

DSA0210 Computer Vision with Open CV LAB Experiments

Experiment- 15: Perform Edge detection using Sobel Matrix along XY axis

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)

# Apply Sobel operator along X-axis
sobel_x = cv2.Sobel(gray, cv2.CV_64F, 1, 0, ksize=3)

# Apply Sobel operator along Y-axis
sobel_y = cv2.Sobel(gray, cv2.CV_64F, 0, 1, ksize=3)

# Convert to absolute values
sobel_x = np.absolute(sobel_x)
sobel_y = np.absolute(sobel_y)

# Combine Sobel X and Sobel Y
```

```
sobel_xy = np.uint8(sobel_x + sobel_y)
```

```
# Display images
```

```
plt.figure(figsize=(8, 4))
```

```
plt.subplot(1, 2, 1)
```

```
plt.imshow(gray, cmap="gray")
```

```
plt.title("Grayscale Image")
```

```
plt.axis("off")
```

```
plt.subplot(1, 2, 2)
```

```
plt.imshow(sobel_xy, cmap="gray")
```

```
plt.title("Sobel Edge Detection (X + Y)")
```

```
plt.axis("off")
```

```
plt.tight_layout()
```

```
plt.show()
```

OUTPUT:

