Machine vision AS-1 (b)

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Task 1: Image Negative Transformation

Objective: Create an image negative using Python.

Steps:

1. Load a grayscale image.
2. Apply the image negative transformation.
3. Display the original and the negative image.

Task 2: Gamma Correction

Objective: Apply gamma correction with different gamma values.

Steps:

1. Load a grayscale image.
2. Apply gamma correction with γ=0.5\gamma = 0.5γ=0.5, γ=1.0\gamma = 1.0γ=1.0, and γ=2.0 \gamma = 2.0γ=2.0.
3. Display the original and the gamma-corrected images.

Task 3: Log Transform

Objective: Apply log transformation to enhance an image.

Steps:

1. Load a grayscale image.
2. Apply log transformation.
3. Display the original and the log-transformed image.

Task 4: Compare Transformations

Objective: Compare the effects of different transformations.

Steps:

1. Load a grayscale image.
2. Apply image negative, gamma correction (γ=2.0\gamma = 2.0γ=2.0), and log transformation.
3. Display the original image alongside the transformed images for comparison.

Task 5: Apply Transformations to Color Images

Objective: Apply the transformations to a color image by processing each channel separately.

Steps:

1. Load a color image.
2. Split the image into its R, G, and B channels.
3. Apply image negative, gamma correction, and log transformation to each channel.
4. Merge the channels back together.
5. Display the original and the transformed images.