Assignment 1

Due 2/9/2020

The objective of this assignment is for you to become familiar with the basic image operations. Select you choice of image processing environment: MATLAB or OpenCV.

1. Various Images (33.3%)

Obtain images in different formats, png, jpg, tiff, gif, ppm. The choice of obtaining the images is yours, download from the web, generate using an image program, take a photo with a device, or scan a printed photo. Load the images in your choice of software, then save them in a different format. In your report describe the difference between the file sizes of the different formats. Obtain and report on the image dimensions, the pixel depth, mean, max, and min intensity values.

2. Histogram (33.3%)

Produce the intensity and the RGB histograms for the images of Question 1. Generate an array to store the frequency of the intensity values and then produce a bar-chart. **Use the built-in functions only for comparing your results.**

3. Histogram Equalization (Grad Credit)

Implement histogram equalization and apply it to the intensity and also to the color channel that appears the most compressed. **Use the built-in function to compare with your results but implement your own code**.

4. Single Image Operations (33.3%)

For each image invert the intensity. Transform the image to the HSI model; generate a double loop to change the intensity of each pixel. Transform the image back to the RGB model. Display and save the inverted image.

What to Submit

Together with your code provide a report discussing your implementation together with some illustrative examples (screen shots). The report will be the primary product of this assignment. Ensure that is well written and formatted. Document your work in images and use captions to describe what each image displays. Use of LaTeX is encouraged. Submit the report in pdf format.