Marmara University

Electrical and-Electronics Engineering

EE7025-Fundamentals of Digital Image Processing

Project 2

Due: 18 October 2017

1. Write a program that can compute the histogram of a grayscale image (assuming 256 levels of gray). and display the histogram as a stem plot besides the image (for example, using “subplot” function if you use MATLAB). Apply your program to Figure 3.23(a) and show the results.
2. Write a program that performs histogram equalization on a grayscale image. Your program should:
3. compute the histogram of the input image
4. compute the histogram equalizing transformation function;
5. apply the function to the input image;
6. compute the histogram of the equalized image;
7. display the original and equalized images, their corresponding histograms, in one figure

Apply your program to Figure 3.9(a) and show the results.

1. Write program to perform spatial filtering of an image. You can fix the size of the spatial mask at 3 x 3, but the coefficients need to be variables that can be input into your program. Use the program to implement high-boost filtering given by

where is the filtered image, *k* is a constant greater than 1, is the image to be filtered, and denote the blurred image obtained by averaging . The averaging part of the process should be done by using the following mask

Enhance Figure 3.40(a) by using the program you developed

1. Use the program that you develeoped in Question 3 to implement the Laplacian enhancement technique given by

where and are the enhanced and input images, respectively. The sign (plus or minus) is determined by the type of the Laplacian mask. Apply your program to Figure 3.38(a) and show the enhanced image.