Reading Assignment

Gonzalez & Woods, 3/e, Chapter 1, Chapter 2, Sections 2.1-2.4

Project #1 Image Quantization Due Thursday September 11th.

(a) Write a computer program which will read and display a grayscale image. You are free to choose a suitable image; however, some suitable images may be found at http://vorlon.cwru.edu/~flm/eecs490f06/Images/Images.html

The ideal image should be 512x512 pixels and contain 256 levels of gray.

(b) Subsample your original image by factors of 2, i.e., 256, 128, 64 and display your images in a manner similar to Figure 2.20 of GW (2/e), i.e., keeping the final images the same size. There are multiple ways to do this as discussed in GW. You may simply sub-sample, average, etc. Describe which you used and why.

(c) Keeping your original image resolution reduce the number of gray levels in your image from 256 to 2 in powers of 2 in a manner similar to Figure 2.21 of GWE.

NOTE: All images in GW are available from the authors' Web site. <u>http://www.imageprocessingplace.com/</u>

Chapters 1 and 2 of GW (2/e) and GW (3/e) are also available from this Web site.

GWE is available from our 2006 Course Web site: http://vorlon.cwru.edu/~flm/eecs490f06

The ideal image should be 512x512 pixels and contain 256 levels of gray.

My contact information:

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Project #1

Suggested Format for Submitting Project Reports

Page 1. Cover Page. Typed or printed neatly.

- * Project title
- * Project number
- * Course number
- * Student's name
- * Date due
- * Date handed in
- * Abstract (not to exceed 1/2 page)

Page 2. *Technical discussion*. One to two pages (max). This section should include the techniques used and the principal equations (if any) implemented.

Page 3 (or 4). *Discussion of results*. One to two pages (max). A discussion of results should include major findings in terms of the project objectives, and make clear reference to any images generated. **Results**. Includes all the images generated in the project. Number images individually so they can be referenced in the preceding discussions.

Appendix. *Program listings*. Includes listings of all programs written by the student. Standard routines and other material obtained from other sources should be acknowledged by name, but their listings should not be included.

Layout. The entire report must be in standard sheet size format (8.5 x 11 inches) All sheets should be stapled. Alternatively, you may electronically submit the entire project. Your report can include .doc or .pdf report files, any appropriate image files. Your program files (M-files) should be included.

A note on program implementation: You may write your program in any language you wish. I encourage you to use MATLAB and the Image Processing Toolbox since GWE follows our textbook and implements many of the needed routines for you; however, ImageJ or C++ (there are many C++ image processing libraries publicly available) is also acceptable. Exceptional programs will be demonstrated in class.