WS 2019/20	Exercises Digital Image Processing	Task No. 7

Filtering in the spatial domain

Task 7.1 *Neighborhood Operations and investigation of different filter masks*

a) Implement a function to perform a filtering in the spatial domain with any given filter mask!

Note: Save the given filter mask in a form of an image (`GrayImage`) which has the same size of the filter mask!

b) Define a mask for the Gaussian filter in the spatial domain and describe the functions of this filter.

c) Apply the filter from task a) on the provided input images! Describe and compare the results with a mean filter with different filter sizes!

Task 7.2 *Medianfilter*

a) What is the idea behind the median filter? How does it work and what is the output of the filter?

d) Implement a median filter and test your results with the images *lena_gauss.bmp* and *lena_int.bmp*.

For loading and saving filter masks, the following functions are available to you in the text files:

`void loadFilterMask (string filename, GrayImage& mask)`
Loade the filter mask from file `<filename>` and store it as an image `<mask>`.

`void saveFilterMask (GrayImage& mask, string filename)`
Saving the filter mask image `<mask>` in the file `<filename>`