COMP 8505

Assignment #2 –Steganography - Instructions

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Overview

This document is a brief instructional guide to using a steganography tool created in QT. This application is cross platform and therefore works on both Windows and Linux identically.

This particular steganography tool was tailored to be used with 24-bit bitmap images but any file type can be embedded into the images as secret. The primary functionality of this tool relies on the ability to toggle bits on and off. The toggled bits signify the bit positions in the colour channels of each pixel. For example, having only bit 0 checked means that only the least significant bit in the red, green, and blue channel will be used to hide secret data.
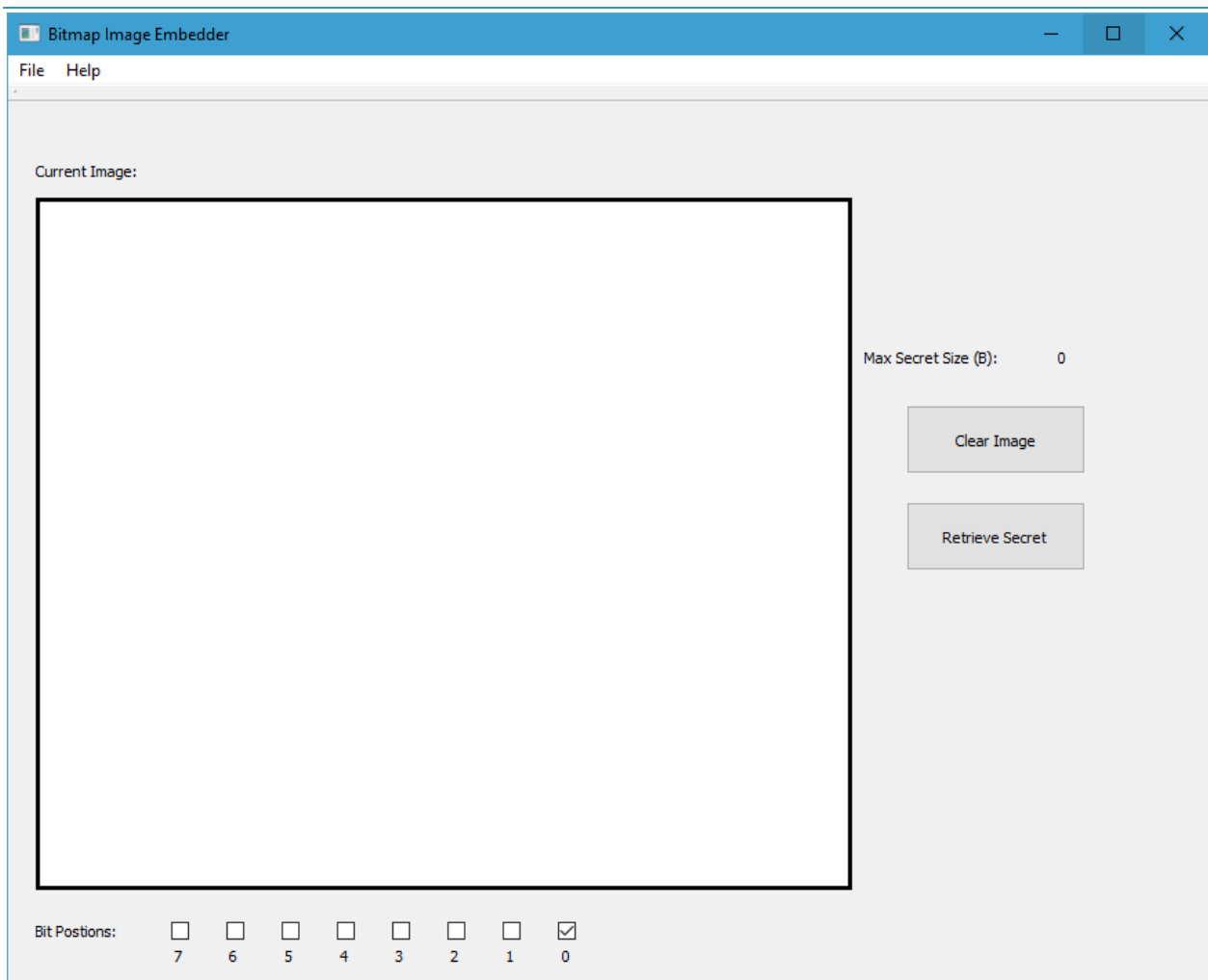
Instructions

Figure 1 - Initial launch of the tool

When the application is initially launched, the above window will appear. There are three main areas of interest to the user: the drag and drop image view, the bit positions to toggle, and the two buttons. A menu bar is also available for those that prefer menus.

