IVP Lab Practice Experiments

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Instructions: Use MATLAB and/or Python and/or Octave tools for the following questions. Do not use the inbuilt functions unless mentioned in the question. If input image not give or specified then you can use Lenna image (popular picture use for image processing) as a sample image.
You are advised to implement/work on this following problem before the mid Sem lab exam.

Aim of this Lab Session: *Image Segmentation, Color image Processing.*

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1. Write you own image processing related program that loads a specified color image (***input1.PNG***) and applies histogram equalization to the R, G, and B channels separately. Implement a second program/function that converts the specified input image into the HSI color space and applies histogram equalization on the intensity (I) channel and again convert into RGB. Show input image and processed image side by side for both cases.
2. Write your own image processing related program to illustrate "Thickening" and "Skeletons". Use the images ***input3.bmp*** & ***input4.bmp***
3. As an Image Processing expert, you are asked to create the raw material for a map of an island. Your source is this photography (***input6.bmp***) and you are expected to write your own image processing program that gives an image of the border between land and water. The coastline should be a black line on white background. Both the sea and the land should be as white as possible. Deliver the processed image, a description of how you did the job and the code.
4. When old documents are scanned it is sometimes difficult to read the text. Is it possible to use "Global" or "Adaptive" Thresholding to increase the contrast between text and background? write your own image processing related program for the same and show the output using given input image (***input6.bmp***). Discuss the effect of thresholding on the image below. What steps can be taken to further increase image quality. Illustrate with histograms and images. Describe what kind of experiments you have done!

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