BLG 453E Homework - 1

Due 21.10.2018 22:00

Policy: Please do your homework on your own (Do not copy paste your solutions from the internet or your friends). The code and the report you submitted must be your own work. All code must be implemented using **Python 3.5+** programming language and **OpenCV Python wrapper**. If you use other version of Python and your code give an error because of Python version you will get 0 point. The deadline for this assignment will not be postponed.

For your questions: albay@itu.edu.tr

1. **Histogram Matching**

   Because Git is a very powerful version-control system, as a scientist, an engineer or a developer, learning to work with it effectively is very important. Therefore, before start this question, if you do not have GitHub account, please create an account and a new **private** project which is named as "CV-HW1". This project will contain your homework code. At the end of the homework, you will make it public and put your project address in a report. Your GitHub project must contain at least three branches that contain logical part of the project (If you create dummy branches which does not contain any logical part of the homework you will get zero for GitHub part of the homework.). You must merge all of the branches into master branch at the end of the project. Also you will submit your code and report by Ninova.

   Important note: During this homework do not use any built in function to calculate histogram or match histogram of images. Implement your own functions to calculate and match histograms.

   In this section, you are required to implement following application to match histogram of two images using PyQt5 and matplotlib libraries (Also you can use other necessary libraries such as Numpy):

Figure 1: Main window.

Using menu you can open two images. One of them is input image and the other image is target image. You must show histogram of these images like following:

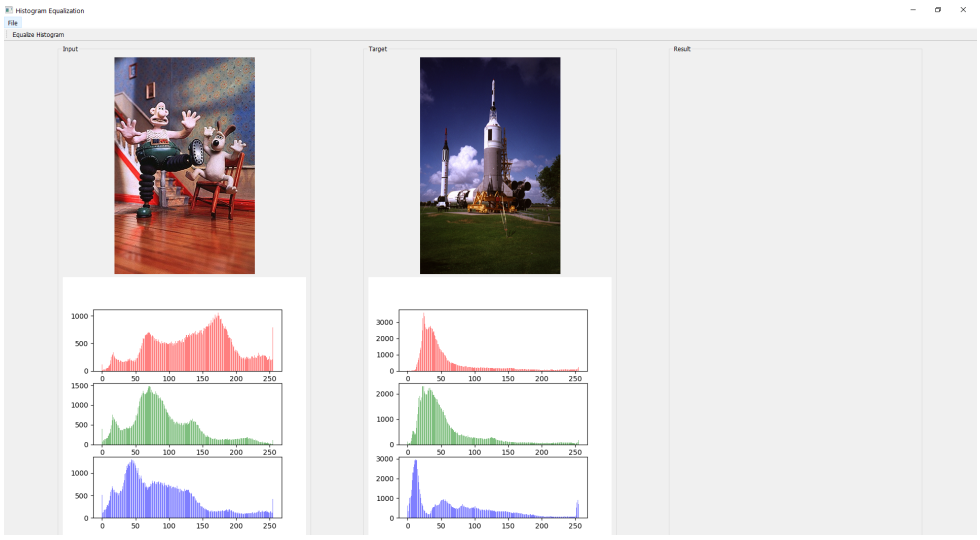

Figure 2: Input and target.

There is also ”Equalize Histogram” button at the toolbar. When the button is pressed, in the result section, you will show the input image which has equalized histogram and its histogram as shown in the following:

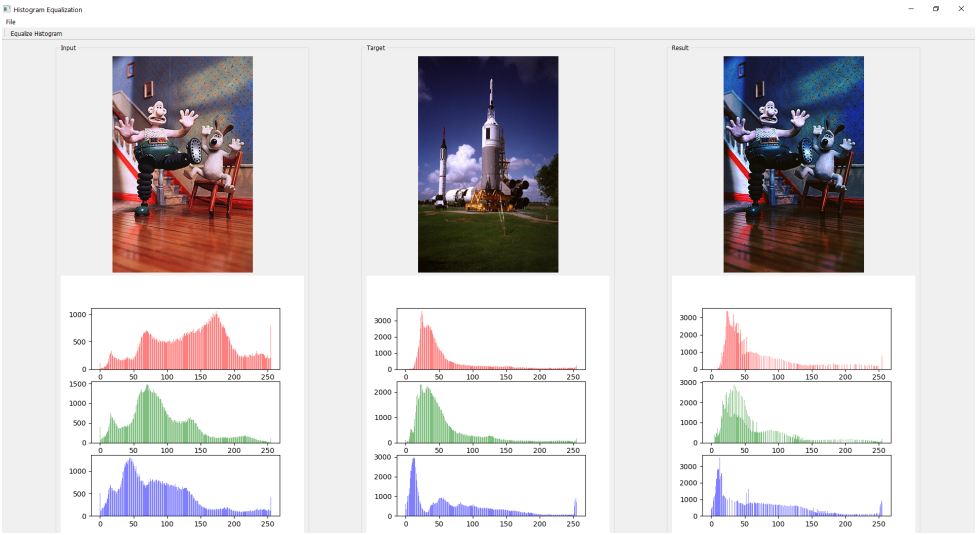

Figure 3: Equalized histogram.