Embedding a Secret

To first embed a secret file in an image, an image must be dropped into the largest box. Once this carrier image is in place, the file path will be displayed above the image view. The maximum secret size is also updated to reflect how big of a file can be embedded into this carrier based off the current number of bits toggled via the checkboxes below the image view. In addition to this, the image view will contain the image dropped. The image displayed is quite large most likely, and it can be panned and examined in depth.
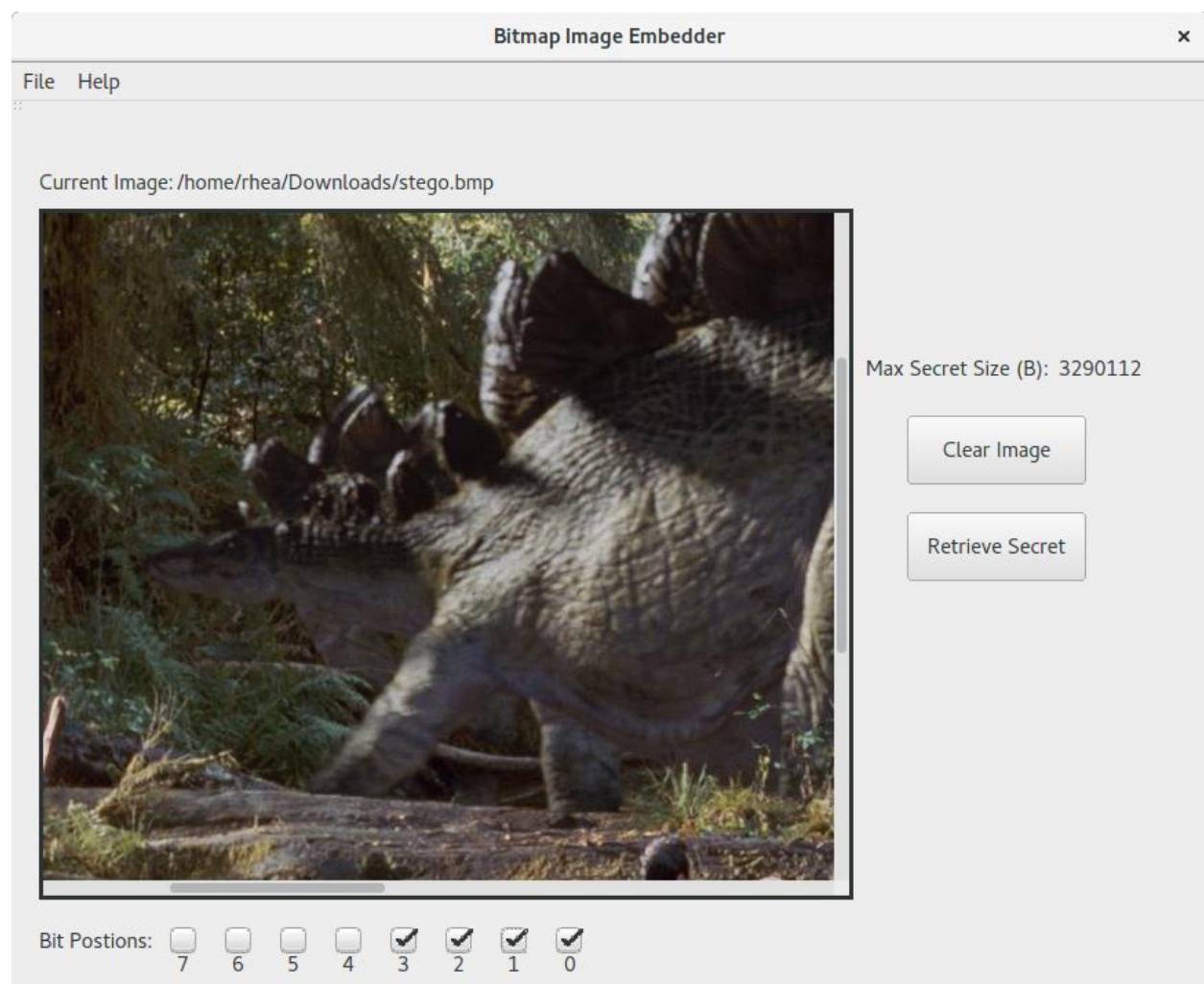

