# Multimedia Data Modelling

**Final exam (your choice)!!!!!!**

Write a python program consisting of the following methods:

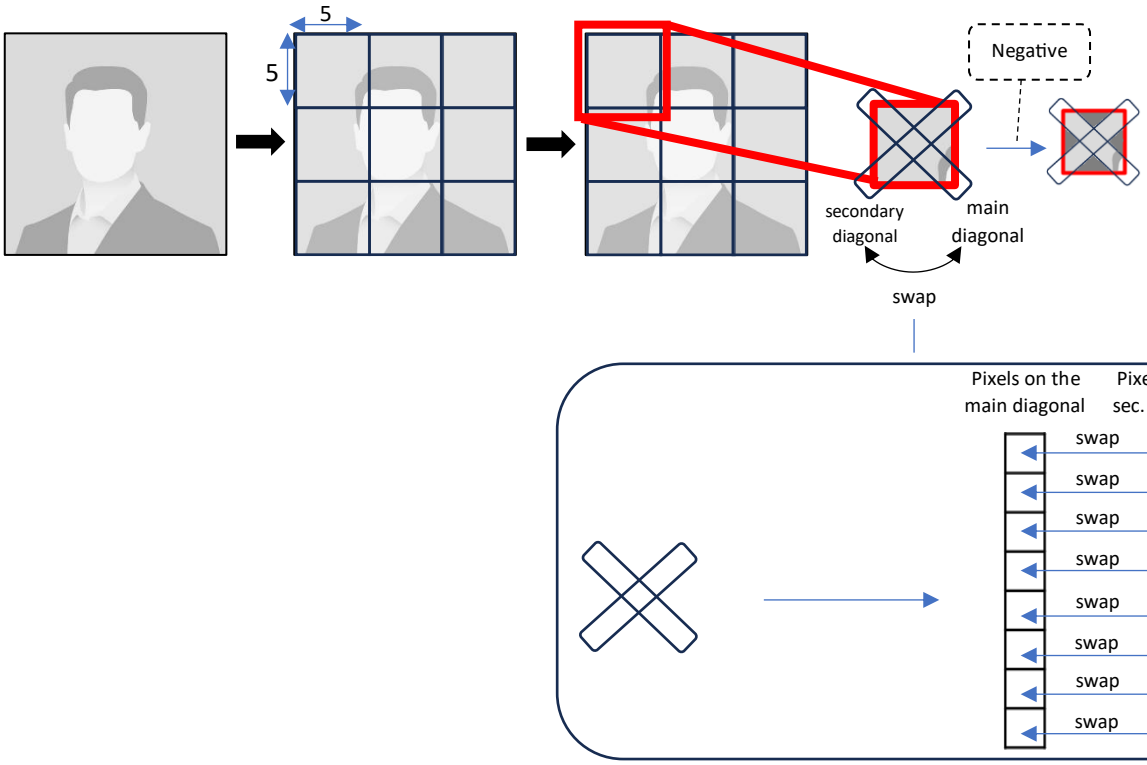
1. **Random(*I*,*t*):** compute and show bit panels of a random patch (positions and sizes) of *I* if *t* is even, otherwise show in half image the ***red channel*** and in the remaining part the ***blue channel*** (you can choose any fixed configuration of "half image" (high, low) (left,right), etc.).

2. **RGB2YCbCr**(*I, ptOut*): Given an image *I* as input:

   a. extract the RGB channels and convert them to YCbCr using OpenCV.
   ***imgYCC = cv2.cvtColor(img, cv2.COLOR_BGR2YCR_CB)***

   b. Randomly choose 3 channels (from the 6: R, G, B, Y, Cb, Cr) and merge them to create a new image. Show the resulting image.
   So for example we could get an image consisting of RYG or CbBG, etc.

3. **Swap-blocks**(*I*): Divide the image into 5x5 non-overlapped blocks. For each block, swap the pixels of the main diagonal with those of the secondary diagonal (Fig (a)). Next, compute the "negative" of the remaining pixels.



# Rules

The **test will end at 10:15 am**.

**You can only use your notes! You cannot use online resources.**

You can choose whether to hand in these solutions as a final test and not take the final exam on December 21!!!!

If so, you will have the results on Thursday, Dec. 21 in classroom 126).

Solutions should be uploaded to MS Teams (***December 15 Exam*** folder).

upload a notebook with name: ***name_surname_Matricola***.ipynb

## Consequences:

- You may choose to do an optional project (To increase the final vote by a maximum of 5 points).
- Those who turn in today will not be able to take the exam on the 21st!
- Those who decline the grade, will have to take the full exam in the official dates (January onwards).

**Monday, Dec. 18, there will be regular lessons and Thursday, Dec. 21, there will be the final exam (for those who do not hand in today) from 8 a.m. room 126.**