FACULTY OF ENGINEERING
Cairo University

Systems and biomedical
Engineering Department

Computer Vision Task 1 Report

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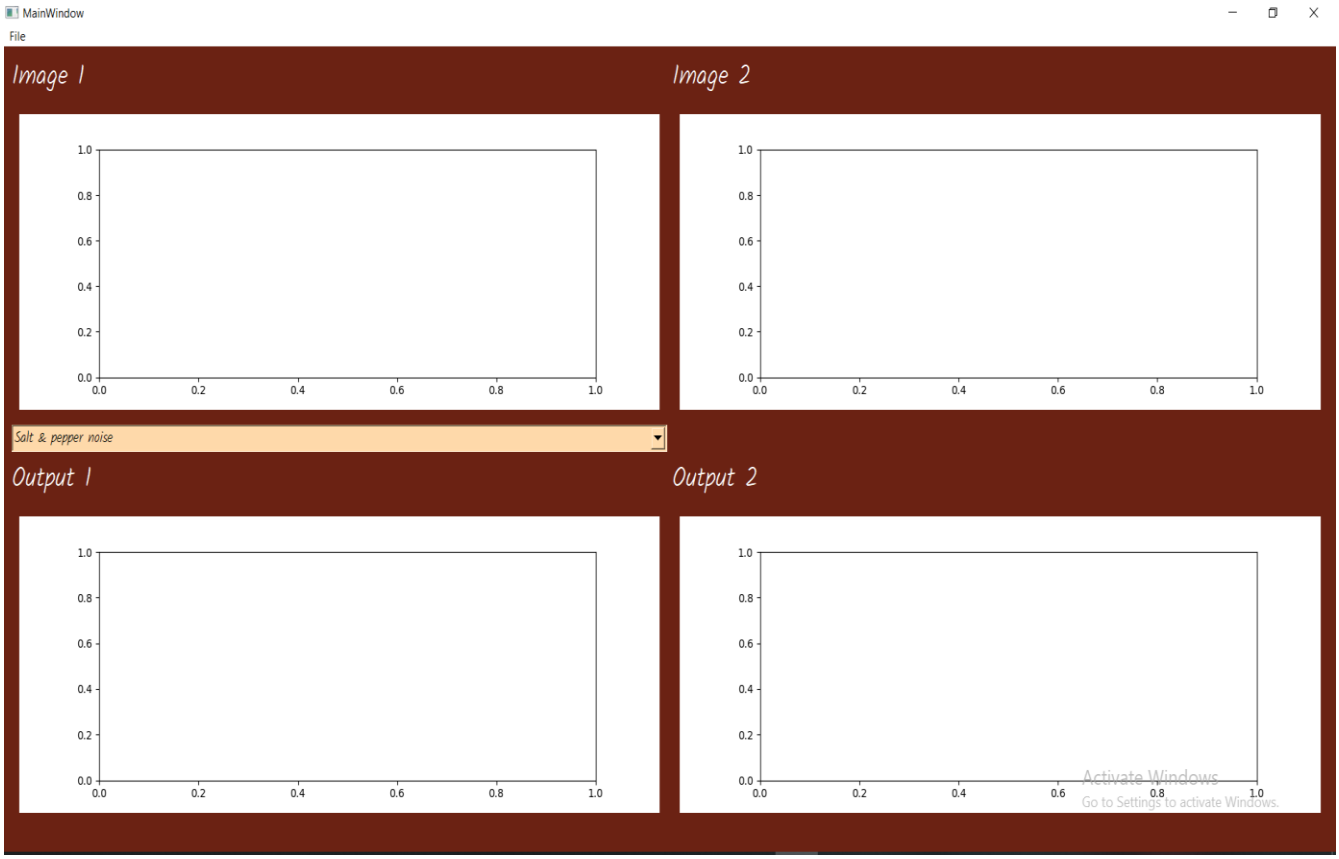
• Contents:

1- How to use the GUI:



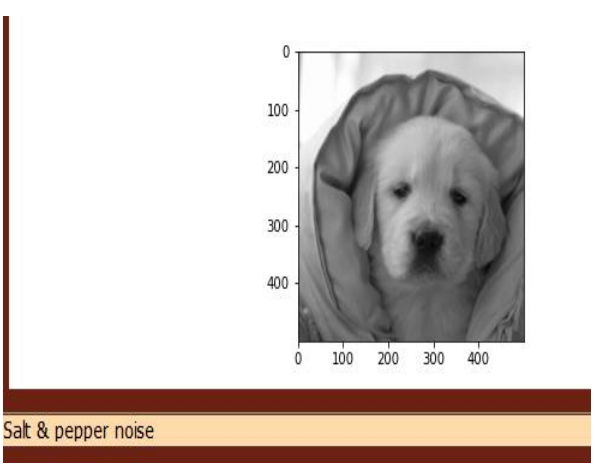
- Click on File from the menu bar, you will see two options, Load img 1 and Load img2
    - Click on Load img 1 to open an image in the image 1 area and click on Load img 2 to Load an image in the image 2 area.
    - You can Load both gray scale images and colored images.
    - The image 2 area is used to Load the second image used to generate a hybrid image.
    - The image 1 is the main image that we use to apply the filters and masks and other functions.

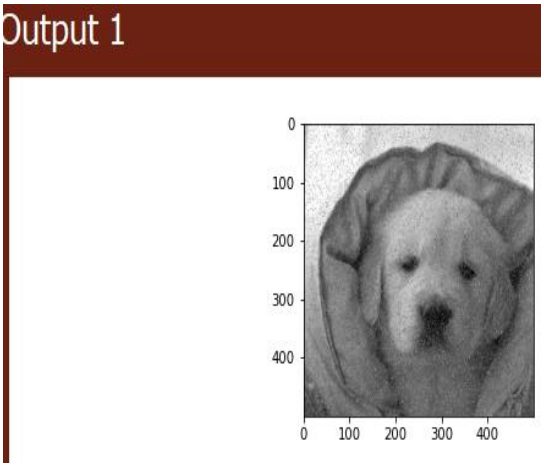
- Click on the combo box and pick any of the tasks required:
    - The tasks are applied on Image 1 and the output is displayed on the Output 2 area.
    - In the output 1 area the result of applying the salt and pepper is displayed, so output 1 area holds the noised image.

- The low pass filters in the spatial domain are applied on the noised image displayed in the output 1 area and the resulted filtered image is displayed on the output 2 area.

