

Airon Kim L. Demandante

BSCS 4A

MP2 – IMAGE PROCESSING TECHNIQUES

LOAD REQUIRED LIBRARIES AND IMAGES

```
!pip install opencv-python-headless

import cv2
import numpy as np
import matplotlib.pyplot as plt

def display_image(img, title="Image"):
    plt.imshow(cv2.cvtColor(img, cv2.COLOR_BGR2RGB))
    plt.title(title)
    plt.axis('off')
    plt.show()

def display_images(img1, img2, title1="Image 1", title2="Image 2"):
    plt.subplot(1, 2, 1)
    plt.imshow(cv2.cvtColor(img1, cv2.COLOR_BGR2RGB))
    plt.title(title1)
    plt.axis('off')
    plt.subplot(1, 2, 2)
    plt.imshow(cv2.cvtColor(img2, cv2.COLOR_BGR2RGB))
    plt.title(title2)
    plt.axis('off')
    plt.show()
```

APPLYING SCALE

```
def scale_image(img, scale_factor):
    height, width = img.shape[:2]
    scaled_img = cv2.resize(img,
    (int(width * scale_factor), int(height * scale_factor)), interpolation=cv2.INTER_LINEAR)
    return scaled_img
scaled_image = scale_image(image, 0.5)
display_image(scaled_image, "Scaled Image (50%)")
```

Scaled Image (50%)



APPLYING ROTATION

```
def rotate_image(img, angle):  
    height, width = img.shape[:2]  
    center = (width // 2, height // 2)  
    matrix = cv2.getRotationMatrix2D(center, angle, 1.0)  
    rotated_img = cv2.warpAffine(img, matrix, (width, height))  
    return rotated_img  
  
rotated_image = rotate_image(image, 150) # This line was incorrectly indented  
display_image(rotated_image, "Rotated Image (150°)") # This line was incorrectly indented
```

Rotated Image (150°)



APPLY BLURRING

```
gaussian_blur = cv2.GaussianBlur(image, (15, 15), 5)  
display_image(gaussian_blur, "Gaussian Blur (5x5)")  
median_blur = cv2.medianBlur(image, 15)  
display_image(median_blur, "Median Blur (5x5)")
```

Median Blur (5x5)



Gaussian Blur (5x5)



APPLYING EDGE DETECTION

```
edges = cv2.Canny(image, 100, 200)  
display_image(edges, "Canny Edge Detection (100, 200)")
```

Canny Edge Detection (100, 200)

