# OpenCV lab 2

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**Abstract**

The aims of this laboratory was to become familiar with

- transformations of images from 3-channel colors to 1-channel graylevel
- filters
- histogram and histogram equalization

## 1 Task 1

In the first task the main difficulty was to find the proper *color space conversion code* in `cv::cvtColor` function.
The output image is Figure 1

Figure 1: Greyscale image

## 2 Task 2

In the second task we had to create a *max/min filter* from scratch and use it in 1. A problem I had and still haven't solved is that the filters applies only in the first third of the image, even if it scan all the pixels.
The output images is Figure 2, with *max filter* on the left and *min filter* on the right.

## 3 Task 3

In the third task we had to use *Median and Gaussian filters* in Figure 1. The result is in Figure 3.
No problem during this task.

## 4 Task 4

In the forth task we had to plot the histogram of Figure 1 using 256 bins and range [0,256]. Reducing the number of the bins the curves of the histogram smooths gradually. Output images in Figure 4.

(a) Max filter image

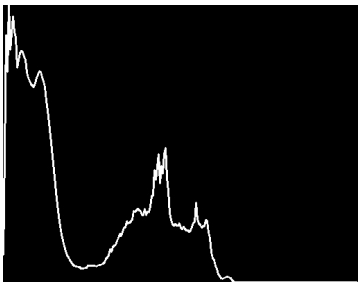
(b) Min filter image

Figure 2: Min/Max filtered images with *kernel=5*

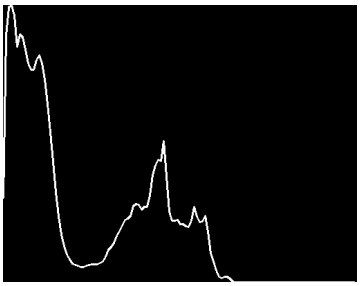
(a) Median filter image

(b) Gaussian filter image

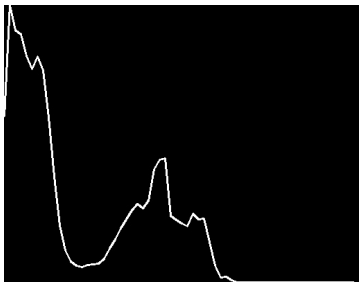
Figure 3: Median/Gaussian filtered images with *kernel=5*



(a) Histogram with 256 bins



(b) Histogram with 128 bins



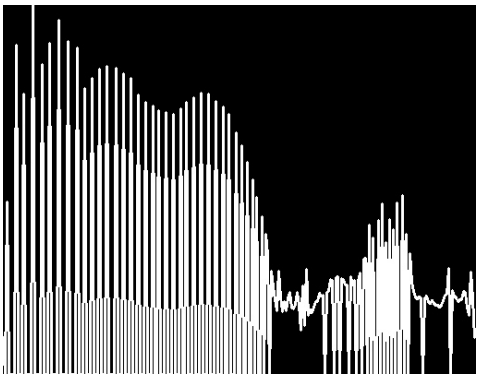
(c) Histogram with 64 bins

Figure 4: Histograms of Figure 1

## 5 Task 5

In the fifth task we had to equalize Figure 1 and plot its histogram. Output images in Figure 5. This time histogram is not smooth but it is flickering from higher to lower values in small intervals.

(a) Equalized image



(b) Hist of equalized image

Figure 5: Equalized image and its histogram