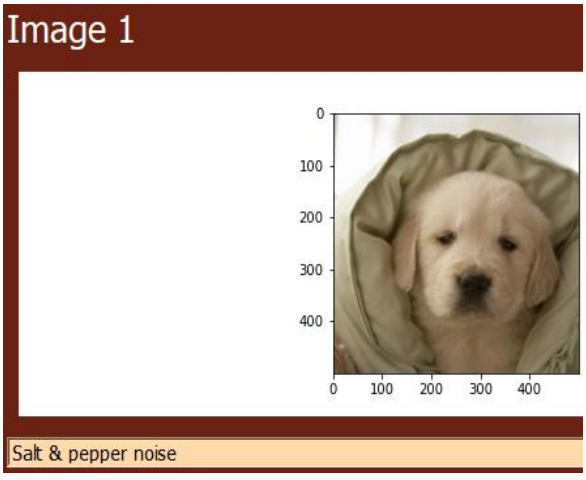
2-Salt and pepper noise

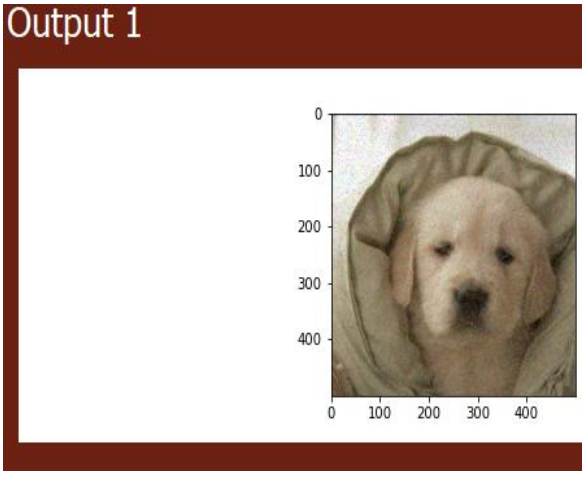
For gray scale image





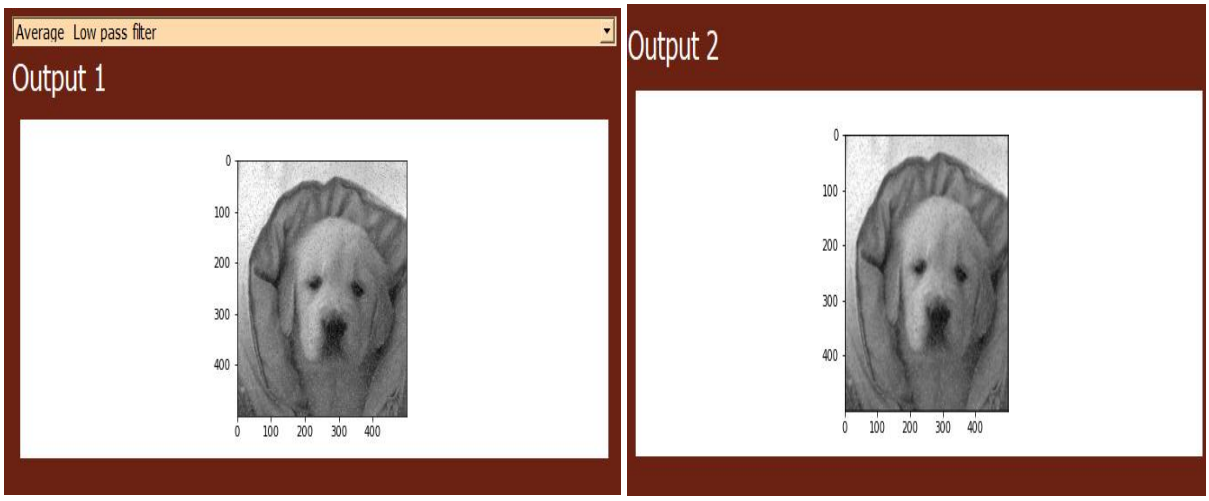
For RGB image



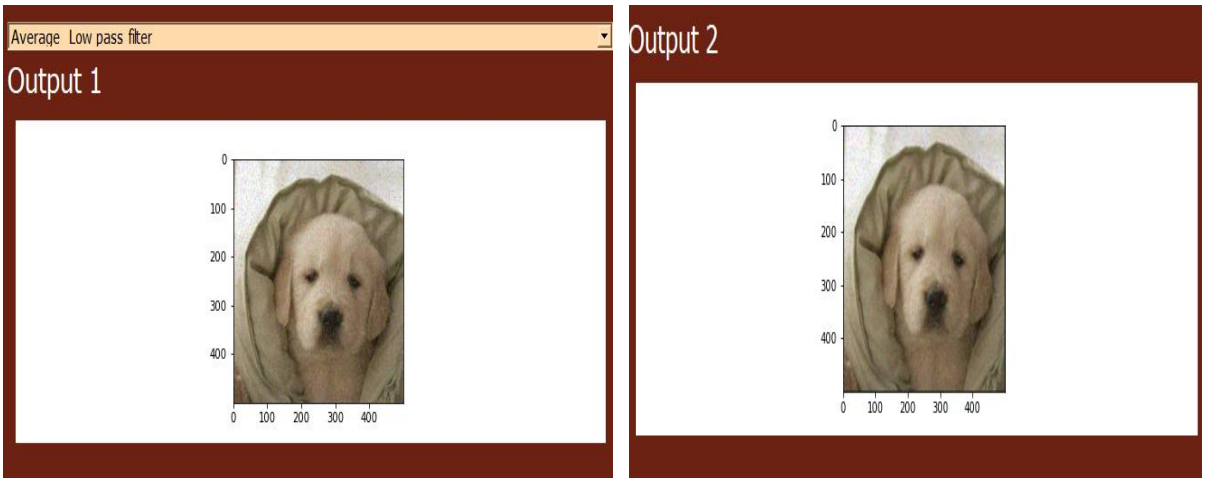


3-Average Filter:

For noisy gray scale image

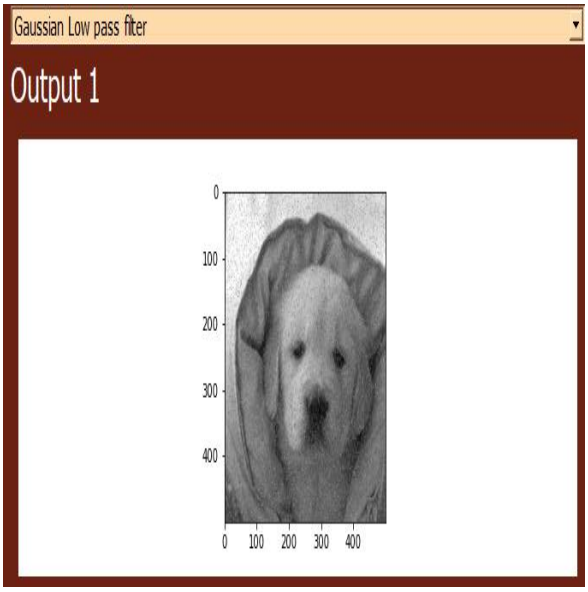


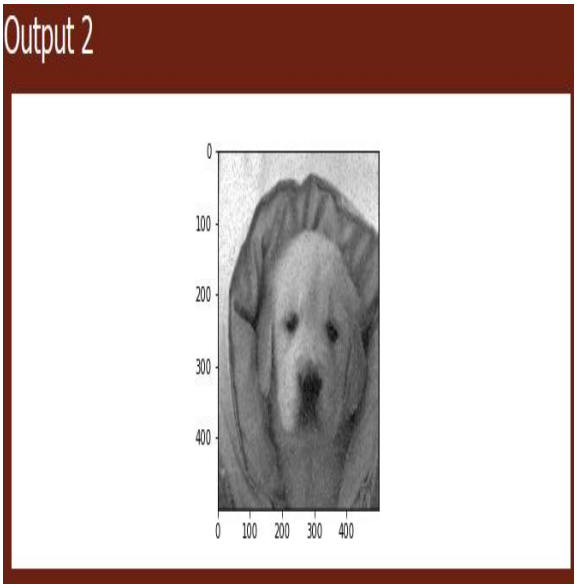
For noisy RGB image



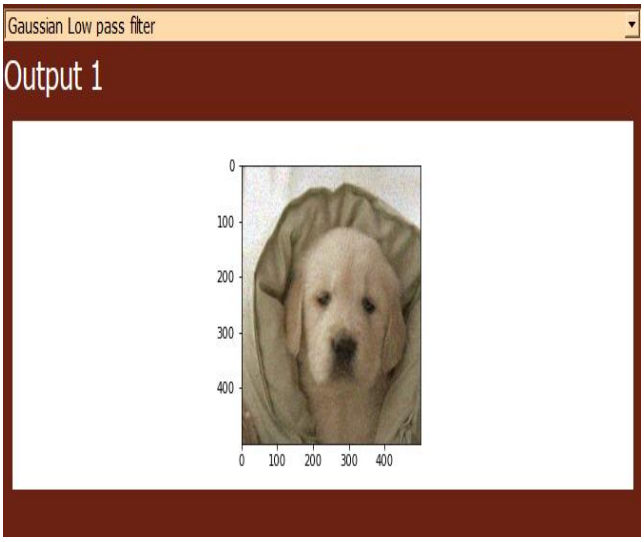
4-Gussian Filter:

