**Practical No. 10**

**Aim:** Write a program for Edge detection with gradient and convolution of an Image.

**Program Code:**

import cv2

import numpy as np

from google.colab.patches import cv2\_imshow

image\_path = 'imagery.jpg'

image = cv2.imread(image\_path, cv2.IMREAD\_GRAYSCALE)

if image is None:

    print(f"Error: Could not load image from {image\_path}")

else:

    blurred\_image = cv2.GaussianBlur(image, (5, 5), 0)

    sobelx = cv2.Sobel(blurred\_image, cv2.CV\_64F, 1, 0, ksize=5)

    sobely = cv2.Sobel(blurred\_image, cv2.CV\_64F, 0, 1, ksize=5)

    gradient\_magnitude = np.sqrt(sobelx\*\*2 + sobely\*\*2)

    gradient\_magnitude = cv2.normalize(gradient\_magnitude, None, 0, 255, cv2.NORM\_MINMAX, cv2.CV\_8U)

    display\_size = (300, 300)

    resized\_image = cv2.resize(image, display\_size)

    resized\_gradient\_magnitude = cv2.resize(gradient\_magnitude, display\_size)

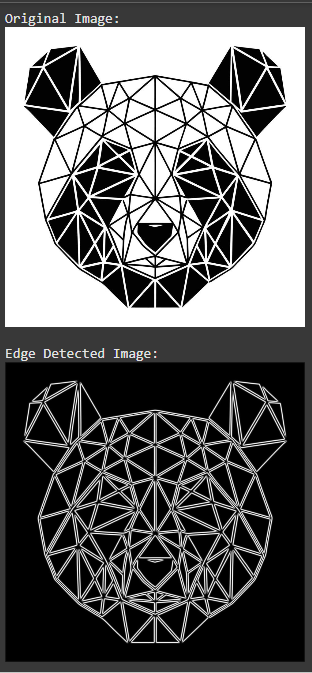
    print("Original Image:")

    cv2\_imshow(resized\_image)

    print("\nEdge Detected Image:")

    cv2\_imshow(resized\_gradient\_magnitude)

**Output:**

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