USER MANUAL
IMAGE PROCESSING PROJECT

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APPLICATION DESCRIPTION

The Image Processing application in this project will manipulate or enhance digital images entered by users.

Application Capabilities

a. Purposes and Scope
- Rotate image
- Reduce image size
- Flip image horizontally and vertically
- Blur image
- Sharpen image
- Add noise to image
- Convert image to its Negative
- Brightens image
- Convert image to its Grayscale
- Save the manipulated image

b. General Descriptions.

The purpose of the application is to manipulate the image provided by the user. Therefore, the features provided by the Image Processing application are:
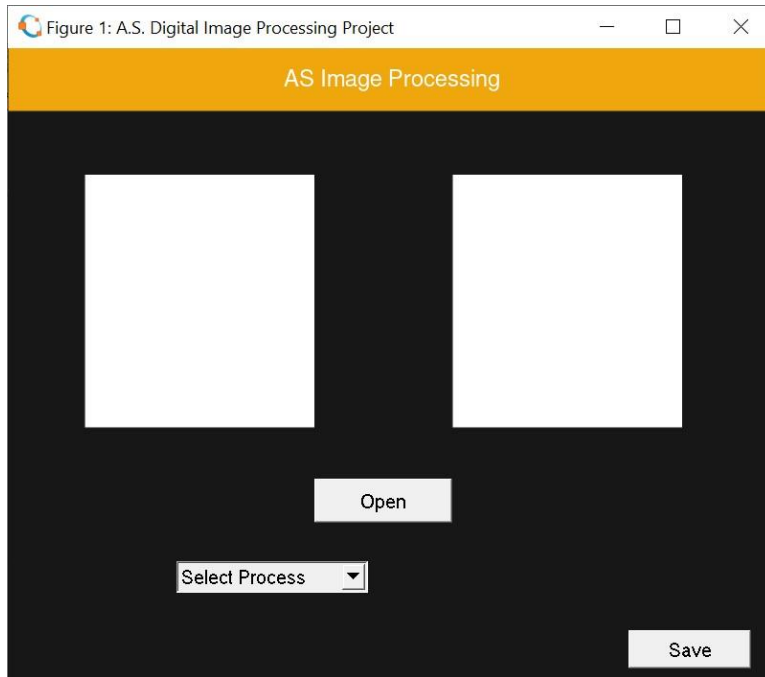- An "Open" button which will pop up a new window for the user to select and open the image they prefer to be manipulated from their own PC.
- Menu option to select the process the user wants to manipulate the selected image. The processes that can be selected consist of: "Rotate", "Scale", "Flip", "Blur", "Sharpen", "Noise", "Negative", "Brighten", and "Gray Scale".
- Save the manipulated image into the user's PC storage which can be done by clicking the "Save" button.

Platform Requirements

- Windows XP
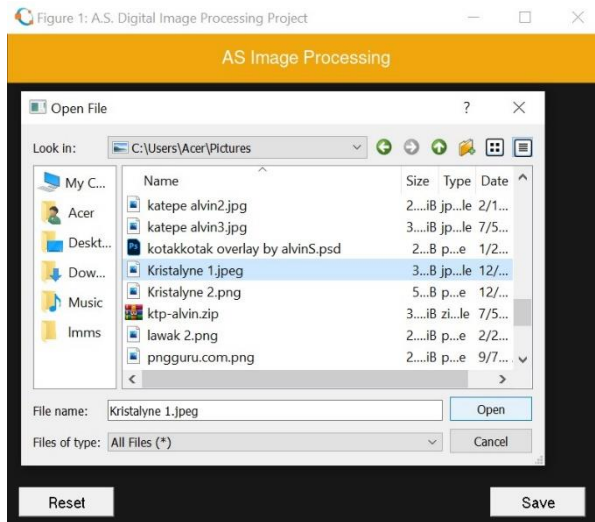- Windows Vista
- Windows 7
- Windows 8
- Windows 10

