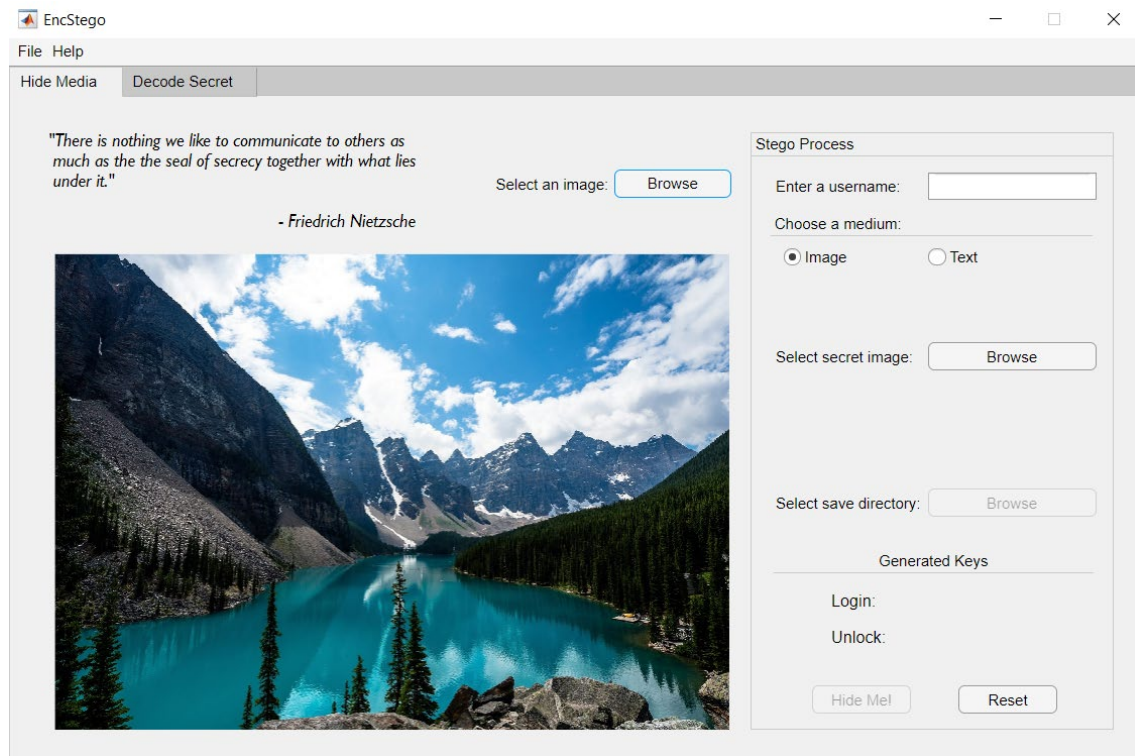
Figure 1: *Hide media window after picking a cover image*