Figure 2 - Carrier Image Added and Bits Selected

Now that a carrier image is in the window, the secret file can be added by dragging and dropping it into the image view as well. The steganography algorithm will run immediately without further input as soon as the secret is dropped and it has confirmed that the file will fit into the carrier.
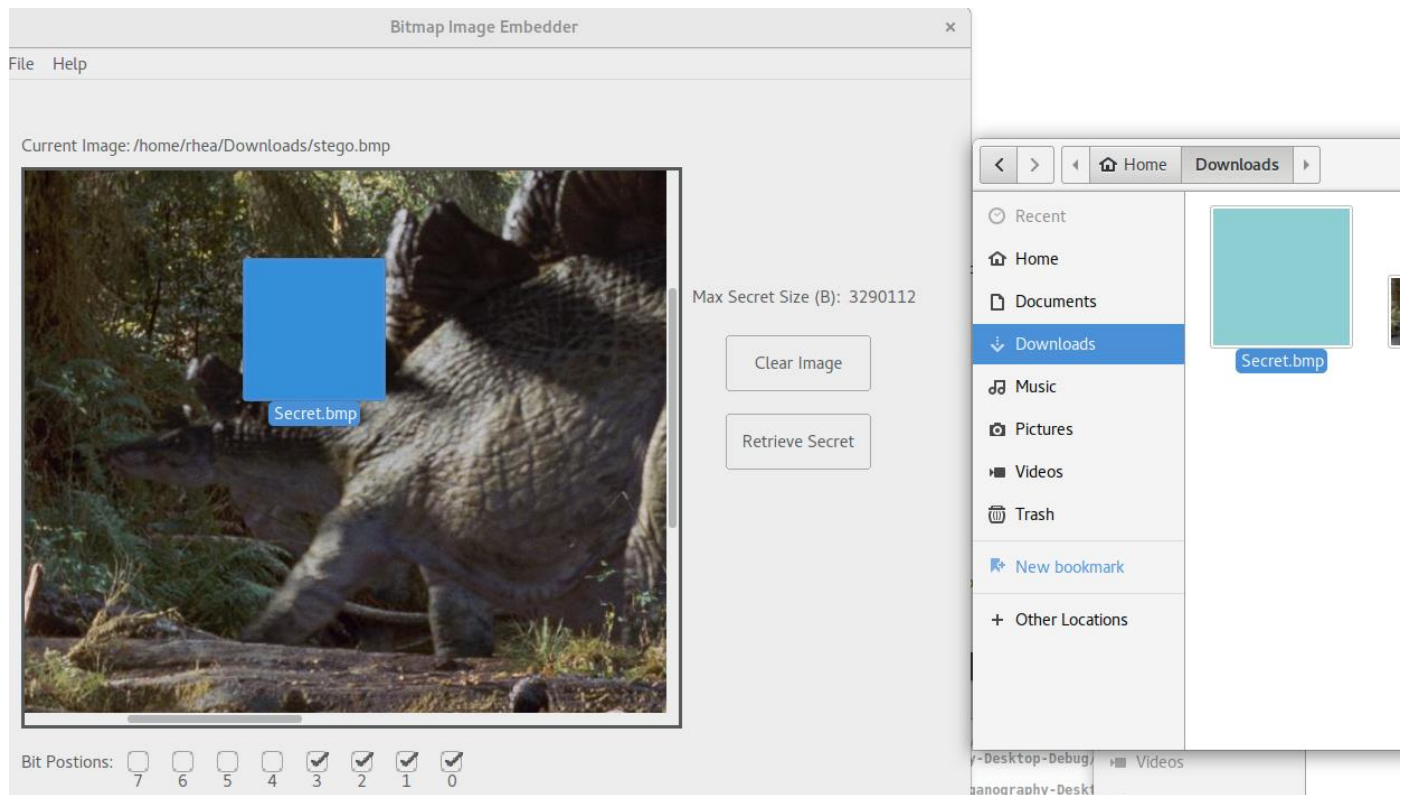
Figure 3 - Drag and Dropping a Secret Image

