ECE415 – HOMEWORK 4

Fall 2018

Problem 1

Find the connected components in the image Connected.bmp.

1) Display the image
2) Perform thresholding if necessary to create binary image. Describe the method and threshold used. Display the image.
3) Find the connected components using the component labeling two-pass algorithm assuming 4 connectivity. How many components are there?
4) Substituting the pixel values in binary image with the component number they belong to, and mapping the component numbers to the full dynamic range of 8 bits display the image to demonstrate the found connected components. Comment!

Problem 2

Load the image Image.bmp.

1) Display the image.
2) Create a Gaussian pyramid for the Image.bmp. The pyramid should have the original image and four more levels. Display all five levels of the pyramid.
3) Create a Laplacian pyramid for the Image.bmp. The pyramid should have the original image and four more levels. Display all five levels of the pyramid.
4) Comment on the difference between the Gaussian and Laplacian pyramid of the image.

Note: Do not use any built in Matlab functions except for plotting and image read in.

Note: All plots must have a meaningful title.