By default, the app will load to this tab. Initially, the window will only show the 'Select the image' button selection.
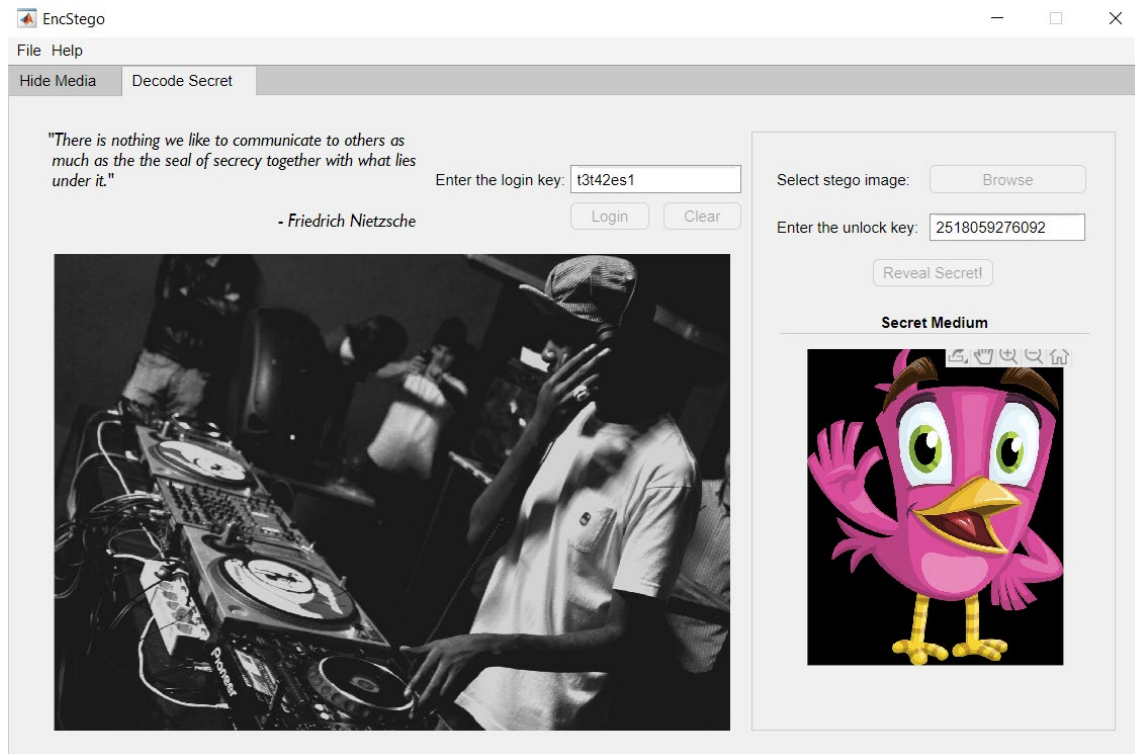
2.1.1. Instructions

a. Select a cover image in .bmp format.
b. Enter a username to be associated with the media decoding.
c. Choose a secret medium:
  - If the image button is selected, select the secret image.
  - If the text button is selected, enter the secret message in the provided textbox.
d. Select the save directory for the resulting stego image.
e. If all parameters are filled up, click the 'Hide Me' button.
  - If one or more parameters is to be changed, click the 'Reset' button.
f. The login and unlock keys required for decoding will be generated.

2.1.2. Messages

- Error:

  "Field cannot be blank! Enter a username."

  - You must enter a username to complete the encoding process.

  "Secret medium cannot be empty!"

  - You must select a secret image or fill up the textbox with the secret message to complete the encoding process.

  "The secret medium cannot be hidden! Please try again."

  - You must select a new cover image for your secret medium.

- Success:

  "The medium has been successfully encoded."

  - Make sure to make a copy of the login and unlock keys before clicking the 'OK' button, since clicking said button will clear the window.

2.2. Decode Media

Figure 2: *Decode media window after revealing a secret image*

It is assumed that the user possesses the required login and unlock keys, as well as the corresponding stego image when accessing the 'Decode Secret' tab.

2.2.1. <u>Instructions</u>

    a. Enter the pre-shared login key.

    b. Once verified, select the stego image associated with the account.

    c. Enter the pre-shared unlock key.

- If an incorrect unlock key was entered, the app will display the number of incorrect tries. If the tries reached 3, the window would clear out.

    d. If the key is verified, the secret medium will be displayed in the lower-right part of the window.

2.2.2. <u>Messages</u>

- <u>Error:</u>

  "User does not exist!"

  \- You must enter a valid username that is saved within the program.

  "Selected image is not associated with the user."

  \- You must select the proper image associated with the account.

- <u>Success:</u>

  "The hidden medium has been successfully revealed!"

  \- If desired, save the secret image or copy the enter secret image before clicking the 'OK' button.

3. App Revisions

The following revisions were applied to the app's current version (Version 2.0):

- Added the *DiffMatrix3* and *DiffToOrig3* functions to be able to hide and decode RGB images, respectively.
- Added the Instructions and About menu tabs under the Help section and removed the encode/decode steps in the main windows.
- Added an *integrity check* in the "Hide Media" function to ensure that the Huffman code stream is embedded properly.
- Fixed bugs that existed in the previous version.