EDGE-DETECTION

Aim:

To perform edge detection using Sobel, Laplacian, and Canny edge detectors.

Software Required:

Anaconda - Python 3.7

Algorithm:

Step1:

Import all the necessary modules for the program.

Step2:

Load a image using imread() from cv2 module.

Step3:

Convert the image to grayscale

Step4:

Using Sobel operator from cv2,detect the edges of the image.

Step5:

Using Laplacian operator from cv2,detect the edges of the image and Using Canny operator from cv2,detect the edges of the image.

Code:

Original:

```
import cv2
import numpy as np
import matplotlib.pyplot as plt

image = cv2.imread('spyd.jpg')
gray_image = cv2.cvtColor(image, cv2.COLOR_BGR2GRAY)
```

```
plt.imshow(cv2.cvtColor(image, cv2.COLOR_BGR2RGB))
plt.title('Original Image')
plt.axis('off')
```

SOBEL EDGE DETECTOR

```
sobel_x = cv2.Sobel(gray_image, cv2.CV_64F, 1, 0, ksize=5)
sobel_y = cv2.Sobel(gray_image, cv2.CV_64F, 0, 1, ksize=5)
sobel_combined = cv2.magnitude(sobel_x, sobel_y)
plt.imshow(sobel_combined, cmap='gray')
plt.title('Sobel Edge Detection')
plt.axis('off')
```

LAPLACIAN EDGE DETECTOR

```
laplacian = cv2.Laplacian(gray_image, cv2.CV_64F)
plt.imshow(laplacian, cmap='gray')
plt.title('Laplacian Edge Detection')
plt.axis('off')
```

CANNY EDGE DETECTOR

```
canny_edges = cv2.Canny(gray_image, 50, 150)
plt.imshow(canny_edges, cmap='gray')
plt.title('Canny Edge Detection')
plt.axis('off')
```

Output:

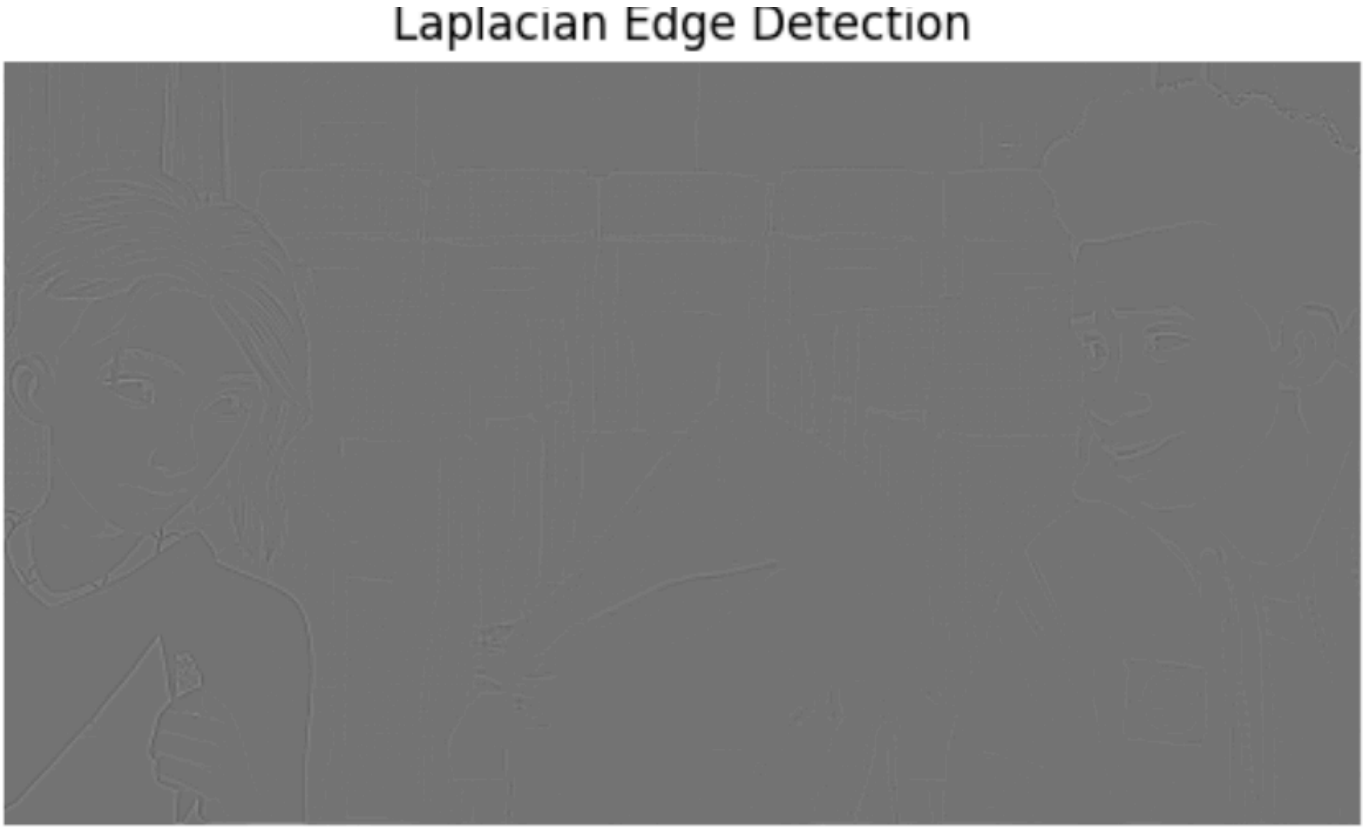
Original:

Original Image

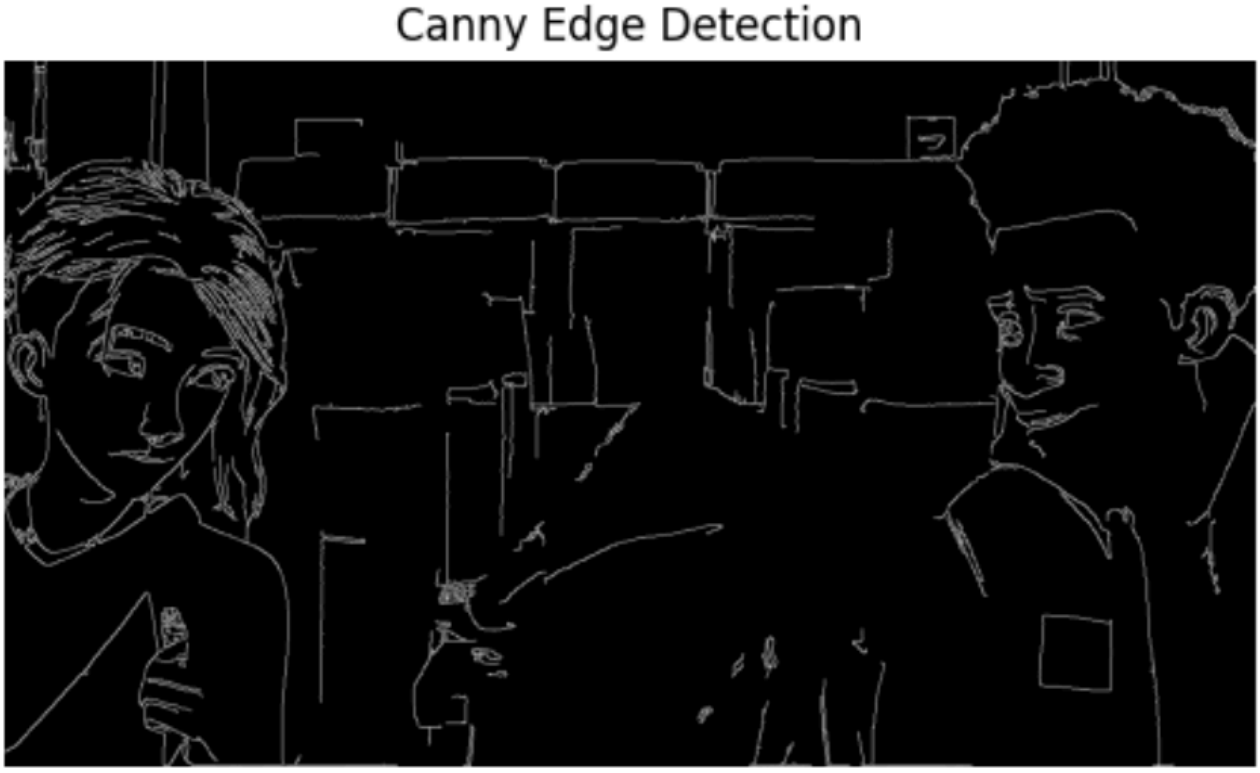
SOBEL EDGE DETECTOR

Sobel Edge Detection

LAPLACIAN EDGE DETECTOR



CANNY EDGE DETECTOR



Result:

Thus the edges are detected using Sobel, Laplacian, and Canny edge detectors.