EEE-6512 Image Processing and Computer Vision
Fall 2017 Homework #2
September 7, 2017

Due: September 17, 2017, 11:59 PM

This assignment should be completed individually by the student. Late submissions will not be accepted. Proper citation should be provided for any references used.

Part I Textbook Questions [50 points]

Answer the following questions from the textbook:

2-4, 2-9, 2-10, 2-22, 2-24, 3-5, 3-7, 3-8, 3-12, and 3-13

Part II MATLAB Programming [50 points]

Please read requirements for each function carefully. Solutions that do not follow provided specifications will not receive credit.

1. You are to write a function *myhist* which accepts an intensity image which has been stored in a matrix, compute the image histogram, display the histogram, and returns a vector containing the image's histogram. You are not allowed to use MATLAB functions for computing the histogram, but you are allowed to use loops. The display of the histogram should include figure title and axes labels to receive full credit.

   Test your program on the '*flower.pgm*', '*swan.pgm*', and '*tools.pgm*' images provided. **What can be inferred from each image by the examination of its histogram?**

2. You are to write a function *myquantize* which accepts an intensity image which has been stored in a matrix and scalar variable *quant_num* which represents the number of gray levels, display the quantized version of the image, and return the quantized version of the image stored in a matrix. The variable *quant_num* can have the value of 8, 32, 128. **Provide a detailed explanation of how your algorithm works.**

To receive full credit for this assignment, you should submit three files. 1.) A document containing answers to the textbook questions and programming questions (.DOC, .DOCX, or PDF file) 2.) An M-file containing commented MATLAB code for the function *myhist* 3.) An M-file containing commented MATLAB code for the function *myquantize*. Students should ensure that their M-files execute without errors to avoid receiving point deductions.