DSA0210 Computer Vision with Open CV LAB Experiments

Experiment- 17: Perform Sharpening of Image using Laplacian mask implemented with an extension of diagonal neighbours.

PROGRAM:

```
import cv2

import numpy as np

import matplotlib.pyplot as plt


# Read the input image

img = cv2.imread(r"D:\New Folder\input.jpeg")


# Check if image is loaded

if img is None:

    raise FileNotFoundError("Image not found. Check the file path.")


# Convert image to grayscale

gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)


# Laplacian mask with diagonal neighbors

laplacian_mask = np.array([

    [1,  1,  1],

    [1, -8,  1],

    [1,  1,  1]

])


# Apply Laplacian filter

laplacian = cv2.filter2D(gray, cv2.CV_64F, laplacian_mask)
```

```python
# Sharpen the image
sharpened = gray - laplacian


# Convert to uint8
sharpened = np.clip(sharpened, 0, 255).astype(np.uint8)


# Display images
plt.figure(figsize=(8, 4))


plt.subplot(1, 2, 1)
plt.imshow(gray, cmap="gray")
plt.title("Original Grayscale Image")
plt.axis("off")


plt.subplot(1, 2, 2)
plt.imshow(sharpened, cmap="gray")
plt.title("Sharpened Image (Laplacian with Diagonals)")
plt.axis("off")


plt.tight_layout()
plt.show()
```

OUTPUT: