PROGRAM 9

READ AN IMAGE AND EXTRACT AND DISPLY LOW LEVEL FEATURES SUCH AS EDGES TEXTURES USING FILTERING TECHNIQUES

import cv2

import numpy as np

# Read the image

image\_path = "gandhi-1.jpg" # Replace "your\_image.jpg" with the path to your image

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

if image is None:

print("Failed to load the image.")

else:

# Display the original image

cv2.imshow("Original Image", image)

# Apply Sobel filter to extract edges

sobel\_x = cv2.Sobel(image, cv2.CV\_64F, 1, 0, ksize=3)

sobel\_y = cv2.Sobel(image, cv2.CV\_64F, 0, 1, ksize=3)

sobel\_edges = cv2.magnitude(sobel\_x, sobel\_y)

sobel\_edges = cv2.normalize(sobel\_edges, None, 0, 255, cv2.NORM\_MINMAX, dtype=cv2.CV\_8U)

# Display edges extracted using Sobel filter

cv2.imshow("Edges (Sobel Filter)", sobel\_edges)

# Apply Laplacian filter to extract edges

laplacian\_edges = cv2.Laplacian(image, cv2.CV\_64F)

laplacian\_edges = cv2.normalize(laplacian\_edges, None, 0, 255, cv2.NORM\_MINMAX, dtype=cv2.CV\_8U)

# Display edges extracted using Laplacian filter

cv2.imshow("Edges (Laplacian Filter)", laplacian\_edges)

# Apply Gaussian blur to extract textures

gaussian\_blur = cv2.GaussianBlur(image, (5, 5), 0)

# Display image with Gaussian blur

cv2.imshow("Gaussian Blur", gaussian\_blur)

cv2.waitKey(0)

cv2.destroyAllWindows()