1. Read a matrix of size 5*5 and find the following by using a user-defined function.

      i. sum

      ii. maximum

      iii.mean

      iv.median

      v.mode

      vi.standard deviation

      v. frequency distribution

2. Read the matrix size through the keyboard and create a random matrix of integers ranging from 0 to 10 and compute all the above functions listed in question 1.

3. Take a Lena image and convert it into grayscale. Add three different types of noises(salt and pepper, additive Gaussian noise, speckle), each noise in the sets of 5,10,15,20,25,30. Take average for each set and display the average images. Report the observation made.

4. Download Lena image and scale it by factors of 1,2,0.5 using bilinear interpolation and display the scaled images. Also, display the output of built-in functions for doing scaling by factors of 0.5,2. Compare the results.

5. Download the leaning tower of PISA image and find the angle of inclination using appropriate rotations with bilinear interpolation.

6. Do histogram equalization on pout-dark and display the same

7. Do histogram matching(specification) on the pout-dark image, keeping pout-bright as a reference image.

(Please find the attached pout-dark,pout-bright images)

Note(s):

1. You are allowed to use only python.
2. Should not import any module for Question 1
3. Only a random module package is allowed in Question 2
4. Maximum of 3 students can be formed for doing the assignments
5. The deadline, mode of submission and TA details will be communicated to you shortly.