USING THE APPLICATION

This application can only be run via octave by running the octave script on the file named "DIP_FinalProject_AxelSengkey_AlvinSengkey.m" which has been provided.
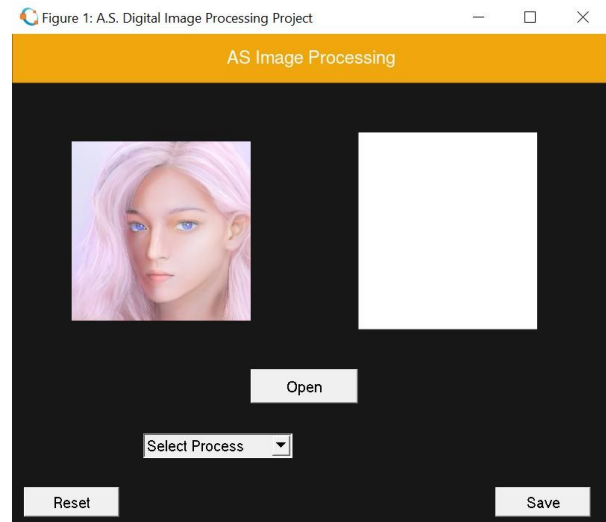

Figure 1. First view after running the application

After run the script, a new window will appear and you can see the first view of the application as shown in *figure 1*. At first, you can see two empty boxes where you will see the image before manipulated at the left side and after manipulated at the right side, an "Open" button, an options menu to select a process, and a "Save" button.
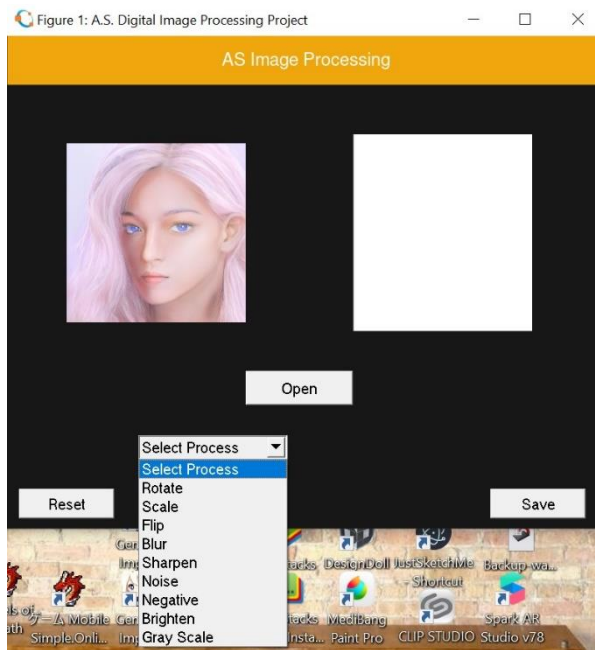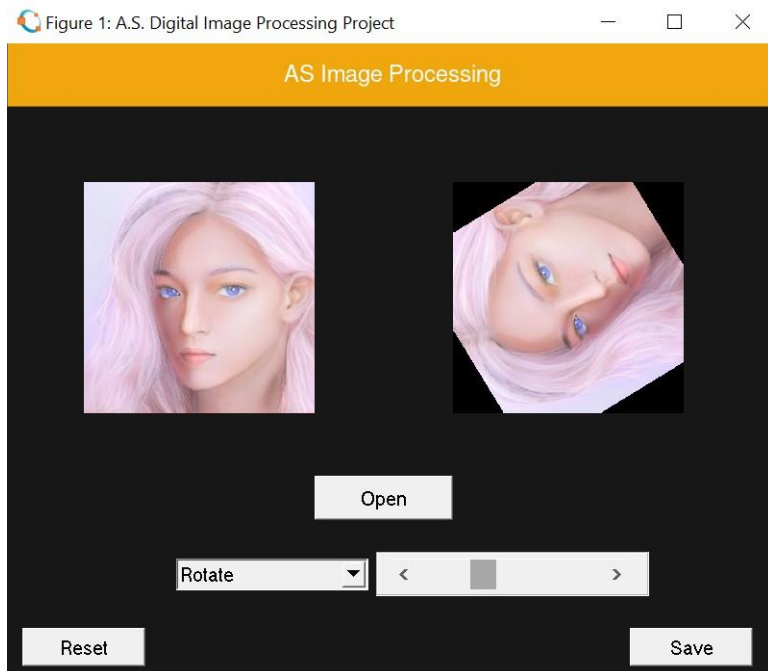
Figure 2. Select an image

