SOURCE CODE:

```
import cv2
import numpy as np
from matplotlib import pyplot as plt
#To load the image and display
image=cv2.imread("image.jpeg")
cv2.imshow("original_image",image)
#The following command waits till we press any
key cv2.waitKey(0)

#To convert RGB to GRAY image
image_gray=cv2.cvtColor(image,cv2.COLOR_BGR2GRAY
) cv2.imwrite('image_gray.jpeg',image_gray)
cv2.imshow("image_gray",image_gray)
cv2.waitKey(0)

#To get histogram equalised image
equalised_image=cv2.equalizeHist(image_gray)
cv2.imwrite('equalised_image.jpeg',equalised_image
) cv2.imshow("equalised_image",equalised_image)
cv2.waitKey(0)

#To plot histogram equalisation graph
histr = cv2.calcHist([equalised_image],[0],None,[256],[0,256])
plt.plot(histr)
plt.show()
#To convolve the given image
kernel=np.ones((3,3),np.float32)/2.0
convolved_image=cv2.filter2D(image,-1,kernel)
cv2.imwrite('convolved_image.jpeg',convolved_image)
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cv2.imshow("convolved_image",convolved_image)

cv2.waitKey(0)


#To blurr the given image using guassianblur

#the (5,5) is the kernel size and should be odd num always

#FORMAT cv2.GaussianBlur(image_name,kernal size(height and width),standard deviation of x and as well as y

gaussianblurred_image=cv2.GaussianBlur(image,(5,5),0)

cv2.imwrite('gaussianblurred_image.jpeg',gaussianblurred_image)

cv2.imshow("gaussianblurred_image",gaussianblurred_image)

cv2.waitKey(0)


#To blurr the given image using medianblur

#FORMAT cv2.medianBlur(image_name,kernal size(single value not like

coordinates)) medianblurred_image=cv2.medianBlur(image,5)

cv2.imwrite('medianblurred_image.jpg',medianblurred_image)

cv2.imshow("medianblurred_image",medianblurred_image)

cv2.waitKey(0)


#To blurr the given image using blur

#FORMAT cv2.blur(image_name,kernal size(height and width),standard deviation of x and as well as y)

blurred_image=cv2.blur(image,(5,5),0)

cv2.imwrite('blurred_image.jpg',blurred_image)

cv2.imshow("blurred_image",blurred_image)

cv2.waitKey(0)
#To find the gradient of the given image using sobel operator for x,y

gradient_x=cv2.Sobel(image_gray,cv2.CV_64F,1,0,ksize=3)

cv2.imwrite('gradient_x.jpeg',gradient_x)

cv2.imshow("gradient_x",gradient_x)

cv2.waitKey(0)
```

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gradient_y=cv2.Sobel(image_gray,cv2.CV_64F,0,1,ksize=3)
cv2.imwrite('gradient_y.jpeg',gradient_y)
cv2.imshow("gradient_y",gradient_y)
cv2.waitKey(0)

#To find the edges of the given image using canny operator
#FORMAT cv2.Canny(image_name, strongedge,weakedge) where
strongedge>weakedge edges=cv2.Canny(image,200,100)
cv2.imwrite('edges.jpeg',edges)
cv2.imshow("edges",edges)
cv2.waitKey(0)

#To close all windows created till now
cv2.destroyAllWindows()
```

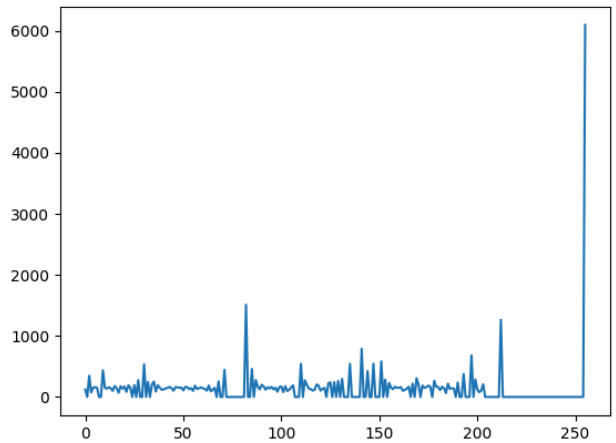
INPUT: IMAGE

OUTPUT:

GRAY SCALED IMAGE:

HISTOGRAM EQUALISED IMAGE:

HISTOGRAM EQUALISED GRAPH:



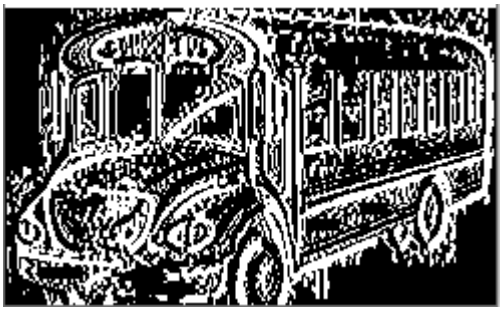
CONVOLVED IMAGE:

GAUSSIAN BLURRED IMAGE:

MEDIAN BLURRED IMAGE:

BLURRED IMAGE :

GRADIENT X IMAGE:



GRADIENT Y IMAGE:

EDGE DETECTED IMAGE: