Complementos Sobre Linguagens de Programação (2019/20)

Lab work Nº 2 - Due: 24 Oct. 2019

1. Implement a structure in C to represent color, grayscale and binary images.

2. Implement a module for each type of images that allow the interaction with the image data: load and save images from/to files, access individual pixels, access Regions of Interest, among others that you consider relevant. Regarding the image files, your software should be compatible with the PNM format http://netpbm.sourceforge.net/doc/.

3. Implement a program to convert a color image to the corresponding grayscale version. In the same program, include an option to split a color image into three grayscale images for each channel.

4. Implement a program to convert a grayscale image to the corresponding binary version based on a simple global threshold that should be an argument of your program. You should also try at leart one more advanced algorithms, for example based on histograms.

5. Implement a program that allows to increase or decrease the intensity of an image, both in color or grayscale. Take into consideration the limits of the image representation.

6. Implement a program to apply a filter on an image. The kernel of the filter should be configurable. Try, at least, an average filter and an edge detection one.

7. Implement a program to include a watermark on an image. The position and size of the watermark image should be a parameter of the program. Take into consideration that eventually you have to perform operations of resize on the watermark image.

8. Elaborate a short report where you describe all the relevant steps and decisions taken in all the items of the work. The evaluation process will take into consideration again the correct use of a repository,, the quality of the documentation and the performance of the solution.