BIL – 421 IMAGE PROCESSING
PROGRAMMING ASSIGNMENT # 1

Due Date: **March 30, 2014 till 23:59 pm**
Submission: **Moodle Upload**

Problem -1) SHRINKING IMAGES BY PIXEL REDUCTION

Write a MATLAB program capable of shrinking an image by pixel reduction. Assume that the desired shrink factors (X) are integers. Use the attached image (**Fig.2.20(a))**) and use your program to shrink the image by a factor of X (given by the user). Your program writes the resulting output images to separate files (Matlab's imwrite function) in the same format of the original one.

Problem -2) IMAGE ENHANCEMENT USING INTENSITY TRANSFORMATIONS

Write a MATLAB program capable of enhancing an image using the intensity transformation functions given below. Use the attached file, **Fig. 3.8(a)**, to enhance by using:

(a) The log transformation of the form: $s = c.\log(1+r)$

(b) The power-law transformation of the form: $s = c.r^\gamma$

In (a) the only free parameter is **c**, but in (b) there are two parameters, **c** and **γ** for which values have to be selected. As in most enhancement tasks, <u>experimentation is a must</u>. The objective of this exercise is to obtain the best visual enhancement possible with the methods in (a) and (b). Once (according to your judgment) you have the best visual result for each transformation, explain the reasons for the major differences between them.

NOTE: You may write your explanations as a comment in your program.

NOTES: Submit your source files (.m files) only. Do not submit your input / output files (images). **Do not use any MATLAB library functions** except reading/writing images or input/output (if necessary). Place comment lines in your code as far as possible. Give meaningful variable names.

Previews of the images to be used:

(Do not use them in your programs, use the original ones located in the assignment directory):

Fig.2.20(a)   Fig.3.8(a)