CE 490 – Introduction to Digital Image Processing

MATLAB Exercise #01

Implement a MATLAB **function/script** that performs ***histogram equalization***.

- Use it to correct the contrast issues with the following images:
  - lightPollen.jpg
  - lowContrastPollen.jpg
  - darkPollen.jpg

- Compare the histograms of the corrected images to those of the original.

Hints:

1/ Read the image with **imread()** function,
2/ Convert the image matrix to **double precision**,
3/ Define L = 256 as the total number of gray-levels (for 8-bits),
4/ Get the number of gray-levels [0…255] in the image in a vector **p** of length 256,
5/ Normalize values in **p** with the total number of pixels in the image → PDF,
6/ Calculate transfer function → CDF, & round 255*CDF values to nearest integer,
7/ Apply this transfer function to original image pixel values,
8/ Plot the histograms (use **stem()** function) and equalized images (use **imshow()**).

More exercise.
Match histograms of *pollen.jpg* and *lightPollen.jpg* using **histogram matching**.