

Digital Image Processing

Assignment 4

This is the fourth assignment for your Digital Image Processing course. After finishing this assignment, you are expected to know:

- Color Image Processing
- Image enhancement using Morphological operators

Instructions

- Please provide a proper answer for each part of the questions.
- Use the cells beneath each question for your answer.
- Feel free to add more cells whenever needed.

Good luck!

Question 1 (15 points)

In this problem, you will use your image processing knowledge to repair a corrupted image. Remove the lines and artifacts from the corrupted “*fruits.png*” image.



fruits.png

Question 2 (15 points)

Apply histogram equalization to tune the low-exposure image *"badexposure.jpg"*.

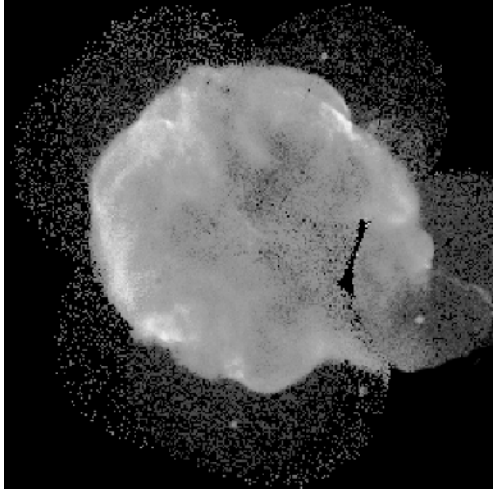
Show the histograms before and after applying the histogram equalization algorithm.



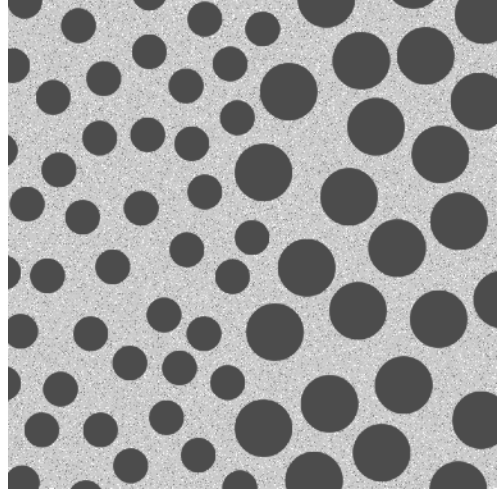
badexposure.jpg

Question 3 (20 points)

- A)** Remove the noise from the image “*splash.png*”.
- B)** Separate the two types of blobs in the “*blobs.png*”.



splash.png

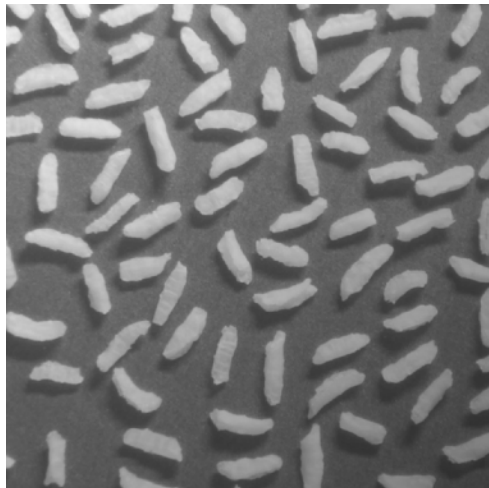


blobs.png

Question 4 (20 points)

The image “*rices.png*” includes objects of rice grains of different orientations over a dark background. In this problem, you are asked to develop a program to:

- A)** Detect (extract from the background) the rice grain objects (By example, using thresholding)
- B)** Compute the number and average size of the rice grains. (Use the morphological operations to count the number of rice grains, such as Opening, Closing connected components, and ...)



rices.png