CENG 391 Introduction to Image Understanding

October 13, 2016

Basic Data Types & UI with OpenCV

Exercise 1 (*Basic Data Types*): Write a C++/Python program that takes an argument as the name of an image and operates the following tasks.

1. Read the image
2. Draw shapes on the image listed in the below:
   - One **red** line from the coordinate $(10, 10)$ to $(520, 260)$
   - One **green** rectangle with the corner coordinates $(50, 50)$ and $(300, 150)$
   - Two **blue** points on the coordinates $(10, 10)$ and $(50, 70)$
   - Write "CENG 391" as a text colored with **magenta** whose left bottom coordinate is $(400, 400)$
3. Show the image
4. Write the image as "modified_img.ppm"

Exercise 2 (*High-level GUI*):

Exercise 2.1 (*Adjusting Brightness and Contrast*): Write a C++ program that takes an argument as the name of an image and operates the following tasks.

1. Read the image
2. Create a window to show the image
3. Create a trackbar on the window to change brightness of the image
4. Create a trackbar on the window to change contrast of the image
5. Change the brightness and contrast of the image on the window until user interruption occurs

Hint: In order to modify image with given brightness and contrast values you can use **convertTo** method which is explained here: *http://docs.opencv.org/3.0-beta/modules/core/doc/basic_structures.html#mat-convertto*

Exercise 2.2 (*Image Blending*): Write a **Python** program that takes two arguments as the name of images and operates the following tasks.

1. Read the images
2. Create a window to show their blended image
3. Create a trackbar on the window to change weight of blending
4. Change the weight of them on the window until user interruption occurs

Hint: In order to blend images with different weights you can use **addWeighted** method which is explained here: *http://docs.opencv.org/3.0-beta/modules/core/doc/operations_on_arrays.html#addweighted*