

# DSA0210 Computer Vision with Open CV LAB Experiments

Experiment-30: Morphological operations based on OpenCV using Black hat technique.

## 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)

# Create structuring element (kernel)
kernel = np.ones((5, 5), np.uint8)

# Apply Black-Hat operation
blackhat = cv2.morphologyEx(gray, cv2.MORPH_BLACKHAT, kernel)

# 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(blackhat, cmap="gray")  
plt.title("Black-Hat Image")  
plt.axis("off")
```

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

**OUTPUT:**