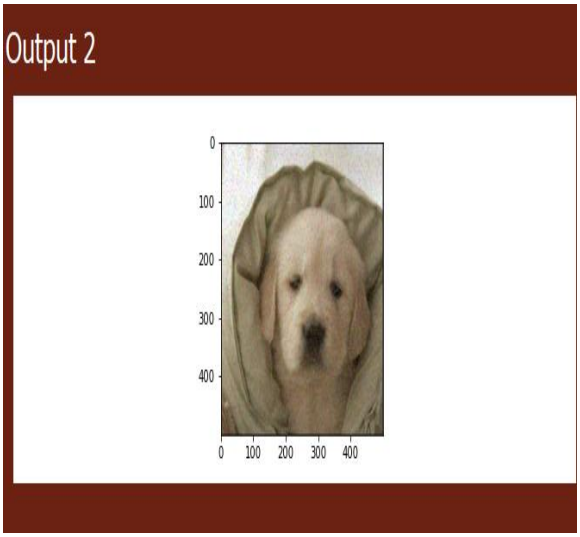
For noisy gray scale image





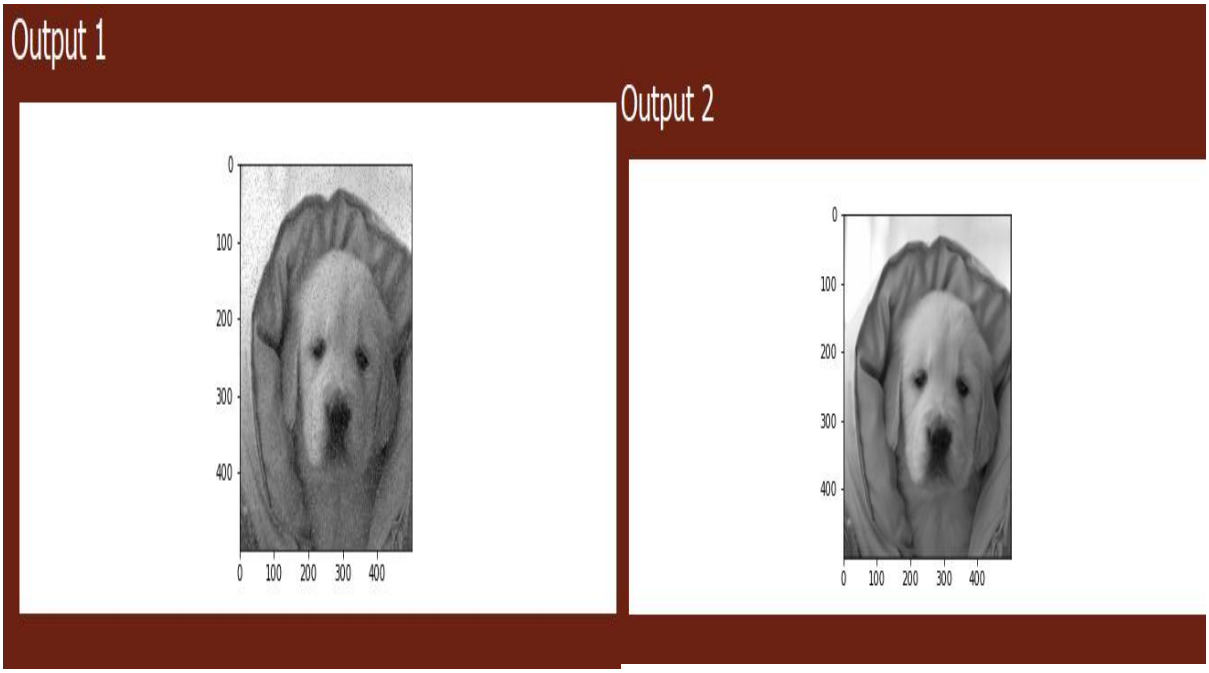
For noisy RGB image



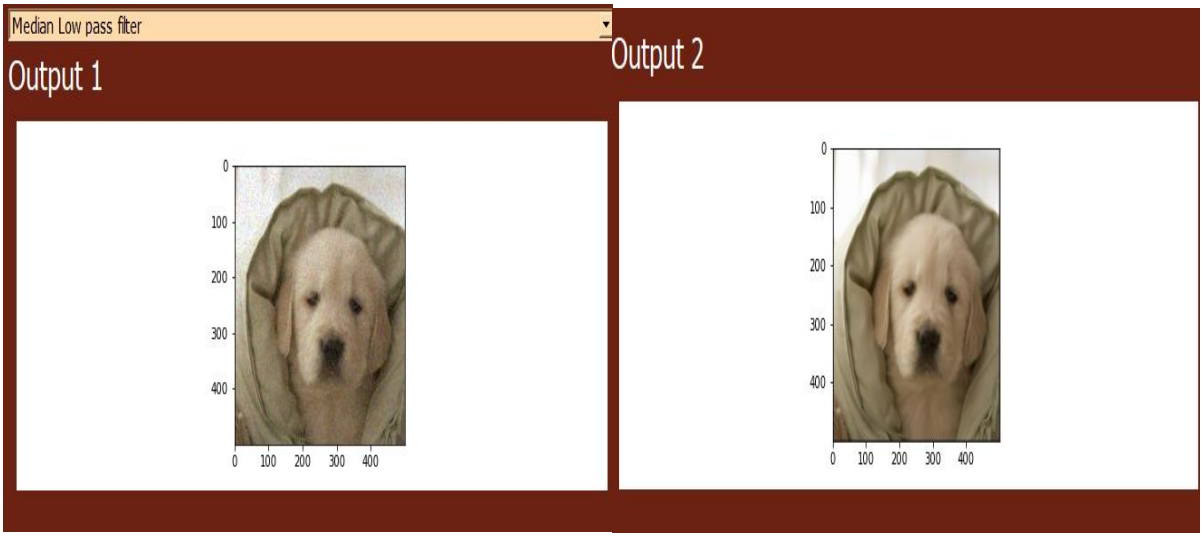


5-Median Filter:

For noisy gray scale image

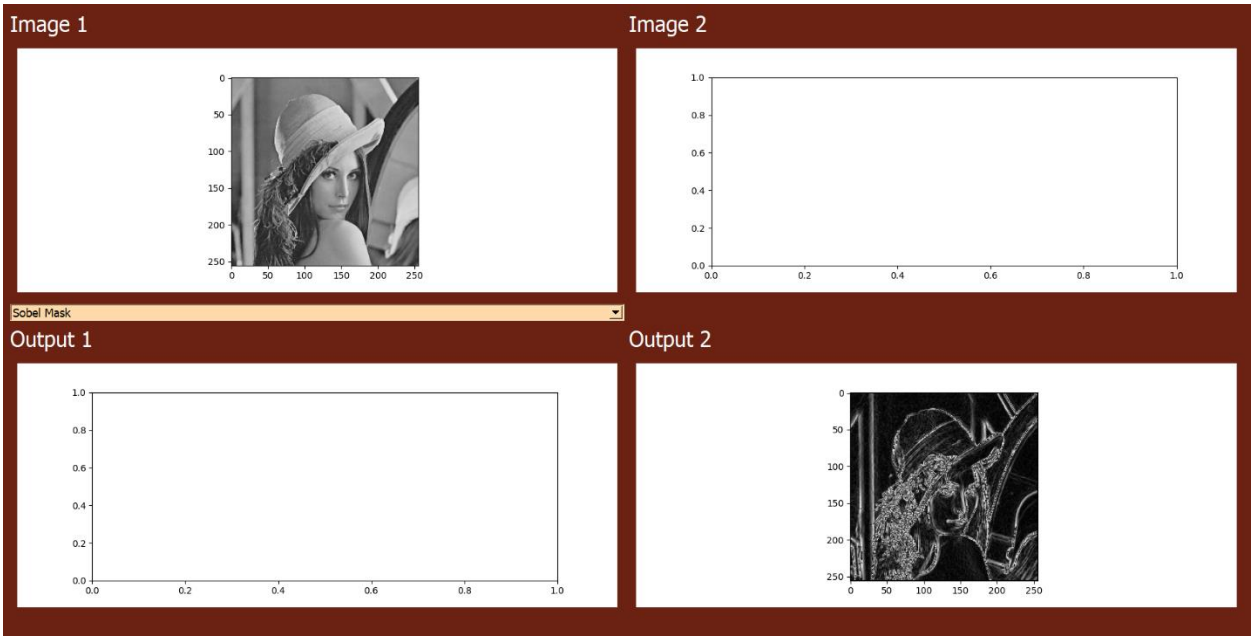


For noisy RGB image

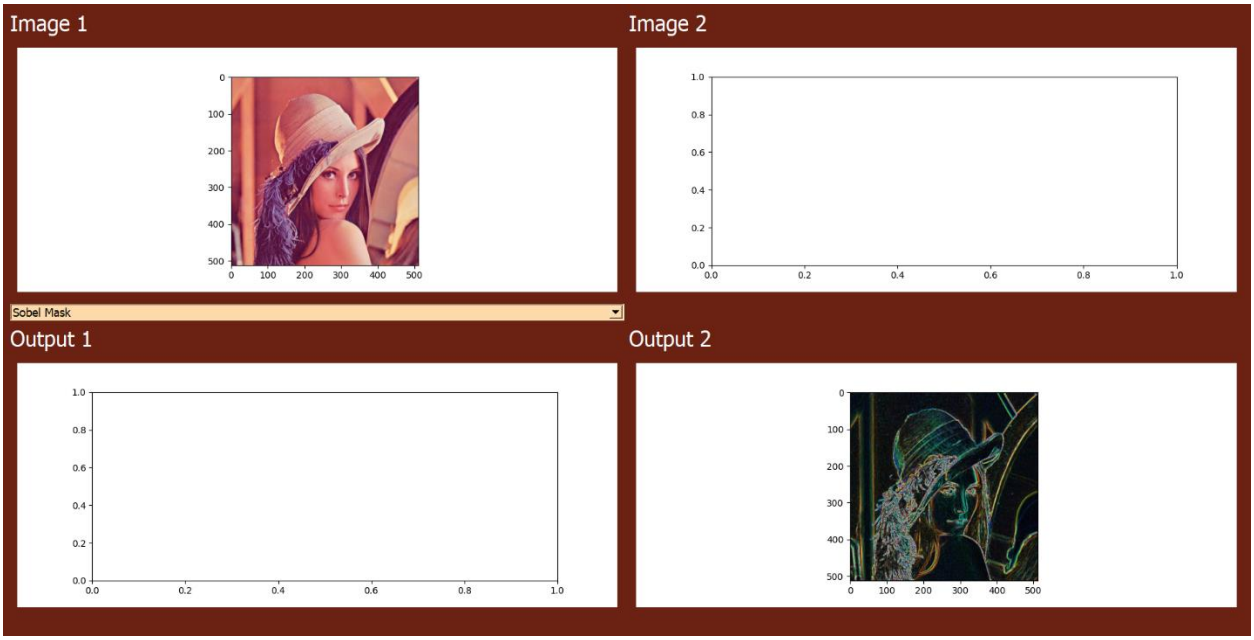


6- Sobel Mask

- The result of applying Sobel mask on a grayscale image.

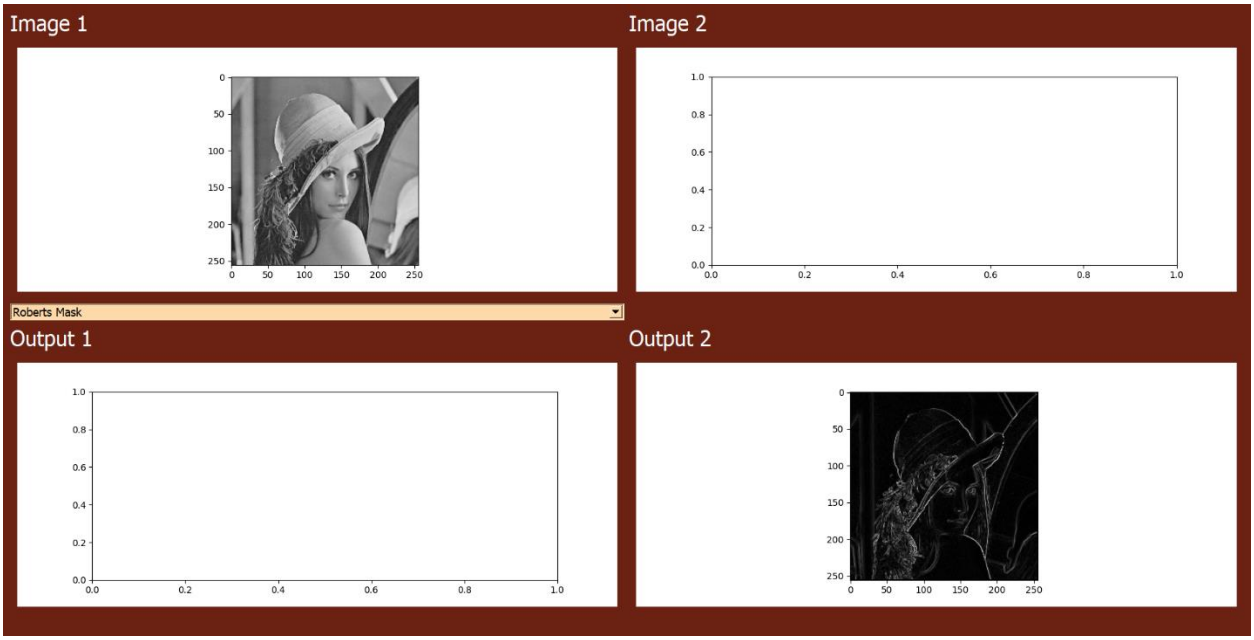


- The result of applying Sobel mask on a colored image.

