Practical Exercises for Image Processing

Exercise D

D1. By using 'imhist' ,compute the histogram of the Lena image with 10, 20, 100, and 256 bins. Determine how many pixels are there in the image whose grey scales are 52, 181 and 232?

D2. Scale the histogram so that the grey scales are between 0 and 1 instead of 0 and 255.

D3. Scale the histogram, to the area beneath it. Now determine the probability of finding a pixel with grey scales 52, 181 and 232?

D4. Add some Gaussian noise with standard deviation 20. Find out what the maximum and minimum grey scales of the Lena noisy image are. Are they between 0 and 255? Change the grey scales to be in the interval between 0 and 255 by using the following methods

a) Linear Scaling
b) Linear Scaling with Clipping at 0 and 255
c) Absolute Value Scaling

D5. Load the "NaturalView.jpg" image and by using the method of linear scaling, stretch the histogram and compare the original image with the stretched histogram one.

D6. Transform the Lena image with the power law histogram transformation for p= ½ and 1/3 and 1/5.

D7. Calculate the reverse (negative) of the Lena image (255-grayscale).

D8. Calculate the inverse of the Lena image (1/grayscale). You may need to use linear scaling to bring back the result into the interval between 0 and 255.

D9. By using 'histeq', equalize the histogram of "NaturalView" image and compare it with the histogram stretched one. Also compare the histogram of NaturalView image after and before histogram equalization.