Image and Video Processing – Individual Lab 1

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October 11, 2021

Problem

In this assignment, you must implement some simple image manipulation using OpenCV in C++. Your program is called by command line arguments and perform the following functions

1. Load the input image by reading it from a file.

2. Save the processed output image to a file.

3. Convert a color image into a grayscale image. The command line is

> <Program.exe> -rgb2gray <InputFilePath> <OutputFilePath>

   where

   - *Program.exe*: the name of executable file
   - *InputFilePath*: the path name of the input file
   - *OutputFilePath*: the path name of the output file
   - *-rbg2gray*: the command name

4. Convert an image from RGB color model into HSV color model. The command line is

> <Program.exe> -rgb2hsv <InputFilePath> <OutputFilePath>

   where

   - *Program.exe*: the name of executable file
   - *InputFilePath*: the path name of the input file
   - *OutputFilePath*: the path name of the output file
   - *-rbg2hsv*: the command name

5. Change the brightness of a color or grayscale image. The command line is

> <Program.exe> -bright <b> <InputFilePath> <OutputFilePath>

where

- *Program.exe*: the name of executable file
- *InputFilePath*: the path name of the input file
- *OutputFilePath*: the path name of the output file
- *-bright*: the command name
- *b*: the brightness intensity

6. Change the contrast of a color or grayscale image. The command line is

> <Program.exe> -bright <c> <InputFilePath> <OutputFilePath>

where

- *Program.exe*: the name of executable file
- *InputFilePath*: the path name of the input file
- *OutputFilePath*: the path name of the output file
- *-contrast*: the command name
- *c*: the contrast coefficient

7. Draw histogram of a color or grayscale image. The command line is

> <Program.exe> -drawhist <InputFilePath> <OutputFilePath>

where

- *Program.exe*: the name of executable file
- *InputFilePath*: the path name of the input file
- *OutputFilePath*: the path name of the histogram image file
- *-drawhist*: the command name

8. Equalize histogram of a color or grayscale image. The command line is

> <Program.exe> -equalhist <InputFilePath> <OutputFilePath>

where

- *Program.exe*: the name of executable file

- *InputFilePath*: the path name of the input file
- *OutputFilePath*: the path name of the output file
- *-equalhist*: the command name

Submission

Your submission must organize into 2 folders and compressed in 1 file *StudentID.zip*

1. Document (contains your own report, personal inforamtion, your solution, and user guide)

2. Release (contains executed file)

3. Sources (contain source code). Your source code must be followed the template code provided in moodle.