Figure 3. selected image

To open an image, click the "Open" button and you can see a new window appear for selecting image from your PC as shown in *figure 2*. Select an image and click *open*. After that, the image you selected will be shown on the left empty box as shown in *figure 3*.
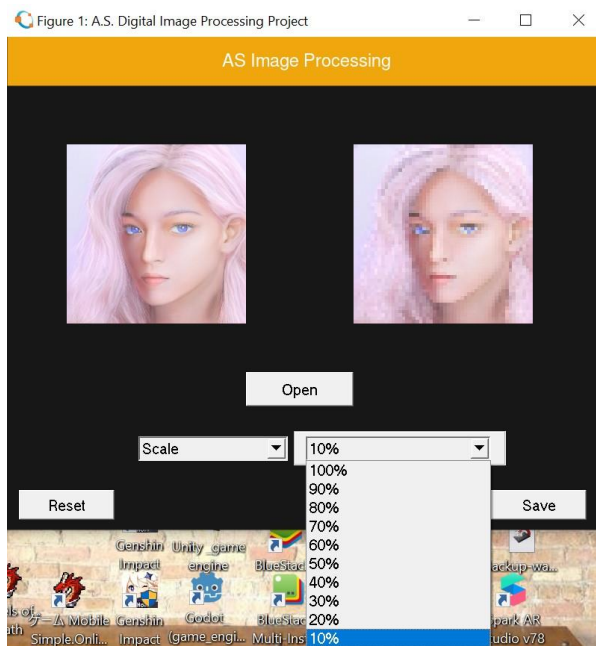

Figure 4. Menu options

To manipulate the image, you have to select what process you want to perform on your selected image by clicking the "Select Process" menu and selecting one of the available options as shown in *figure 4*.
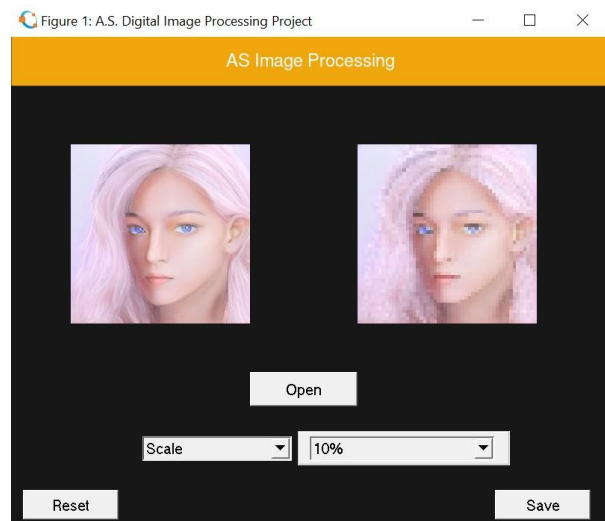
Figure 5. Rotate image

