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Digital Image Processing

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TERM PROJECT

The term project includes the development of a GUI in MATLAB, using GUIDE, which facilitates some of the basic image processing techniques. The characteristics of the GUI are listed below:

1. **File Menu**
    a. Image Open (read an image using Windows explorer)
    b. Image Save (writes an image using Windows explorer)
    c. Exit (exists the GUI and terminates is properly)
2. **3 Axis in main GUI**
    a. Axis 1 contains image 1
    b. Axis 2 contains image 2
    c. Axis 3 contains the resulting image after operation on image 1 or image 2 or a combination of both
3. **Task Buttons**

    The task buttons should perform the techniques listed below

    a. Image transform – Fourier and Inverse
    b. Image Spatial Transformation – rotation, flipping, transposition, transforms such as log, root, power etc.
    c. Image Cropping – for image cropping a rectangle should be placed on the image 1 or 2 as desired. The rectangle using *imrect* should allow for its relocation and size variability. Once the area is selected the user executes the crop button again and the Region of Interest (ROI) is extracted.

d. Multiple Image Manipulation – Addition, subtraction and scaling of image 1 or 2 or both.
e. Mouse Hover– This should allow for the mouse cursor to be hovered over image. The pixel's location and intensity information should be displayed in axis 2.
f. Zooming: Use a scroll bar to zoom on image 1 or 2 as desired.

N.B. This project should be developed and will be evaluated individually. Do not copy or cheat in any way from your classmates or anyone else. If you are utilising any material from the internet, properly reference it using the Numbered Referencing Style. Plagiarism is strictly discouraged and there will be severe repercussions.

Project will be evaluated in the week preceding immediately the finals.