ECE415 – HOMEWORK 2

Fall 2018

Problem 1

Load the grayscale image Image.bmp into Matlab.

1) Display the image
2) Thresholding
    a. Select a threshold.
    b. Perform thresholding on input image and display the resulting image.
    c. Comment on effect thresholding had on the image.
    d. What threshold value did you select and why?
3) Contrast stretching
    a. Perform contrast stretching on input image and display the resulting image. The range of pixel intensities that is being stretched should include 90% of the pixels, except for 5% lowest valued and 5% highest valued ones. The target range is [0 255].
    b. What was the range that was stretched?
    c. Comment on effect contrast stretching had on the image.
4) Gamma correction
    a. Select a gamma.
    b. Perform gamma correction on the input image and display the resulting image.
    c. What gamma value did you select?
    d. Explain the expected behavior for such gamma value and point out the example(s) where the modified image demonstrates such behavior.
5) Histogram equalization
    a. Perform histogram equalization on the input image and display the resulting image.
    b. Comment on effect histogram equalization had on the image.

Please do not use any built-in functions except ones necessary for plotting and vector and matrix algebraic operations. Submission should include a zipped file with homework report as a PDF file and Matlab code as one or more .m files.