To rotate the image, select "Rotate" from the options menu and as shown in *figure 5*, a slider will appear and you can move the slider to determine the rotation direction. You can move the slider from left to right. The most left side means 0° and the most right side means 360°.
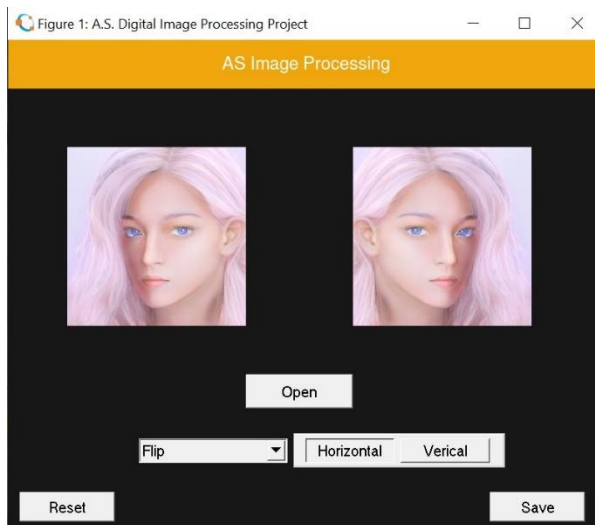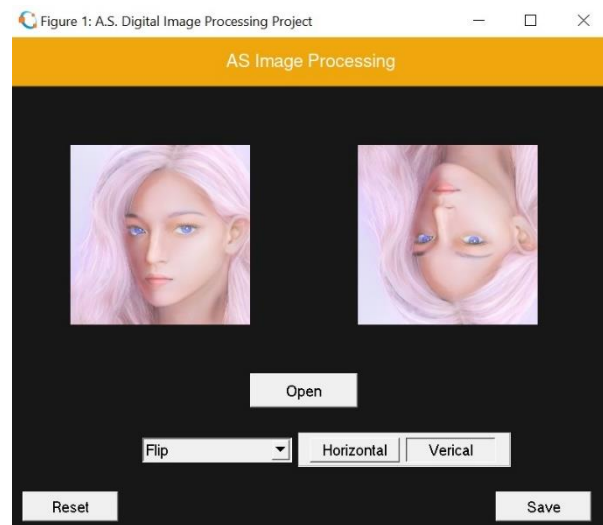

Figure 6. Select scale number

Figure 7. Reduce size to 10% of the original size

To reduce the image size, select "Scale" from the options menu and as shown in *figure 6,* you can also choose the scale you want from 10% to 100% of the image. For example, if you select 10% as shown in *figure 7,* the image size will be reduced to 10% of the original image size.
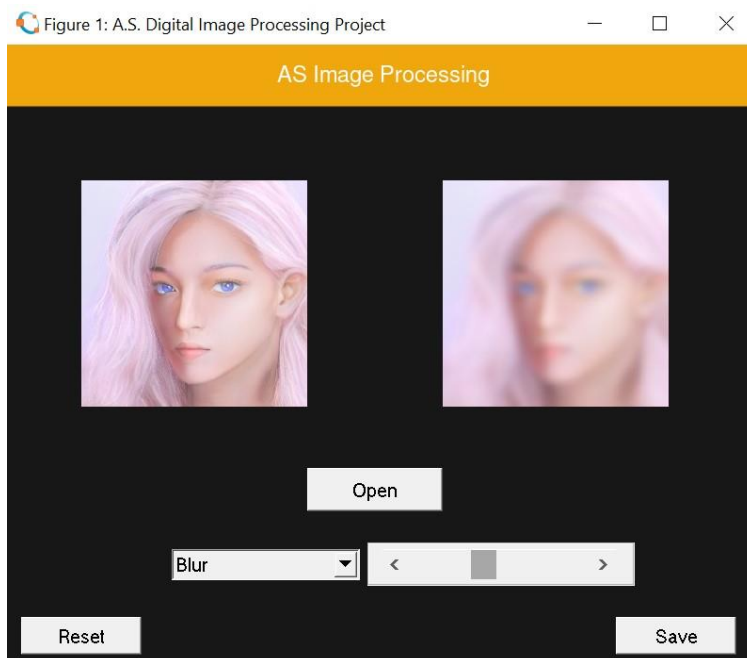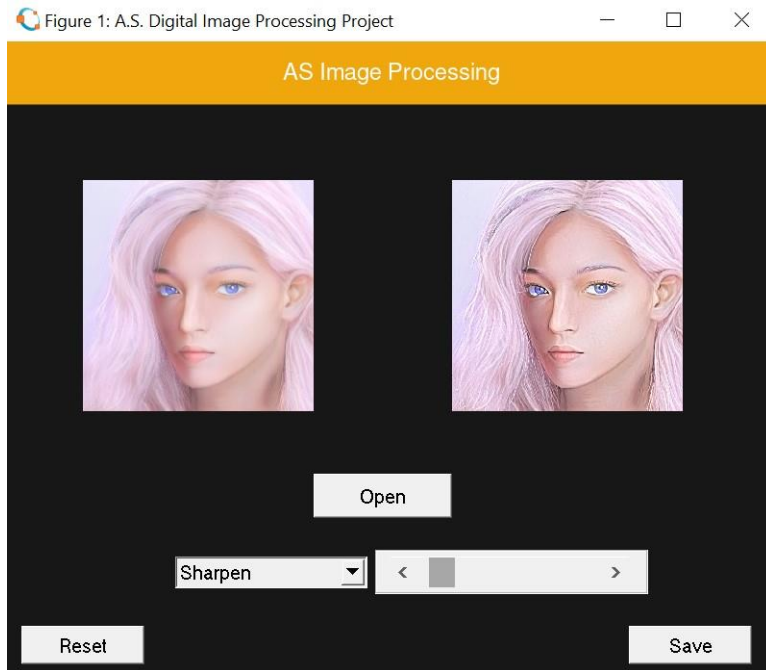

