ECAM
BRUSSELS ENGINEERING SCHOOL

Winter 2020
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NC301μ Introduction to Numerical Computing with SciPy

Coding 1: Image transformation

This assessment evaluates the following competencies:

- *NC101 – Understand what is numerical computing* *(+1)*
- *PP401 – Use Numpy to represent multidimensional arrays and perform operations with them (+1)*
- *NC490 – Solve a given basic problem with the Scipy ecosystem* *(+2)*

In this coding assessment, you have to modify an existing Python program that loads a picture and performs a transformation on it [1]. The existing program just transform a colour image to darken it, by dividing the value of each pixel in each channel (red, green and blue) by two.

Many other transformations are possible on pictures:

- darken or lighten a picture;
- transform a colour picture to a grayscale one;
- ...

You can also think about doing different transformations on the different channels of the picture or on different parts of the picture. To succeed the assessment, you have to:

1. Write and test your own picture transformation program.
2. Explain to the teacher how you designed your code and make a demonstration.

Remember that you have to use operations on multidimensional arrays and, whenever possible, avoid using loops. Also, be creative and find the best picture transformation ever!

[1] The code can be found here: https://github.com/ukonline/uCourse/blob/master/NC301%C2%B5/code/transformpict.py