Indian Institute of Information Technology , Allahabad

IVP LAB ASSIGNMENT III

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1. Perform Log transform on given image Download. Display the original and log transformed Image
2. Perform power law (Gamma) Transform on given image Download. Display the original and gamma transformed Image with value of c = 1 and values of gamma as 0.25 , 1 , 2.5
3. For the given input image Download perform following operations :
   (a) Convert given RGB image to gray scale using greyscale = 0.2126*R + 0.7152*G + 0.0722*B
   (b) Write a function to plot histogram of given image
   (c) Perform Histogram Equalization , plot image and histogram of the image before and after transformation
4. Apply image smoothing on given image Download using
   (a) Box filter with 3*3 kernel given below

$$\frac{1}{9} * \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix} \tag{1}$$

   (b) Gaussian filter with 3*3 kernel given below

$$\frac{1}{16} * \begin{bmatrix} 1 & 2 & 1 \\ 2 & 4 & 2 \\ 1 & 2 & 1 \end{bmatrix} \tag{2}$$

   (c) [**optional**] Use a 4*4 filter for above questions
5. Sharpen the given image Download using Laplacian filter , the Laplacian mask is given below

$$\begin{bmatrix} 0 & 1 & 0 \\ 1 & -4 & 1 \\ 0 & 1 & 0 \end{bmatrix} \tag{3}$$

   [**optional**] apply a 4*4 laplacian filter

****You are only allowed to use matplotlib and numpy****