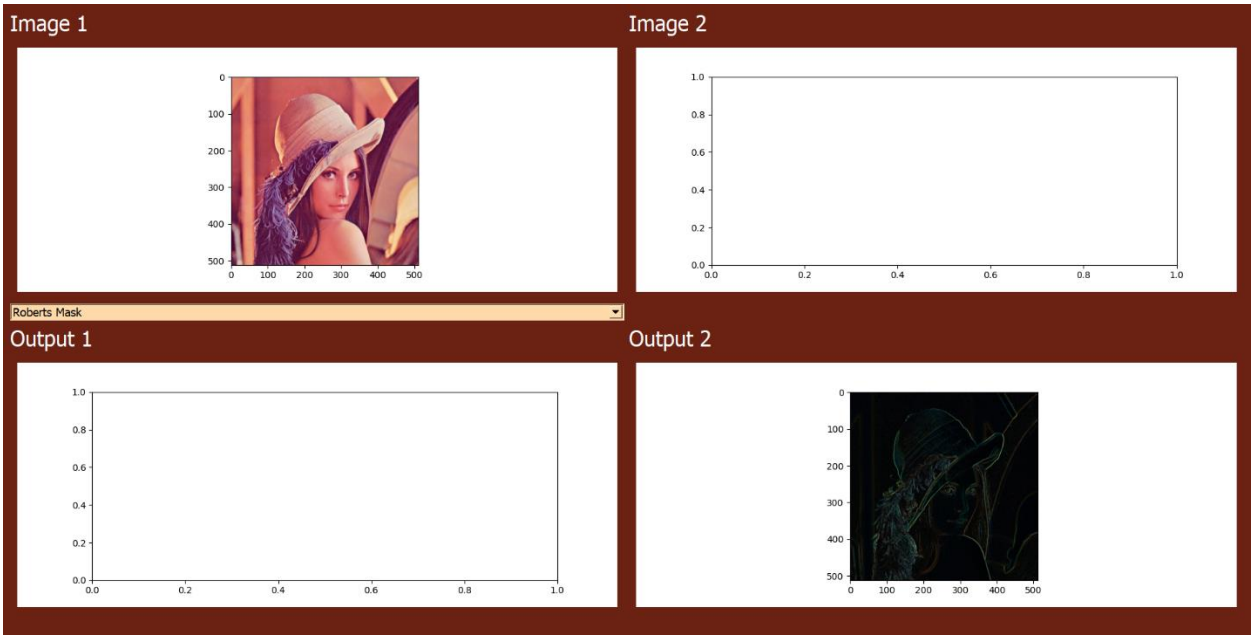


7- Roberts Mask

- The result of applying Roberts mask on a grayscale image.

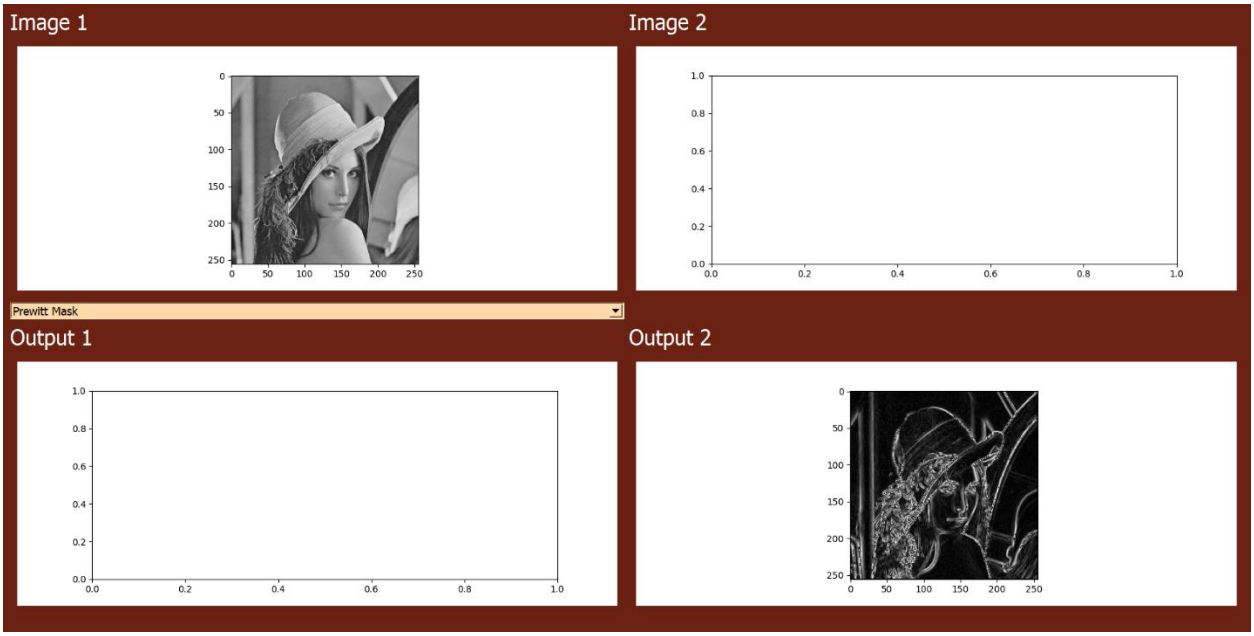


- The result of applying Roberts mask on a colored image.

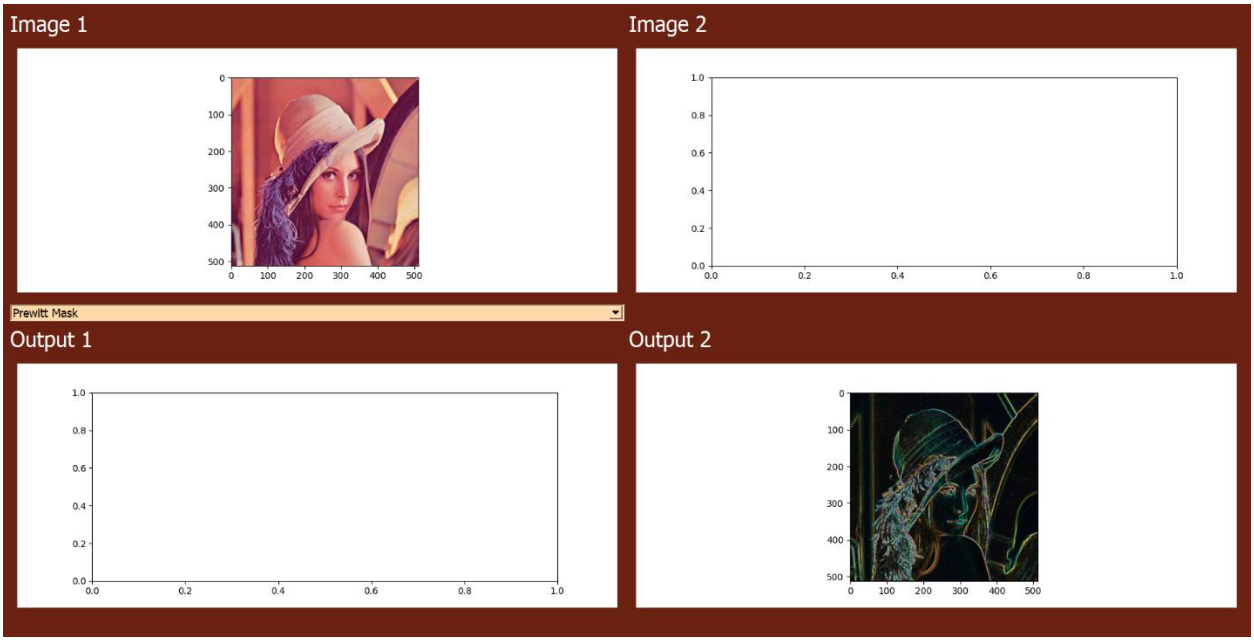


8- Prewitt Mask

- The result of applying Prewitt mask on a grayscale image.

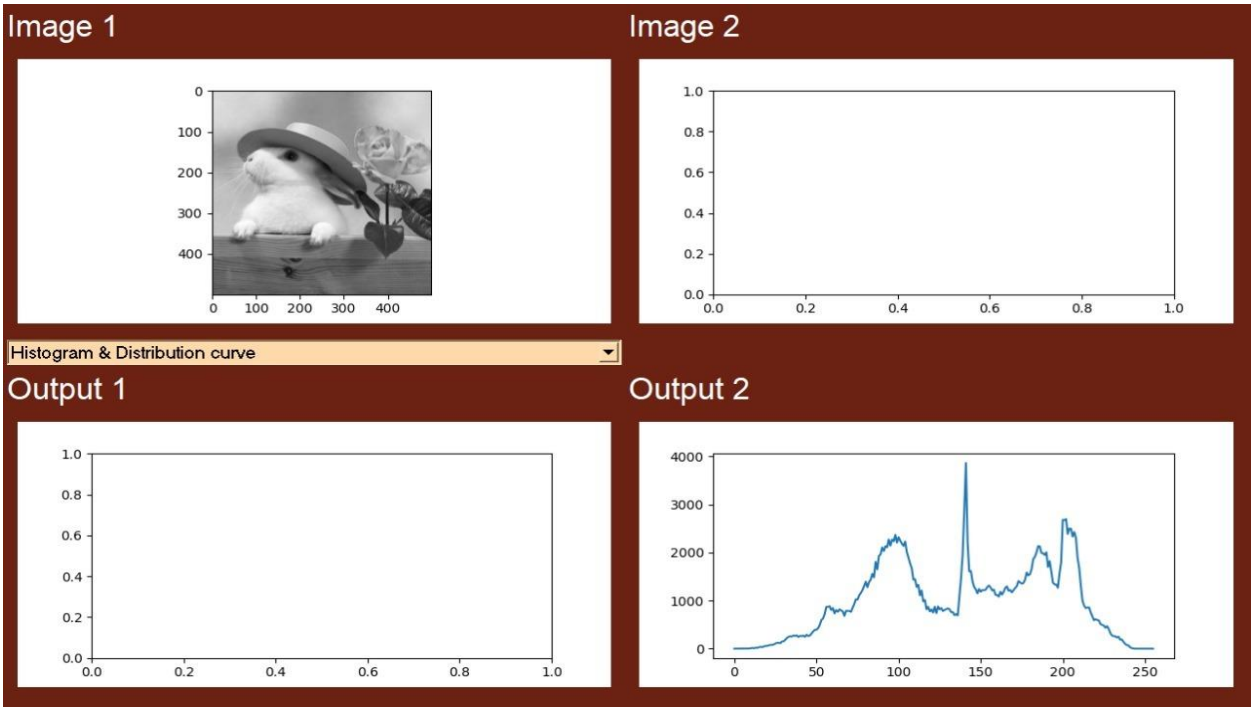


- The result of applying Prewitt mask on a colored image.

