INFO-H500
Module 1 project report
Watermark

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1 Main requirements

To add the watermark, it just has to add white color on the corresponding pixels. The white color is equal to the RGB color where all the values for each channel is equal to 255. Thus, to whiten a pixel, the values of each RGB channel has to increase with the same amount.

2 Additional requirements

Some additional requirements have been implemented.

- **Location choice** : The watermark can be placed wherever the user wants on the image. At the beginning of the code, a constant taking the relative position on the image is available.

- **Position corresponding to the watermark center** : The relative position does not give the position of the top-left corner of the watermark. It corresponds to the center of the watermark. This way, the user can easily center the watermark on his/her image by giving the relative position $(0.5, 0.5)$.

- **Watermark partly seen** : If the user decides to place the watermark too close to the borders, it just cuts the part which should not appear on the image.

- **Scaled watermark** : The user can choose to change the size of the watermark by changing its scale. A scale value of 1 corresponds to the initial size of the image.

- **Transparency effect** : A parameter corresponding to the opacity has been implemented. It allows the user to choose at which point the watermark has to be visible on the image.

- **Dark or light watermark based on the luminosity** : A feature that choose between a dark or light watermark based on the luminosity has been implemented. To handle this, it should first determine if the area where the watermark has to be placed is globally light or dark. It corresponds to checking if the mean grey value of the image is closer to black or white. To calculate this mean grey value, the sum of values of each RGB channel for each pixel in the area has been done. Then, this sum has to be divided by the number of pixels composing the area times the number of channels, which is 3. Once it is done, it knows if the watermark should be light or dark. The way to whiten a pixel has been described above. To darken a pixel, it uses the same principle. The black color corresponds to a value of 0 for each RGB channel. Consequently, to darken a pixel, it has to decrease the value of each RGB channel by the same amount.