Assignment 3 : Histogram Equalization and Matching

10 points

Due Date: October 29, 2021

1 Background

An image histogram is a type of histogram that acts as a graphical representation of the tonal distribution in a digital image. It plots the number of pixels for each tonal value. By looking at the histogram for a specific image a viewer will be able to judge the entire tonal distribution at a glance.

Image histograms are present on many modern digital cameras. Photographers can use them as an aid to show the distribution of tones captured, and whether image detail has been lost to blown-out highlights or blacked-out shadows. This is less useful when using a raw image format, as the dynamic range of the displayed image may only be an approximation to that in the raw file.

2 Problem Statement

To perform histogram equalization and matching, comparing your algorithms to the inbuilt algorithms from the OpenCV and scikit modules. Here is the colab file.

3 Procedure

- Open the colab file, and follow along the lines. The dataset downloading and some other utils have already been completed for you. You can start with running them.
- Before starting, go through the colab to understand the assignment in a better way.
- You have been provided with a low contrast dataset[1] for this assignment.
- You are required to complete the given code template and the other components that are present in the colab file.
- For any doubts, add your questions to the FAQ document.

4 Deliverables

1. You are required to submit the completed colab file with the following file name **RollNo_Assignment3.ipynb**
2. The marking scheme is labelled in the colab file it self.
3. Please submit only the colab file, i.e. no other report apart from the colab file is required.
4. Avoid any sort of malpractice and adhere to the institute's code of conduct.

References

[1] Muhammad Ali Qureshi, Azeddine Beghdadi, and Mohamed Deriche. Towards the design of a consistent image contrast enhancement evaluation measure. *Signal Processing: Image Communication*, 58:212–227, 2017.