IIVP Practice Assignment Set-4

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Instruction:

Download MATLAB and/or Python and/or C++ and/or Java toolkit and setup environment for IVP Practice experiments. Do not use the inbuilt functions unless mentioned in the experiments. Use **Lenna image** (popular picture use for image processing) as a sample image. Input images may vary subject to experiments.

Submit your codes and outputs etc. by 1pm, Today (28.08.2020).

Questions:

A. Imagine that we have an image with pixels like below. Write an appropriate code to show the histogram representation of the provided image.

$$\begin{bmatrix} 87 & 90 & 1 \\ 1 & 89 & 89 \\ 87 & 120 & 120 \\ 88 & 100 & 90 \\ 2 & 88 & 88 \\ 2 & 90 & 90 \end{bmatrix}$$

B. Write a program to Perform contrast stretching on the following image of a woman's face (Figure-1):

Figure-1

Record the values of a, b, c, d used for the operation. Now perform histogram equalization on the original image. Compare the original picture and its histogram with the stretched picture and its histogram as well as with the equalized picture and its histogram.

Note: For 8-bit graylevel images the lower and upper limits might be a=0 and b=255. c and d the lowest and highest pixel values currently present in the image.

Hint: $P_{out} = (P_{in} - C)\left(\frac{b-a}{d-c}\right) + a$ and Values below 0 are set to 0 and values about 255 are set to 255.