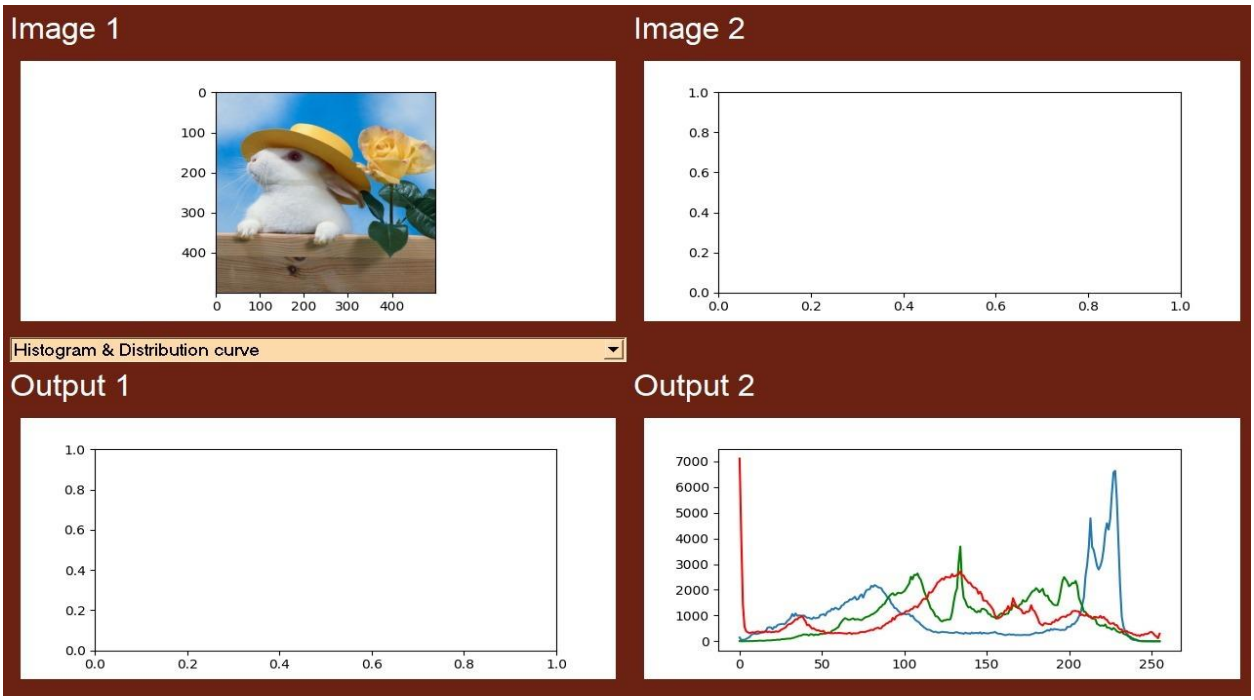


9- Histogram and distribution curve:

- The result of applying histogram on a grayscale image.

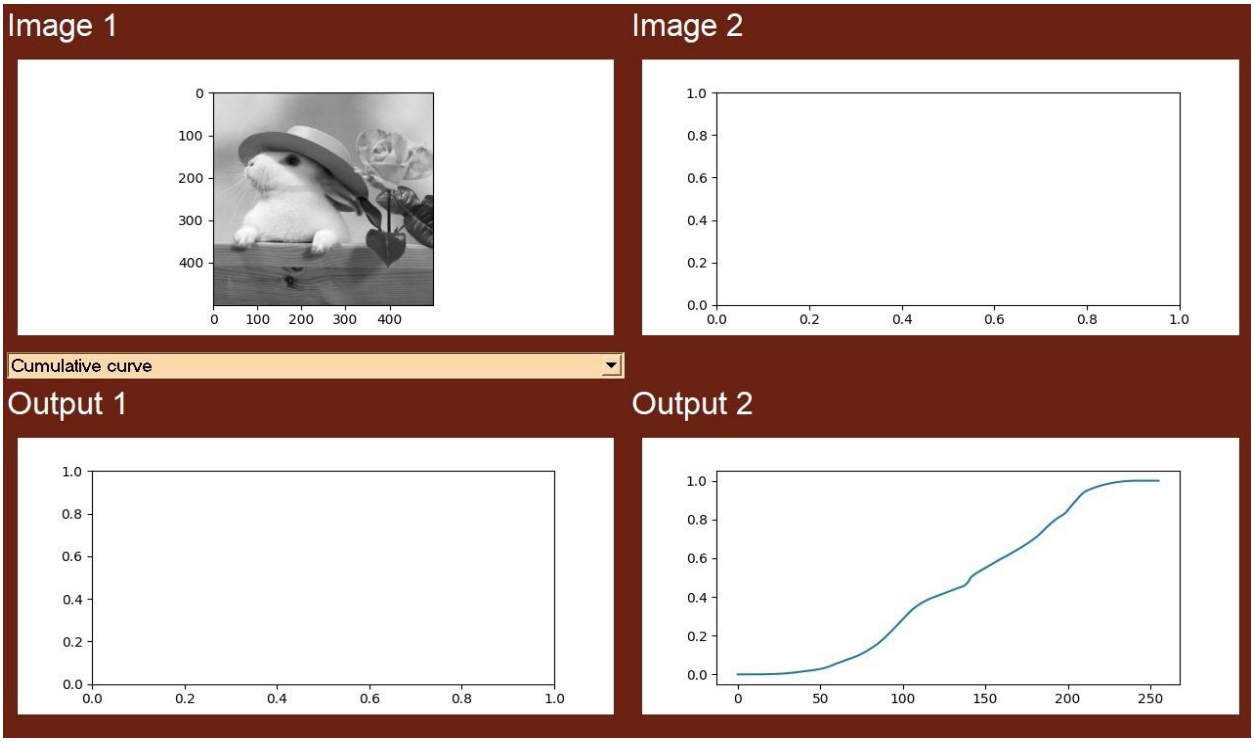


- The result of applying histogram on a colored image
    - Each colored line corresponds to one of the colors of the RGB channels.

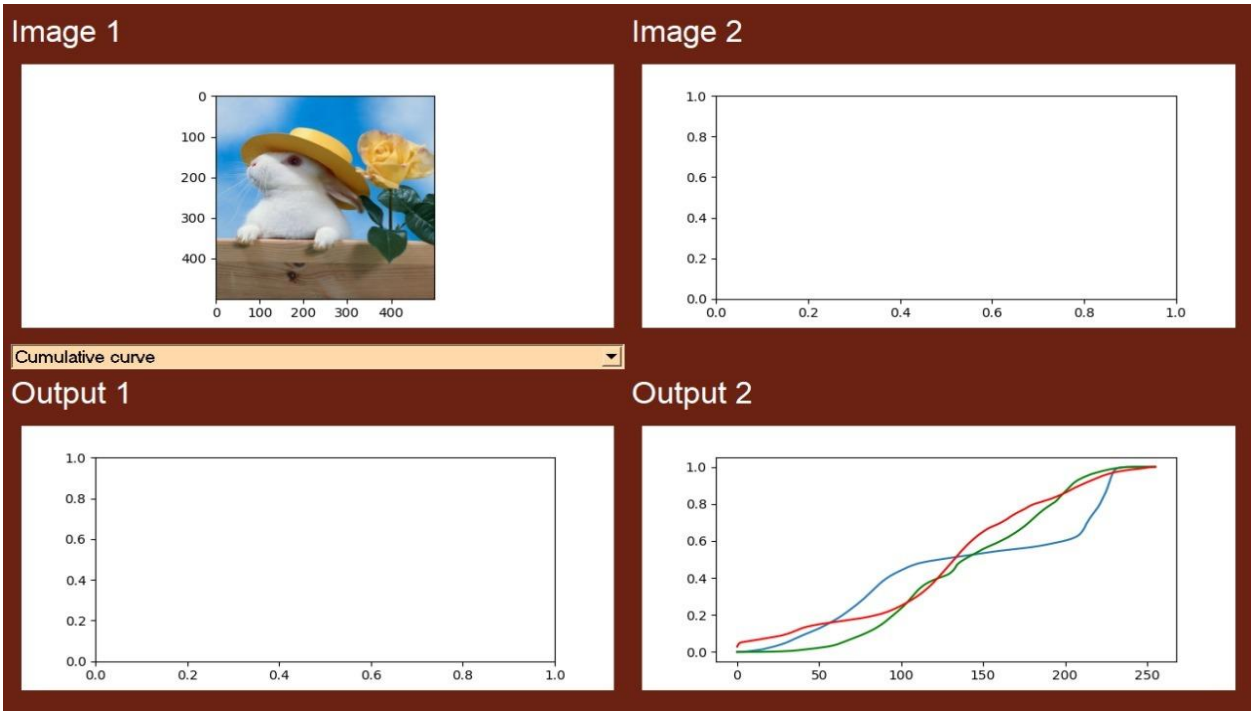


10-Cumulative curve:

- The result of applying cumulative distribution on a grayscale image.

