CS 314 - IMAGE PROCESSING PRACTICAL (2020/2021)
Assignment 06 – Image Filters

Due date: August 16th 2022, 11.59 pm

This assignment requires you to practice image filtering techniques learned on digital image processing using OpenCV-Python library.

You are required to submit the python script, answers.txt file and the screenshots/results. **DO NOT submit the answers using a zip file**. Directly upload the files into your submission thread.

1. Read the image circle.png (say **img_1**) and display it. Create a 5 x 5 kernel h for a mean filter:
    a) Examine the matrix h. Comment on the values and data type
    b) Why should the size of the kernel be odd?

2. Apply the filter h on the image **img_1**. Store the filtered image in a variable called **mean_img_1**. Display both images in the same figure. Try to do the same with different colormaps (jet, pink, hot etc.).
    a) Compare the two images. Is there noise in the original image? Has it been reduced in the mean filtered image?

3. Change the size of h from 5x5 to 15x15 and filter **img_1**.
    a) What happens to the noise when the filter size increases?

4. Try using the median filter on **img_1**. Compare the result with the result of the mean filter.
    a) What differences can you see?

5. Try changing the size of the kernel for the median filter.
    a) What happens when the kernels gets larger?