Figure 8. Horizontal flip

Figure 9. Vertical flip

To flip the image, select "Flip" from the options menu and you can see another two buttons appear which are the "Horizontal" button to flip image horizontally, and the "Vertical" button to flip image vertically. You can click one of the buttons to apply the horizontal or vertical flip to the image as shown in *figure 8* and *figure 9.*
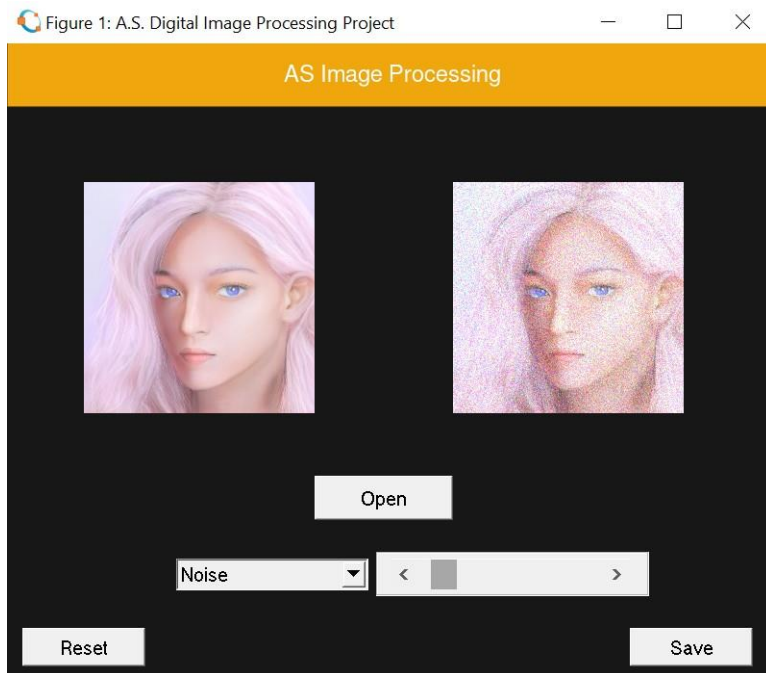

