HW1

Instructor: Dr. Hanieh Naderi

Due Date: 1402/08/17

Question 1:

Do the following tasks on the image "sample.jpeg" available in "/resources":

a - Describe its contrast level by checking the image's histogram.

b - Implement a method for histogram sliding by yourself. Apply the implemented method to the image to create dark and light images.

c - Implement histogram equalization and apply it to the image. Then, use the histogram equalization method in the OpenCV or pillow libraries. Finally, compare two outputs.

Question 2:

In this Question, You must detect stars in the sky image. In the tests of this question, there are 8 real photos of the sky, the more stars you can find in them, the higher score you will get for this question. In this way, there is an expected value in the input of each test before describing the photo, which means that if you have at least the number of expected, find stars in the picture, you will get the test score.

After receiving the photo, your program should print the number of stars it found and then write the coordinates of at least one point of each star in the output. Then the system will check the number of stars your program has found. If less than 75% of the number of

stars your program claimed included your exit points, your program will not receive a score for that test.

Your program just needs to find the stars that can be recognized and separated from each other by the human eye. It is guaranteed that in the entrances, the size of such stars are bigger than other stars, and in fact, the difference between smaller stars cannot be recognized by the human eye. For example, the following photo is a part of one of the photos in the tests:

In the above image, there are 5 stars that you will find them.

Input:

In the first line of the input, there are three w, h, and expected numbers that respectively represent the height and width of the input photo and the number of stars to be found.

Then in the h rows, the w points of the image are described. The description of each point is (r, g, b), which represents the color of this point when displayed as RGB. Description points are separated by spaces.

See this sample input.

Output:

Number of detected stars and the coordinates of each found star.

Notes:

- This assignment should be done individually.
- Upload a zip file named "HW[No.]_[StudentID]_[Name]"
- Put your codes and the pdf report file in the mentioned zip file
- In the event of academic misconduct, both individuals producing similar work will receive a grade of 0.