DSA0210 Computer Vision with Open CV LAB Experiments

Experiment- 23: Find the boundary of the image using Convolution kernel for the given image.

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)

# Define boundary detection kernel
kernel = np.array([
    [0,  1,  0],
    [1, -4,  1],
    [0,  1,  0]
])

# Apply convolution
boundary = cv2.filter2D(gray, cv2.CV_64F, kernel)
```

```
# Convert to displayable format
boundary = np.absolute(boundary)
boundary = np.uint8(boundary)

# 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(boundary, cmap="gray")
plt.title("Boundary Detected Image")
plt.axis("off")

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

OUTPUT:

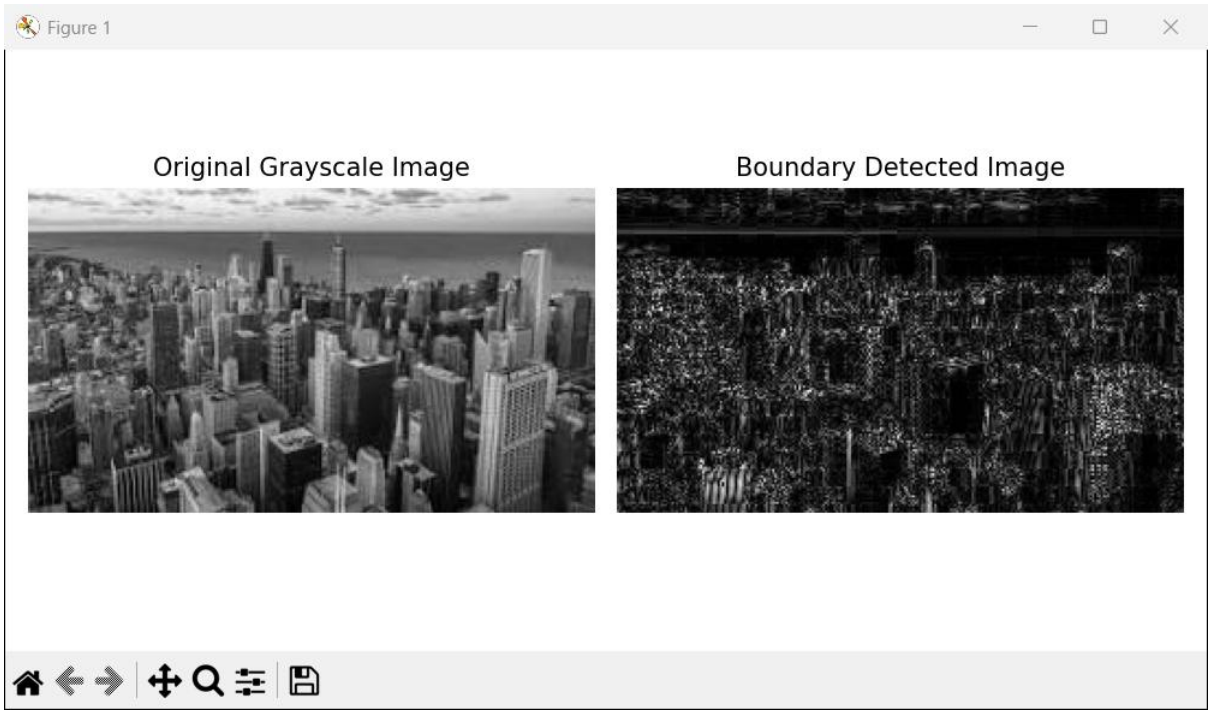
Figure 1
Original Grayscale Image
Boundary Detected Image