

Edge-Detection

Aim:

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

Software Required:

Anaconda - Python 3.7

ALGORITHM:

Step 1:

Import the necessary modules.

Step 2:

Convert image into GRAY using COLOR_BGR2GRAY.

Step 3:

Apply Gaussian Blur to the gray image

Step 4:

Perform edge detection on a image.

- Sobel
- Laplacian
- Canny

Step 5:

Display the original images with edge detected images.

Program:

Developed By: **Shafeeq Ahamed. S**
Register Number: **212221230092'**

Import the packages

```
import cv2
from cv2 import COLOR_BGR2GRAY
import matplotlib.pyplot as plt
```

Load the image, Convert to grayscale and remove noise

```
input_img = cv2.imread("mikasa.jpg",1)

gray = cv2.cvtColor(input_img,COLOR_BGR2GRAY)

img = cv2.GaussianBlur(gray,(3,3),0)

cv2.imshow("GaussianBlur",img)
cv2.waitKey(0)
cv2.destroyAllWindows()
```

SOBEL EDGE DETECTOR

```
sobelx = cv2.Sobel(img,cv2.CV_64F,1,0,ksize=9)
sobely = cv2.Sobel(img,cv2.CV_64F,0,1,ksize=13)
sobelxy =cv2.Sobel(img,cv2.CV_64F,1,1,ksize=31)

plt.imshow(img,cmap = 'gray')
plt.title('Original')
plt.xticks([], plt.yticks([]))
plt.show()

plt.imshow(sobelx,cmap = 'gray')
plt.title('sobelx')
plt.xticks([], plt.yticks([]))
plt.show()

plt.imshow(sobely,cmap = 'gray')
plt.title('sobely')
plt.xticks([], plt.yticks([]))
plt.show()

plt.imshow(sobelxy,cmap = 'gray')
plt.title('sobelxy')
plt.xticks([], plt.yticks([]))
plt.show()
```

LAPLACIAN EDGE DETECTOR


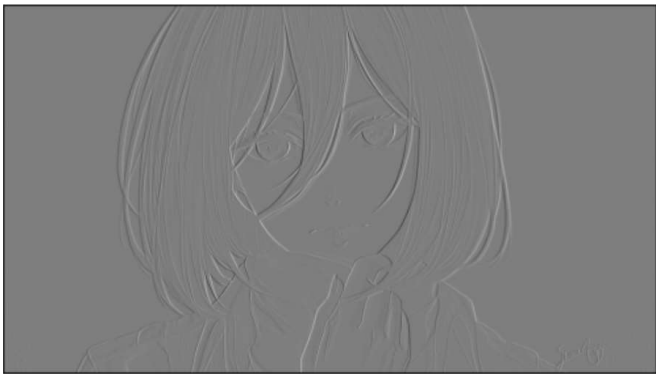
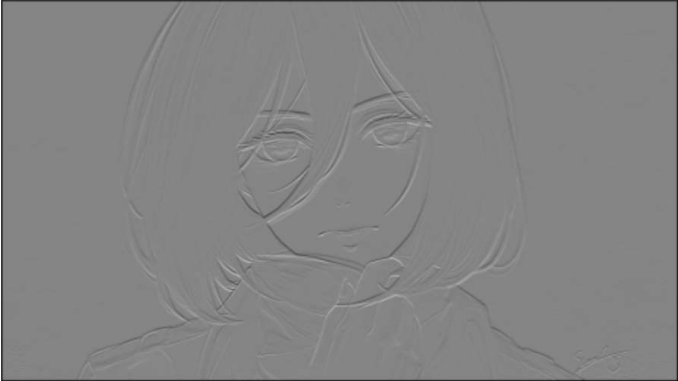

```
laplacian = cv2.Laplacian(img,cv2.CV_64F)
cv2.imshow("laplacian",laplacian)
cv2.waitKey(0)
cv2.destroyAllWindows()
```

CANNY EDGE DETECTOR


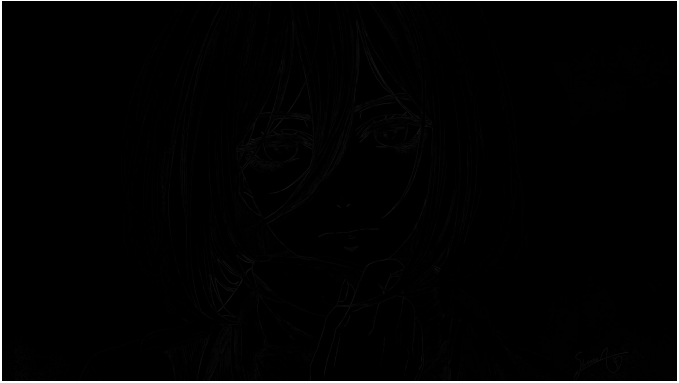
```
canny_edges = cv2.Canny(img, 120, 150)
cv2.imshow("Canny",canny_edges)
cv2.waitKey(0)
cv2.destroyAllWindows()
```

Output:



SOBEL EDGE DETECTOR

Original	Sobel X
	
Sobel Y	Sobel XY
	

LAPLACIAN EDGE DETECTOR

Original	Laplacian
	

CANNY EDGE DETECTOR

Original	Canny Edge
	

Result:

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