The American University in Cairo

Department of Computer Science and Engineering

CSCE 4603 Fundamentals of Computer Vision

Dr. Mahmoud Khalil Assignment 1 [10%] Fall 2019

Released September 23th, and due by end of October 14th, 2019

Submission Guidelines

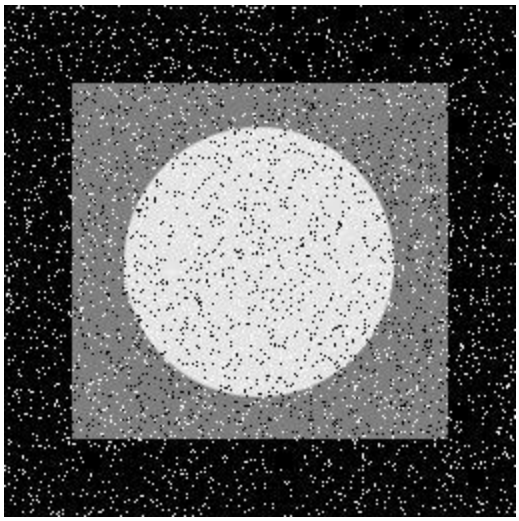
- This is an individual assignment.
- Use **OpenCV** to implement this assignment.
- Your submission should include source code and a report that include the source code and your output images.

Question 1:

Given the image "pout.jpg", you're required to implement a transformation to output an image with higher contrast.

Question 2:

Given the image "sap.jpg" try to implement a suitable filter that would decrease the salt and pepper noise effects.

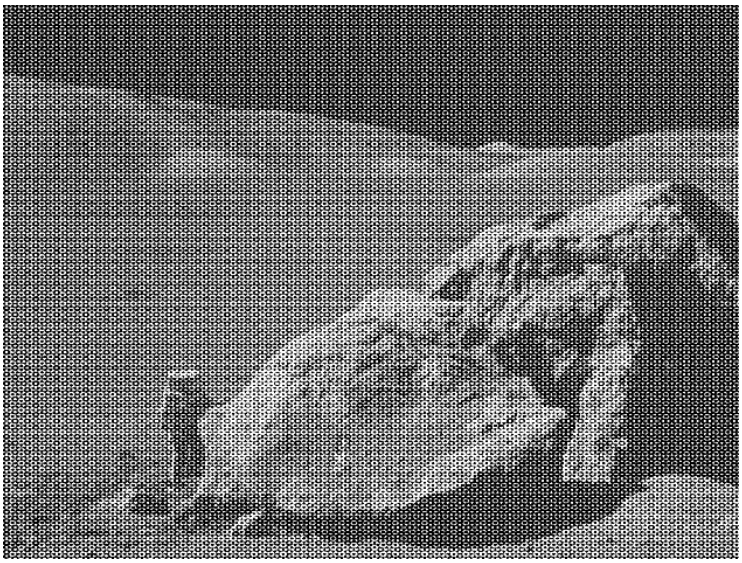


Question 3:

Apply the Gaussian High pass filter to the image “pout.jpg” with different Do. Apply a Gaussian Low Pass Filter (GLPF) to the image “pout.jpg”, compare the results of GLPF with results of Ideal Low Pass Filter. Which is better and why?

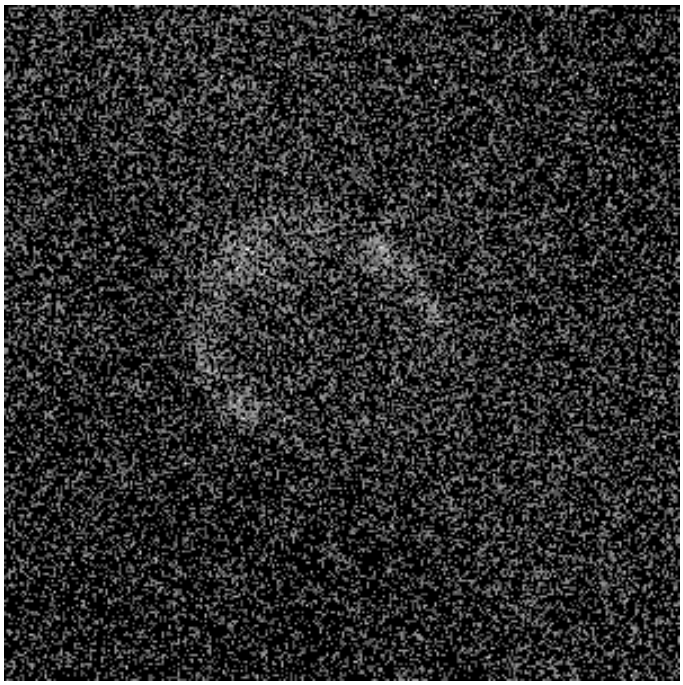
Question 4:

Given the image “noisy3.tif” and “noisy1.tif”, you’re required to enhance the image details as much as you can by removing the repeating pattern.



Question 5:

Given the Image “noisy2.tif”, you’re required to remove the noise as much as you can and enhance object details (the moon in the center of the image). You can use spatial filtering techniques.



Question 6:

Given the 4 images “a1.jpg, a2.jpg, b1.jpg, b2.jpg”, use Fourier transform to detect whether the image is captured in the morning or in the evening.

Note that it is acceptable to customize your solution for each sequence {a1, a2} and {b1, b2}

a1.jpg

a2.jpg