Figure 10. Blur image

To blur the image, select "Blur" from the options menu and as shown in *figure 10*, you can move the slider to specify the amount of blur. You can move the slider from left to right. The more to the right the blurrier the image.
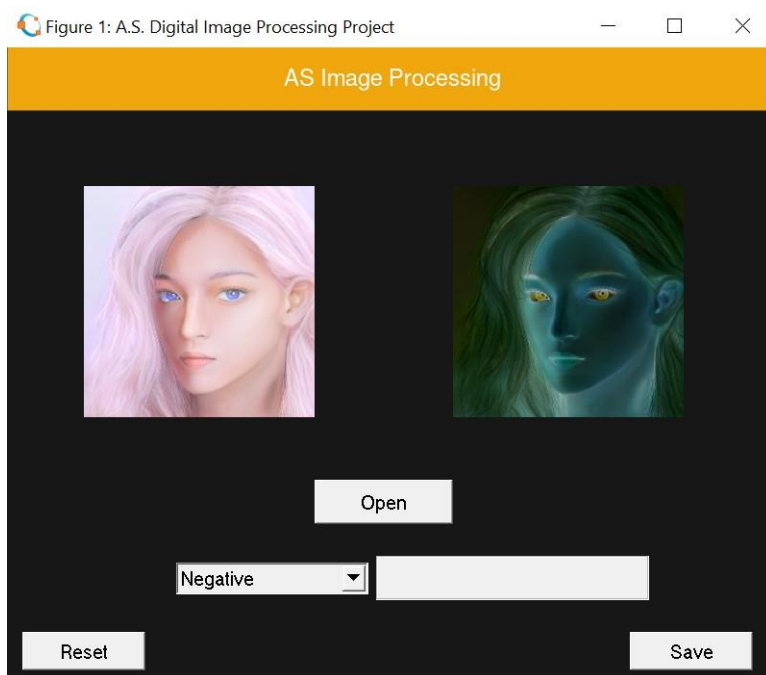

Figure 11. Sharpen image

To sharpen the image, select "Sharpen" from the options menu and as shown in *figure 11*, you can move the slider to specify the amount of sharpening. You can move the slider from left to right. The more to the right the sharper the image.
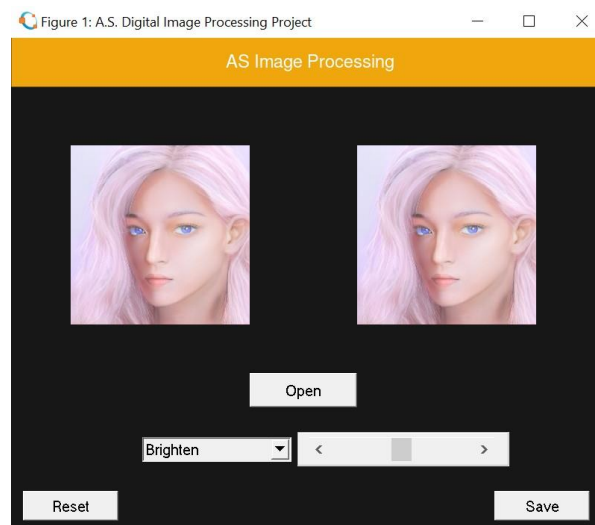
Figure 12. Noise image

To add noise to the image, select "Noise" from the options menu and as shown in *figure 12*, you can move the slider to specify the amount of noise. You can move the slider from left to right. The more to the right the more noise in the image.
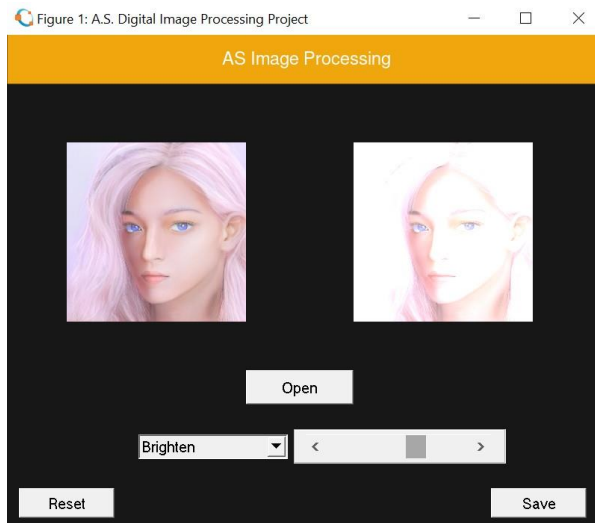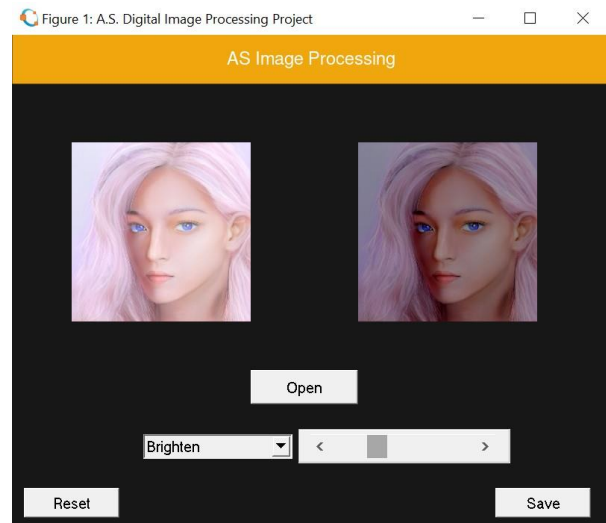