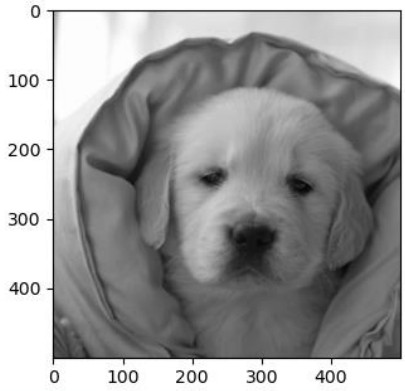


- The result of applying cumulative distribution on a colored image.



11-Histogram Equalization:

Image 1



Histogram equalization

Output 2

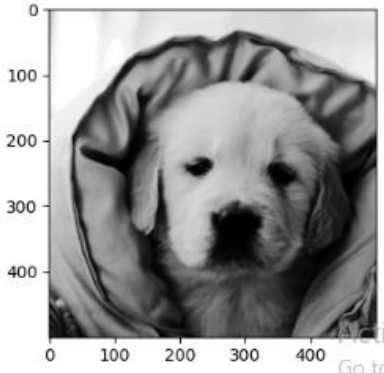
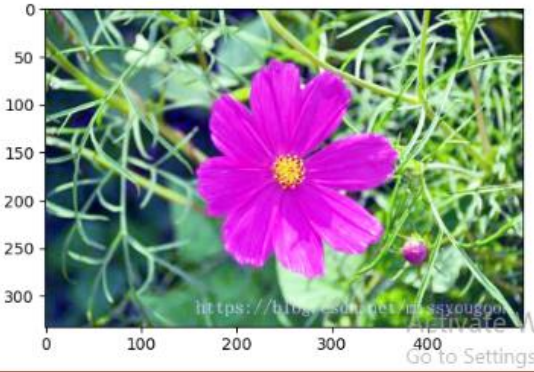


Image 1

Histogram equalization

Output 2



12-Image normalization:

Image 1

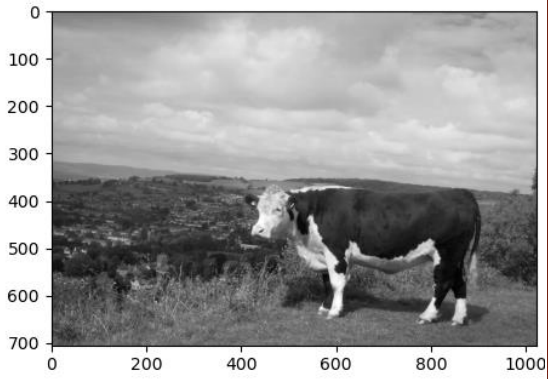


Image normalization

Output 2

Image 1

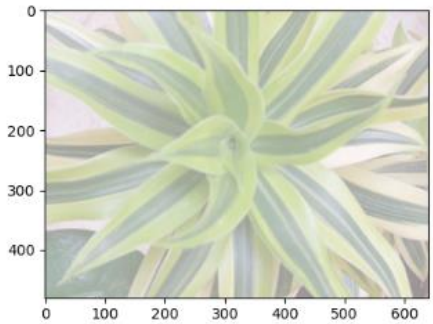
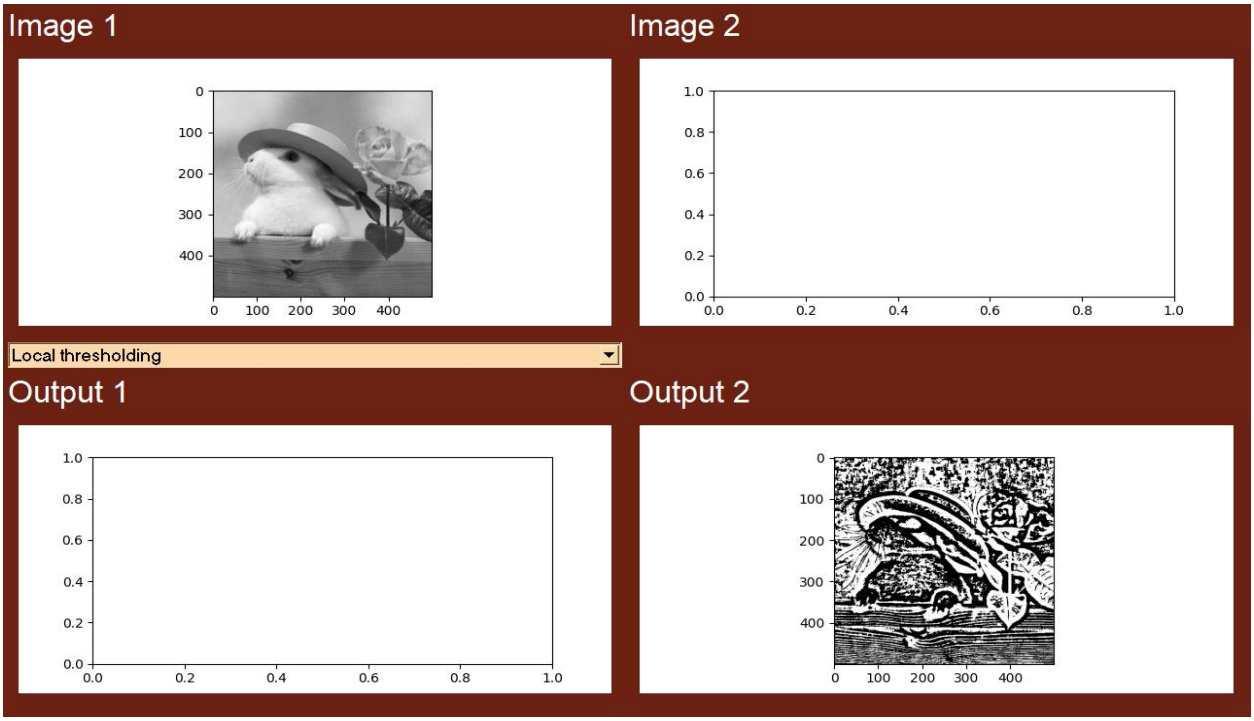


Image normalization

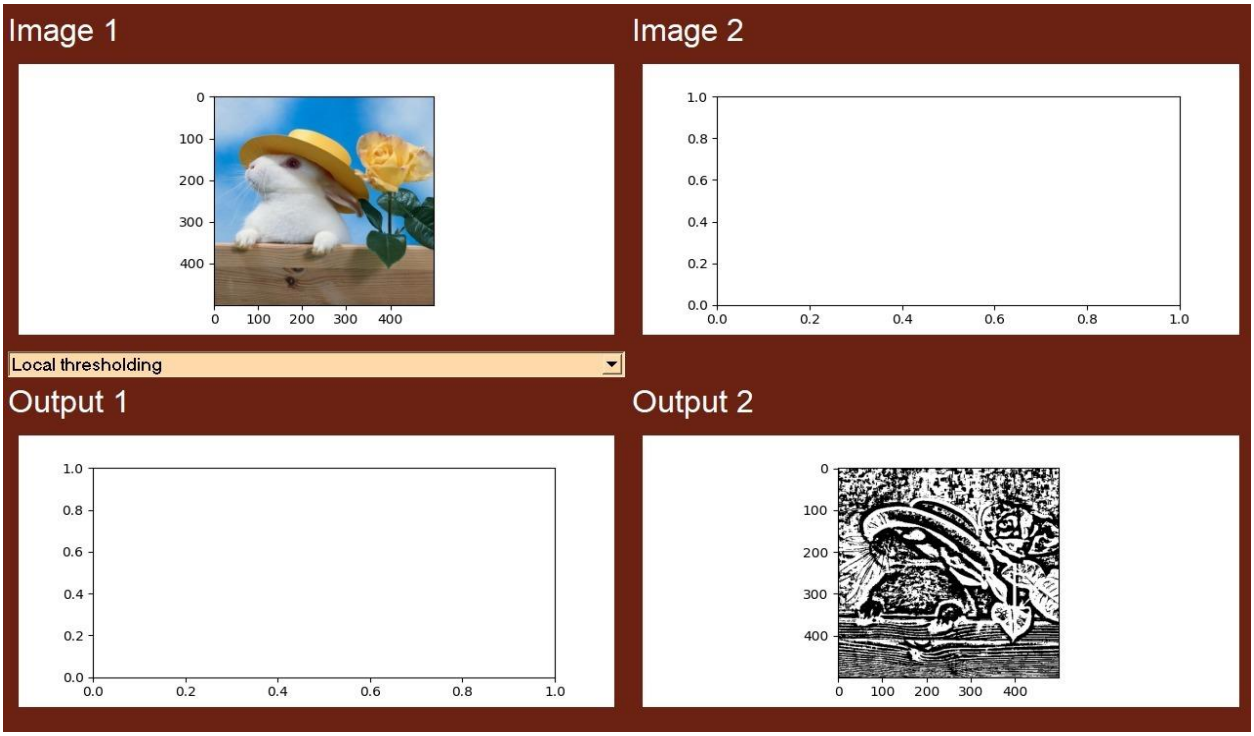
Output 2

13-Local Thresholding:

- The result of applying local thresholding on a grayscale image.

