CENG 466

Fundamentals of Image Processing

Spring 2017-2018
Assignment 3

Due date: May 23 2018, Wednesday, 23:55

Part I (60 pts)

You are given two images displayed in Fig.1. The distorted image is acquired by the following operations:

1. "Original Image" is opened in RGB, and its channels are permuted (none of the channels is fixed)[1],

2. `rgb2hsv` is used to acquire HSV form of the image,

3. HSV channels are also permuted (one of the channels is fixed) and saved as "Distorted Image" .

(a) Original Image   (b) Distorted Image

Figure 1: Provided Images

In this part, you will

1. implement the function `m_hsv2rgb` that does the same thing as `hsv2rgb` of MATLAB,

2. experiment and undo the changes in HSV form and RGB form (use `m_hsv2rgb` to work on RGB), respectively.

In the first part of your reports, include the changes that was done on original image to acquire the distorted image, and display the image you have retrieved.

The retrieved image may have ruptures on it. If this is the case, explain possible reasons for these defects, and use morphological filters to repair them.

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[1]To permute means rearranging a set. For example, one possible reordering of RGB is RBG.

Part II (40 pts)

In this part you will

1. use the image operations you have done so far in this course on "Original Image",

2. use `rgb2lab` of MATLAB and manipulate (you may swap, scale etc.) these channels

and observe the differences they make on the histograms of the images.

Report your observations that you find worth-mentioning displaying the related images and histograms.

Regulations

1. Your report length should be between 350 words and 600 words, avoiding repetitive statements and excluding your code.

2. **Late Submission:** E-mail your submission and reasons to the TA of the course. Your late submission **may or may not** be accepted depending on your reasons.

3. **Cheating:** You are free to obtain information from any source provided you cite properly. However, if what you are doing feels like cheating, it would be better if you stopped doing it.

4. **Updates & Announces:** Please follow **odtuclass** for discussions and possible updates.

Submission

Submissions will be done via **odtuclass**.

Submit a single compressed file (could be ".tar.gz", ".rar", etc.) that includes a ".pdf" file along with your code (and a Makefile, if needed).