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.

Step6:

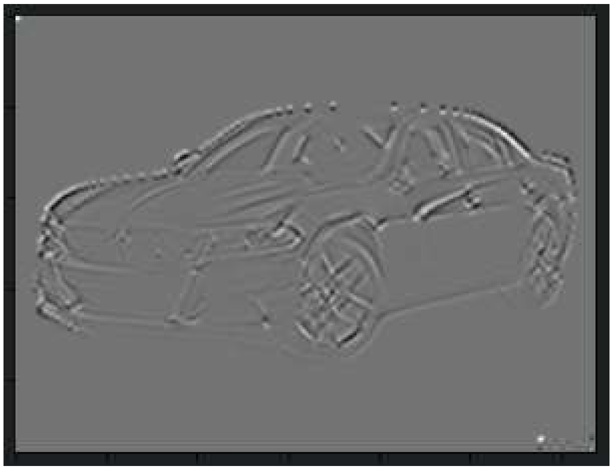
Using Canny operator from cv2,detect the edges of the image.

Program:

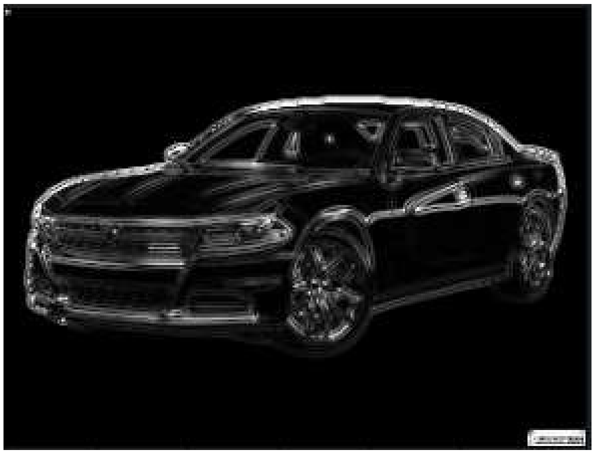
```
# Import the packages
import cv2
import numpy as np
import matplotlib.pyplot as plt
# Load the image, Convert to grayscale and remove noise
image1=cv2.imread('1.png',0)
plt.imshow(image1)
# SOBEL EDGE DETECTOR
sobelx = cv2.Sobel(img,cv2.CV_64F,1,0,ksize=5)
sobely = cv2.Sobel(img,cv2.CV_64F,0,1,ksize=5)
sobelxy= cv2.Sobel(img,cv2.CV_64F,1,1,ksize=5)
plt.imshow(sobelx,cmap='gray')
plt.imshow(sobely,cmap='gray')
plt.imshow(sobelxy,cmap='gray')
# LAPLACIAN EDGE DETECTOR
dst = cv2.Laplacian(img,cv2.CV_16S,ksize=3)
plt.imshow(dst,cmap='gray')
abs_dst = cv2.convertScaleAbs(dst)
plt.imshow(abs_dst,cmap='gray')
# CANNY EDGE DETECTOR
edges = cv2.Canny(img,100,200)
plt.imshow(img,cmap = 'gray')
plt.title('Original Image'), plt.xticks([]), plt.yticks([])
plt.imshow(edges,cmap = 'gray')
plt.title('Edge Image'), plt.xticks([]), plt.yticks([])
plt.show()
```

Output:

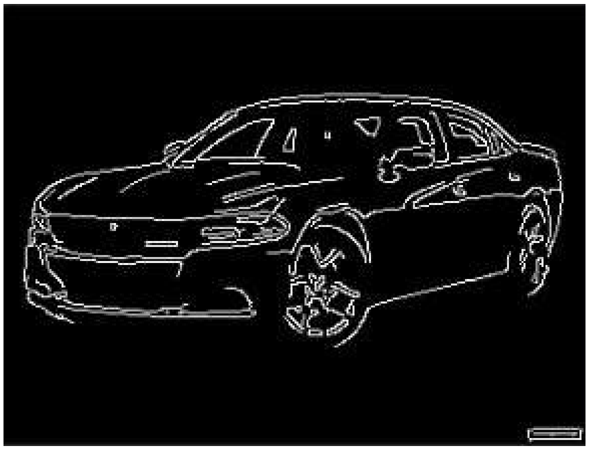
SOBEL EDGE DETECTOR



LAPLACIAN EDGE DETECTOR



CANNY EDGE DETECTOR



Result:

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