Once the algorithm completes, the image view will update with the resulting image and a popup window will appear to display the success or failure of the embedding process.
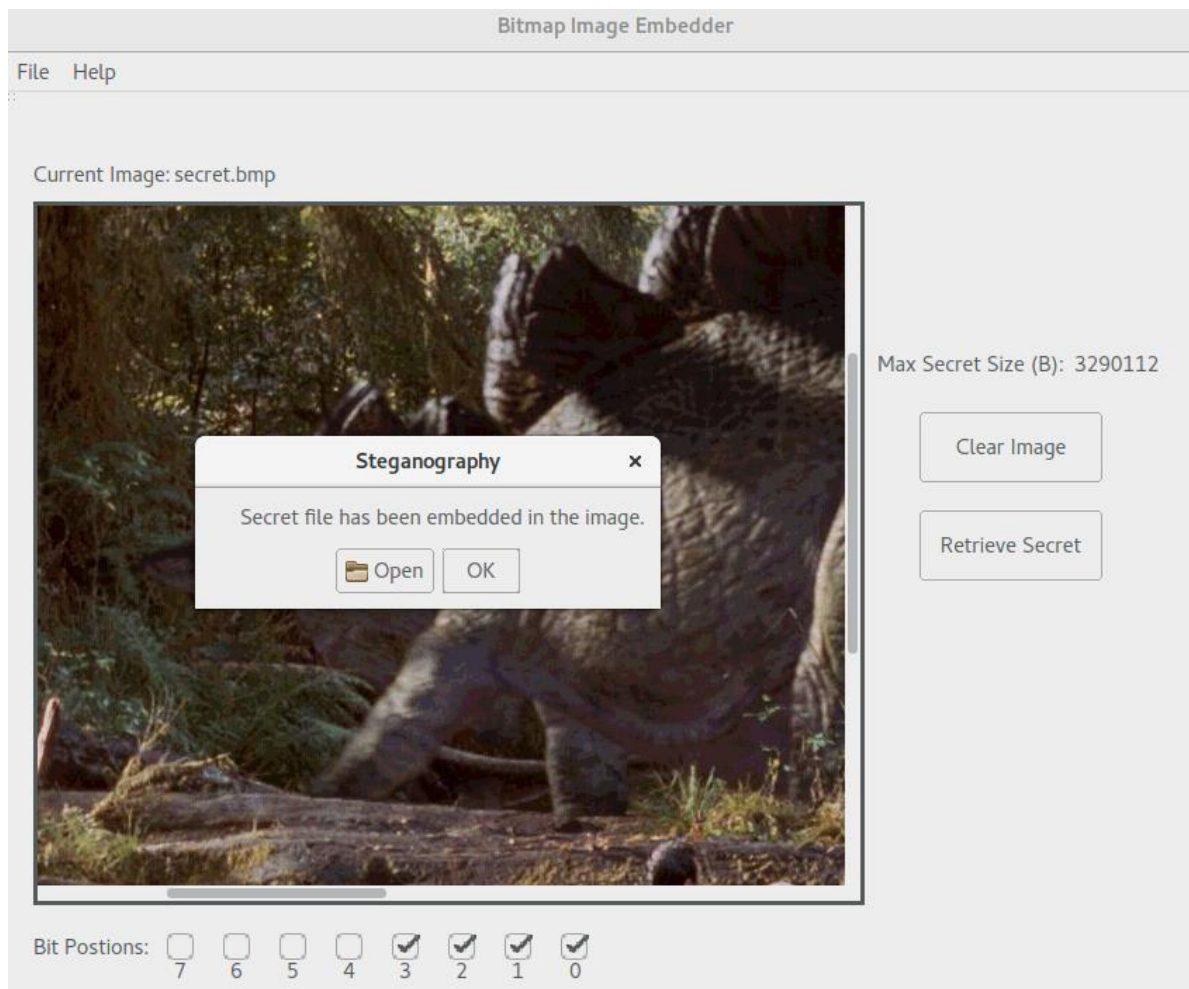
Figure 4 - Secret Successfully Embedded

Pressing the "Open" will open the resulting image in your image viewer of choice. Pressing "OK" will simply dismiss the popup. Using the image viewer, you can now examine the results of the algorithm.

From here, you can then choose to start a new image and embed more secrets by pressing the "Clear Image" button which will empty the image view. Pressing the "Retrieve Secret" button will attempt to pull a secret out of the image currently in the image view.