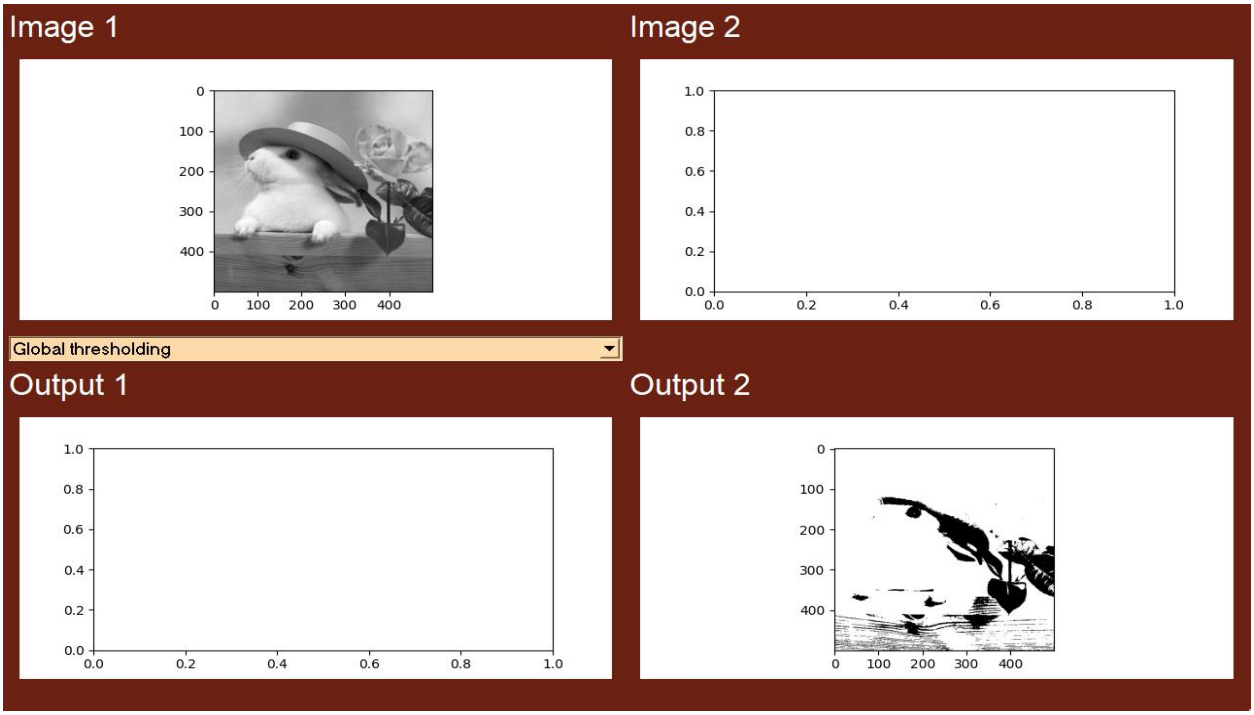


- The result of applying local thresholding on a colored image.

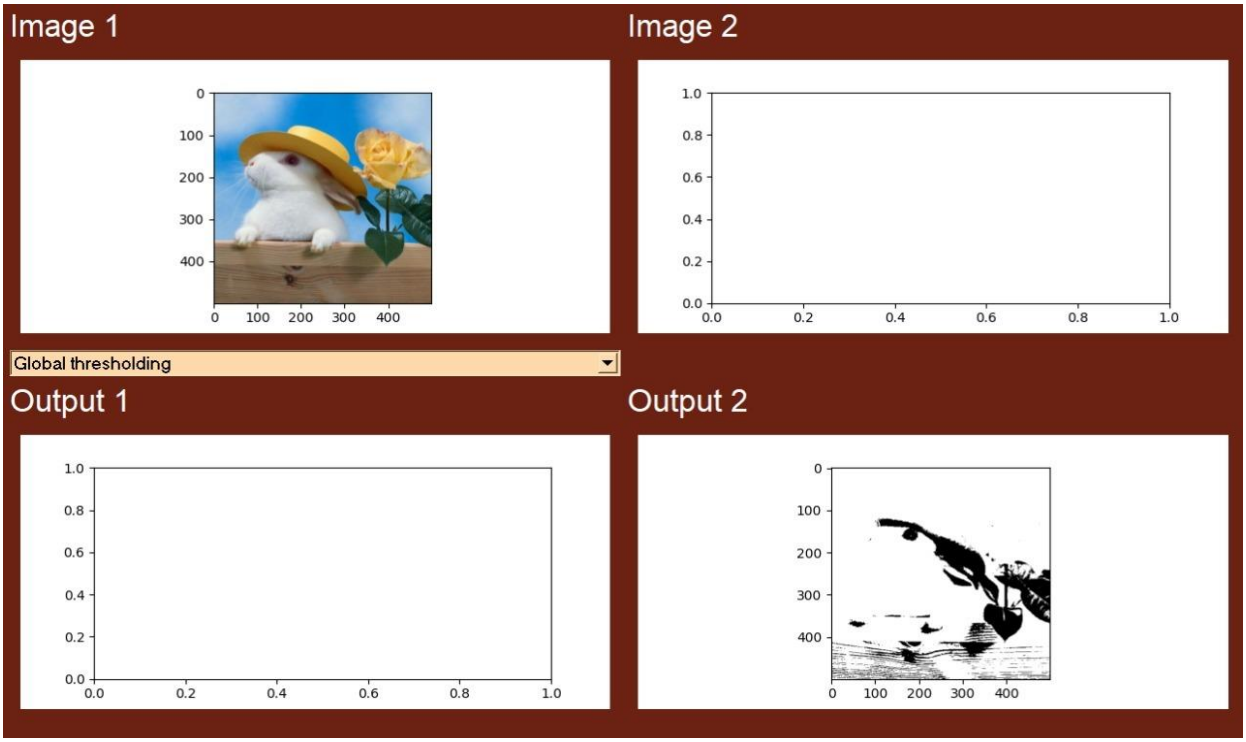


14-Global Thresholding:

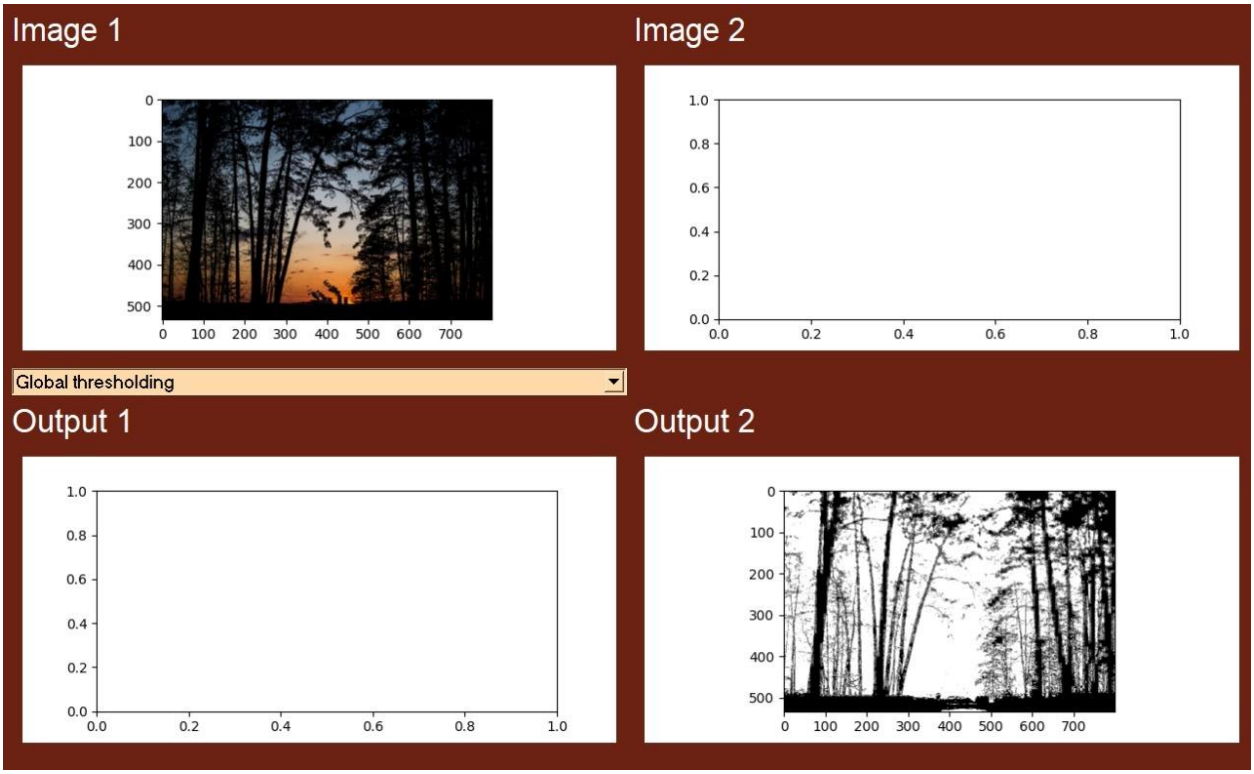
- The result of applying global thresholding on a grayscale image.



- The result of applying global thresholding on a colored image.

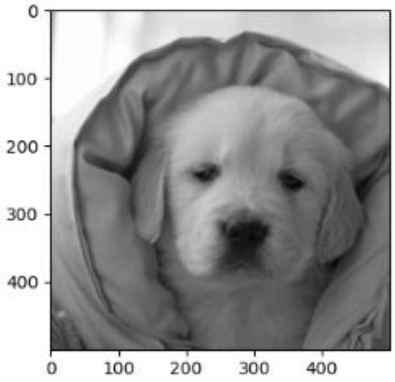


- Another example on applying global thresholding on a colored image.



