Machine Vision Lab AS-1 (a)

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Task 1: Basic Image Statistics and Color Space Conversion

Objective:

Compute basic statistics and convert an image into different color spaces.

Steps:

1. **Read the Image**: Load an image using OpenCV.
2. **Compute Basic Statistics**: Calculate the mean, standard deviation, and histogram of each color channel.
3. **Convert Color Spaces**: Convert the image to HSV and Lab color spaces and display the results.

Task 2: Simple Image Segmentation Using Thresholding

Objective:

Segment an image into foreground and background using global thresholding.

Steps:

1. **Read the Image**: Load a grayscale image.
2. **Apply Thresholding**: Use a fixed threshold value to segment the image.
3. **Display Results**: Show the original and segmented images.

Task 3: Color-Based Segmentation

Objective:

Segment specific objects in an image based on their color.

Steps:

1. **Read the Image**: Load an image with objects of different colors.
2. **Convert to HSV**: Convert the image to HSV color space.
3. **Apply Color Thresholding**: Use color thresholds to segment objects of a specific color.
4. **Display Results**: Show the original and segmented images.