Retrieving a Secret

To retrieve a secret from an image, first drop the image with a secret image embedded into the image view. Next, make sure the correct bit positions are set below the image view for retrieval, otherwise the data will not be pulled out of the correct positions of the RGB channel. After the bit positions are set, simply press the "Retrieve Secret" button. Once the secret has been successfully retrieved (or not in the scenario that the image does not contain a secret based off the bit positions) a dialog box will be displayed.
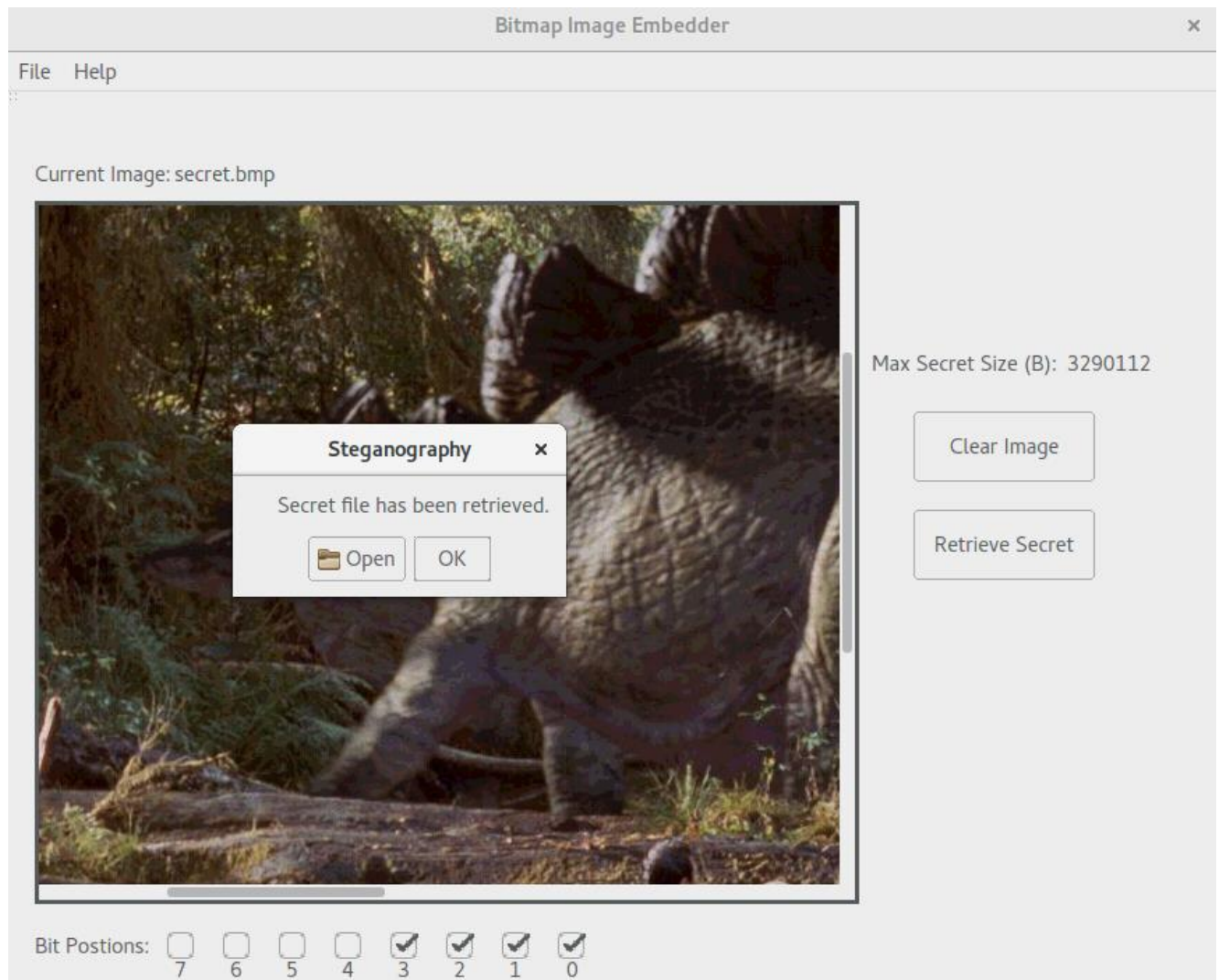
Figure 5 - Secret Successfully Retrieved

Pressing the "Open" in the dialog box will open the secret file in its corresponding program. Pressing "OK" will simply dismiss the popup.