Inel 5327 **Project II** **Name**:_____

Spring 2009 **StudentID**: _____

Due Date: March 24 2009

50 points

1. **Histogram Equalization**

(a) Write a computer program for computing the histogram of an image.

(b) Implement the histogram equalization technique discussed in Section 3.3.1.

(c) Download Fig. 3.8(a) from the book web site and perform histogram equalization on it.

Your report should include the original image, a plot of its histogram, a plot of the histogram-equalization transformation function, the enhanced image, and a plot of its histogram. Use this information to explain why the resulting image was enhanced as it was.

2. Spatial Filtering

Write a program to perform spatial filtering of an image (see Section 3.4 regarding implementation). 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. This project is generic, in the sense that it will be used in other projects.

3. Enhancement Using the Laplacian

(a) Use the programs developed in Project 2 to implement the Laplacian enhancement technique described in connection with Eq. (3.6-7).

(b) Duplicate the results in Fig. 3.38. You can download the original image from the book web site.

4. Unsharp Masking

(a) Use the program developed in Project 2 to implement high-boost filtering, as given in Eq. (3.6-9). The averaging part of the process should be done using the mask in Fig. 3.32(a).

(b) Download Fig. 3.40(a) from the book web site and enhance it using the program you developed in (a). Your objective is to approximate the result in Fig. 3.40(e).