Figure 13. Negative image

To convert the image color to its negative, select "Negative" from the options menu and as shown in *figure 13*, the image color will be changed to its negative color.

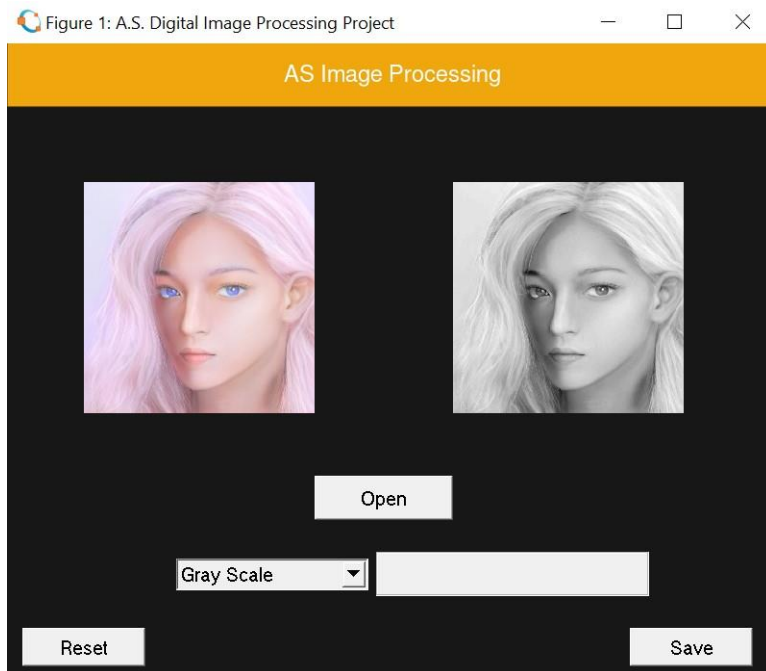**Figure 14. Slider for the amount of brightness**
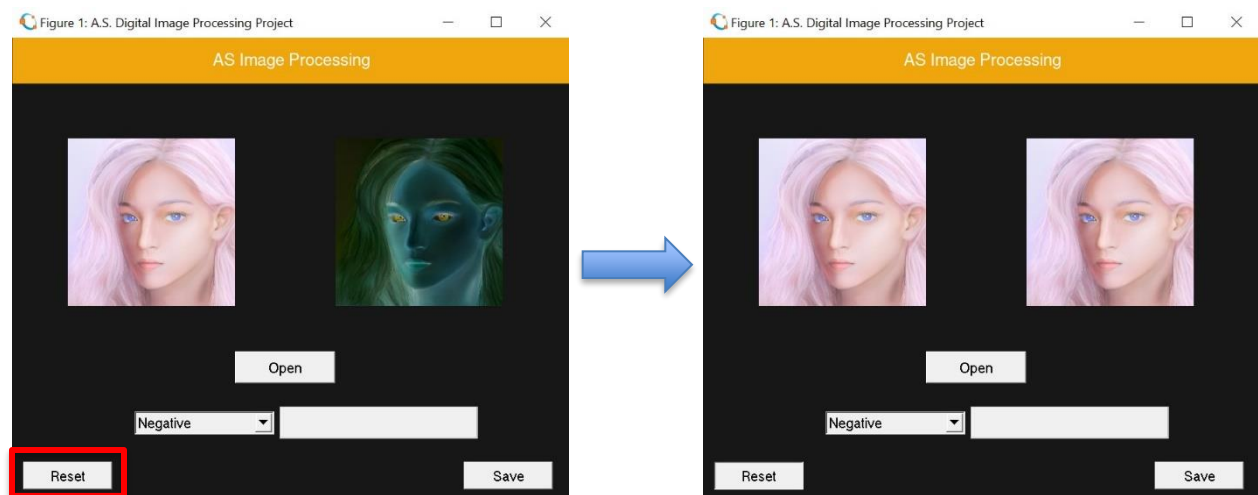