16-Frequency domain Low pass filter:

Image 1



Frequency domain Low pass filter

Output 2

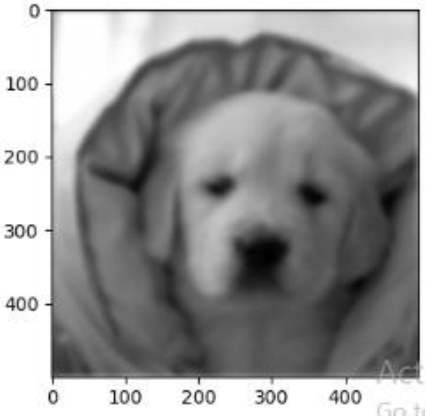
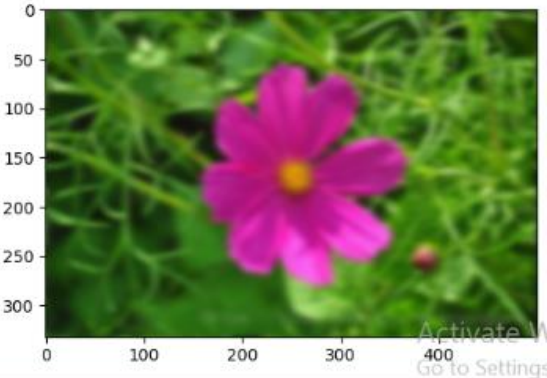


Image 1

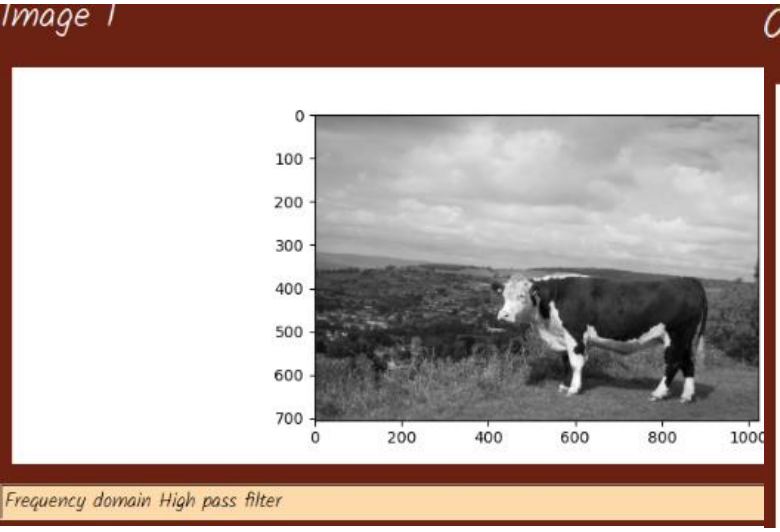
Frequency domain Low pass filter

Output 2



17-Frequency domain High pass filter:

Image 1



Output 2

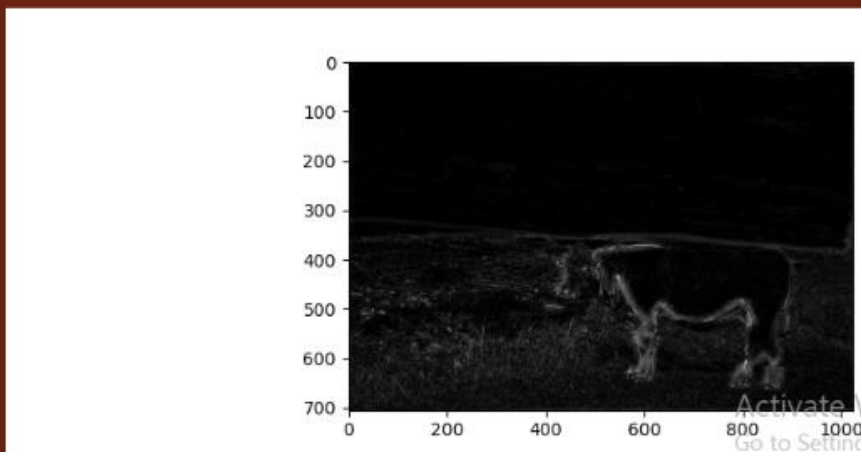
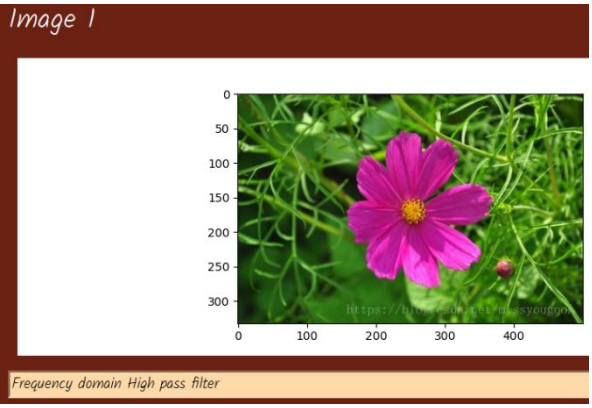
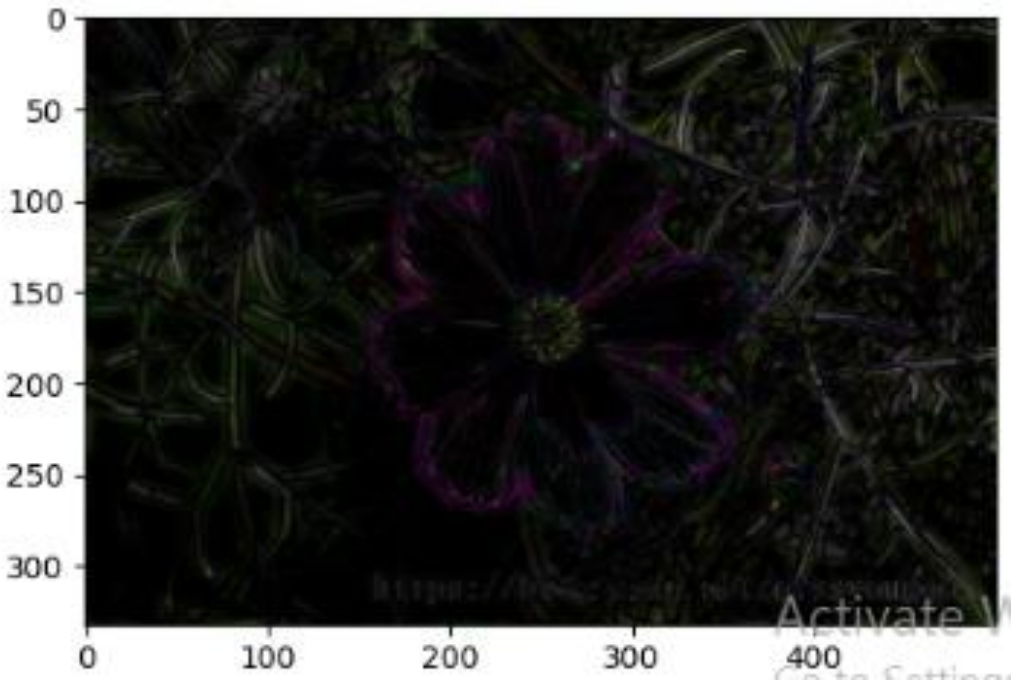


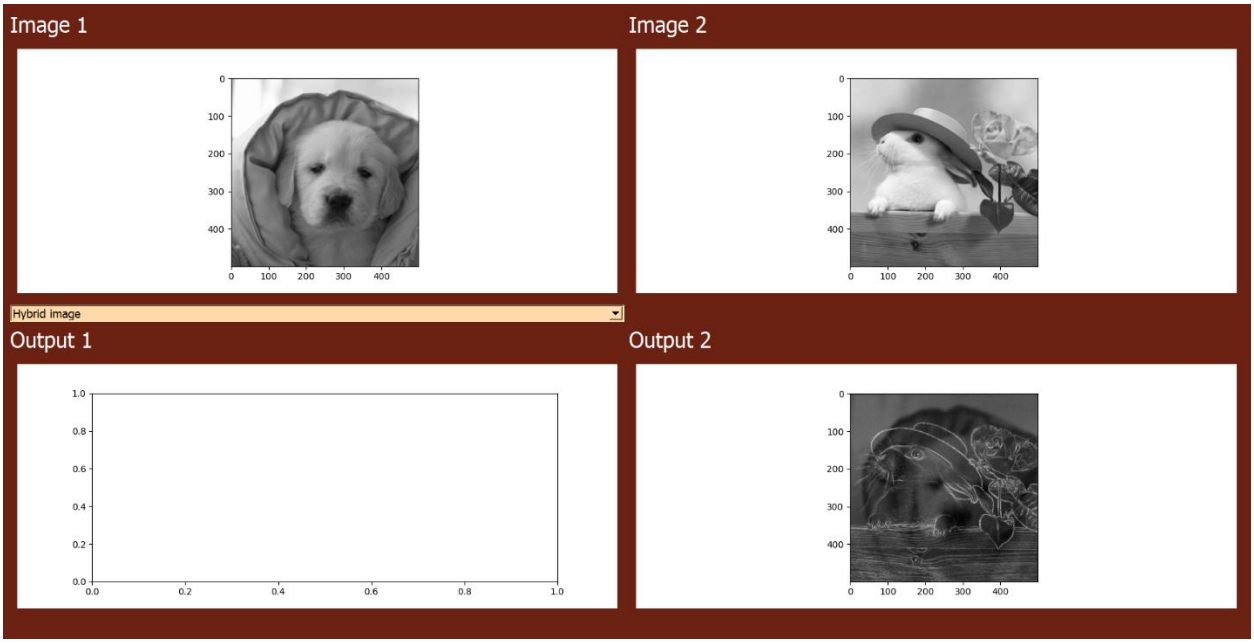
Image 1





18- Hybrid Image:

- The hybrid image of two grayscale images.



- The hybrid image of two colored images.