



Resource Person: Asma Naseer

Digital Image Processing



Assignment # 1

Image Processing Assignment: GUI-based Image Manipulation Application

Objective:

Develop a GUI-based application for performing basic image processing tasks. The GUI should allow users to load, manipulate, and save images in a variety of formats. Additionally, the application should display important information about the images and provide multiple processing features.

Requirements:

1. GUI Components:

- **Browse:** A button to load an image from the system.
- **Save Image:** A radio button/dropdown list to select and save the image in formats like .jpg, .png, .bmp, .tiff.
- **Image Info:** A button to display image details (height, width, format, original file size, compressed file size, and compression ratio).
- **Operations:**
 - Convert a grayscale image to black and white.
 - Crop the image.
 - Resize the image.
 - Flip the image vertically or horizontally.
 - Combine two images (side-by-side or overlay).

Bonus Tasks (Optional):

- Implement drag-and-drop functionality to load images.
- Add a slider for dynamically adjusting the threshold when converting to black and white.
- Allow users to choose custom compression levels (for example, when saving as .jpg).



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Expected Deliverables:

- Fully functioning code with a GUI that meets all the requirements.
- Screenshots showing each feature working (loading an image, saving, displaying info, processing operations).
- A short write-up explaining your approach, challenges faced, and any additional features added.

This assignment is aimed at building practical experience in both GUI development and image processing concepts.