

# Computer vision course

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Lab 1 - Intro to OpenCV, pixel manipulation, transformations

Pietrobon Andrea

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# 1 | Task 1

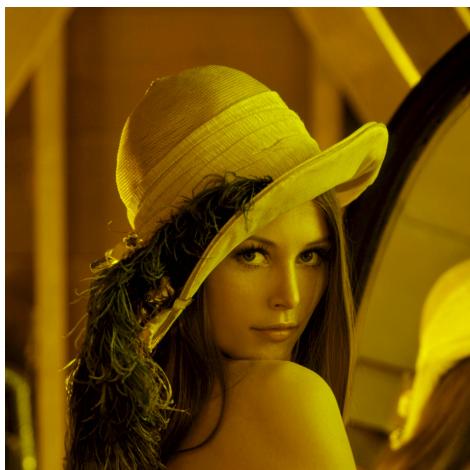
This task was very simple. Even with my little prior knowledge of c++ I had no difficulty doing it. In fact, it was enough to add some if statements and some basic OpenCV functions to complete it.

## 2 | Task 2

Like the previous task, there were no problems with this one either. I simply used .channels() to find the channels of the image and then print them to the screen. While for cv::waitKey() I used a variable.

## 3 | Task 3

I performed the third task differently from what was suggested on the slides using the `cv::Mat::zeros` function (found on internet) to set the channel values to 0. I then divided the image channels and used the function to bring to zero the indicated channels and then I did a merge of the channels to reconstruct the image.



**Figura 3.1** Lena\_color without channel 0



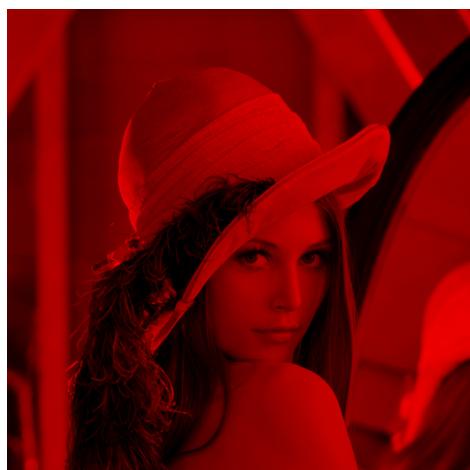
**Figura 3.2** Lena\_grayscale without channel 1



**Figura 3.3** DL\_gurus without channel 2

## 4 | Task 4

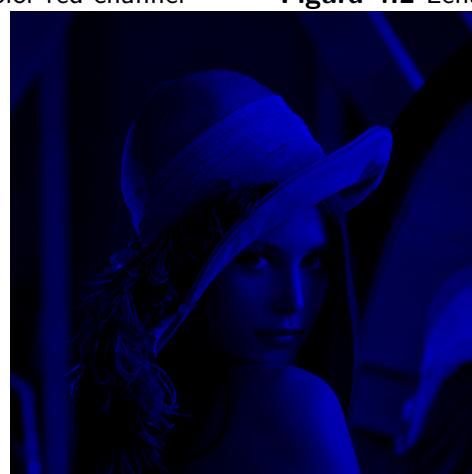
With the fourth exercise I used the same technique and consequently I didn't encounter any major difficulties.



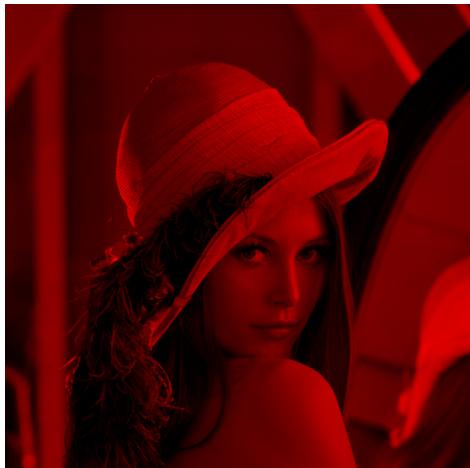
**Figura 4.1** Lena\_color red channel



**Figura 4.2** Lena\_color green channel



**Figura 4.3** Lena\_color blue channel



**Figura 4.4** Lena\_grayscale red channel



**Figura 4.5** Lena\_grayscale green channel



**Figura 4.6** Lena\_grayscale blue channel



**Figura 4.7** DL\_gurus red channel



**Figura 4.8** DL\_gurus green channel



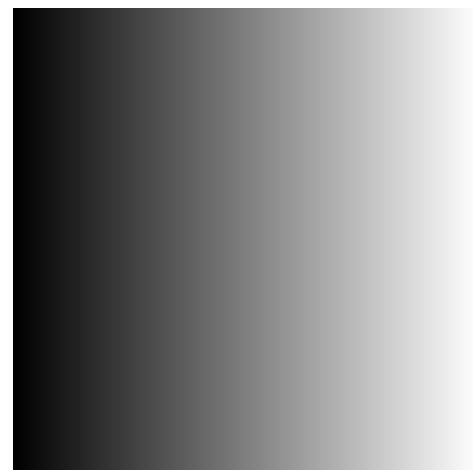
**Figura 4.9** DL\_gurus blue channel

## 5 | Task 5

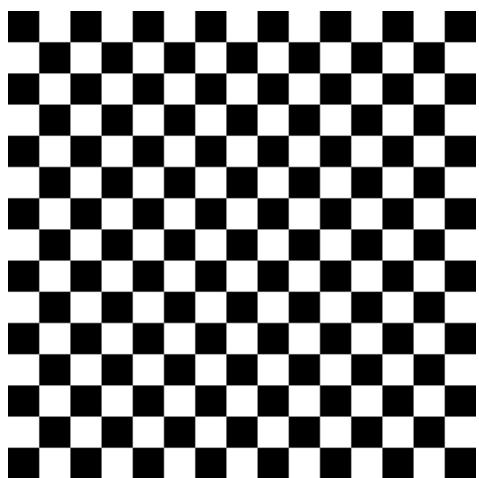
With the fifth exercise after some initial failed tests I understood that it is simply enough to use the for loops to tell it how to color the pixels. So the problem was more of logic than of carrying out the exercise. Once I understood this, the implementation of the code was very fast.



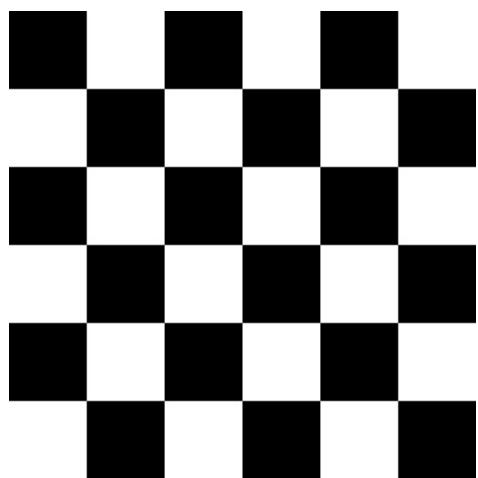
**Figura 5.1** Vertical gradient



**Figura 5.2** Horizontal gradient



**Figura 5.3** chessboard with squares of size 20 pixels



**Figura 5.4** chessboard with squares of size 50 pixels