import cv2

import numpy as np

import matplotlib.pyplot as plt

image = cv2.imread('1.png')

gray = cv2.cvtColor(image, cv2.COLOR\_BGR2GRAY)

laplacian\_kernel\_8 = np.array([[1, 1, 1],

[1, -8, 1],

[1, 1, 1]])

laplacian = cv2.filter2D(gray, cv2.CV\_64F, laplacian\_kernel\_8)

sharpened = cv2.convertScaleAbs(gray - laplacian)

plt.figure(figsize=(10, 5))

plt.subplot(1, 2, 1)

plt.imshow(gray, cmap='gray')

plt.title("Original Grayscale")

plt.axis('off')

plt.subplot(1, 2, 2)

plt.imshow(sharpened, cmap='gray')

plt.title("Sharpened with 8-Neighborhood Laplacian")

plt.axis('off')

plt.tight\_layout()

plt.show()

output:

