

Homework #1

In this homework, you will implement some filters to the images.

WHAT YOU WILL IMPLEMENT

Implement the following filters to the each given image in the zip file

1. Blur the image with Mean Filter. Use the following filter sizes: 3x3, 5x5, 7x7, 11x11. Use zero padding at the boundaries.
2. Subtract the blurred images obtained in question (1) from the original images.
3. Shift the image up by 2 pixel using a filter. Also shift the image right by 3 pixels using another filter.
4. Sharpen the images using the sharpening filter of size 3x3 presented in the lecture slides.
5. Remove salt and pepper noise by using median filter for salt and pepper image.

IMPORTANT :

Besides image reading and writing, do not use any image processing function from Python and OpenCV.

All the operations have to be coded from scratch, i.e. filtering, sliding window scheme, etc.

You should comment your code, so that it can be easily understood.

Use Python/Ipynb. Your code has to be in script file with .py/.ipynb extension.

You must explain what you implement in the report. You must show your output images in the related parts of the report. Please zip and upload all your files.

Cheating and plagiarism on assignments will be punished according to ITU regulation.