Figure 15. Brighten image

Figure 16. Darken image

To adjust image brightness, select "Brighten" from the options menu and as shown in *figure 14*, there will be a slider to specify the amount of brightness. You can move the slider from center to left or right. As shown in *figure 15* and *figure 16*, the more to the left the darker the image and the more to the right the brighter the image.
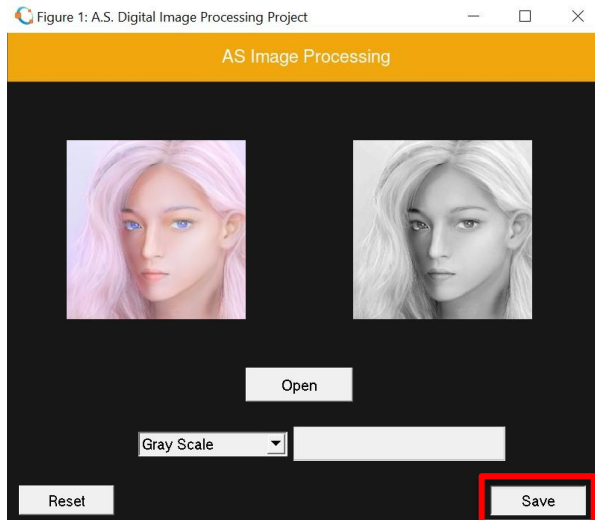
Figure 17. Grayscale image

To convert the image color to its grayscale, select "Gray Scale" from the options menu and as shown in *figure 17*, the image color will be changed to its grayscale color.
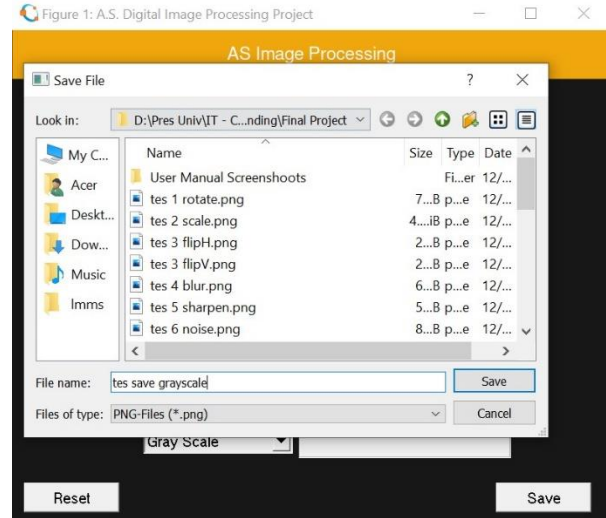

Figure 18. Reset image

To reset the manipulated image back to the original image, click the "Reset" button in the bottom-left of the application as shown in *figure 18*.

Figure 19. Save button

Figure 20. Put the file name

To save the manipulated image to your PC, click the "Save" button and a new window will pop up for the user to save the image with the name they want as shown in *figure 19* and *figure 20*.