DSP2 SS2020 – Exercise 2: Threshold

Note: For a more detailed description of steps 1 and 2 see exercise 1.

1. Download the exercise (02_threshold.zip) and unzip it
2. Create the project with CMake
3. The folder src includes 2 files:
    a. main.cpp: this is the source code for the exercise
    b. Timer.h: header file for the time measurement, you do not need to change anything here
4. In main.cpp you will find 3 functions to implement:
    a. void threshold_loop(const cv::Mat &input, cv::Mat &output, int threshold)
    b. void threshold_loop_ptr(const cv::Mat &input, cv::Mat &output, int threshold)
    c. void threshold_loop_ptr2(const cv::Mat &input, cv::Mat &output, int threshold)
5. Function Parameters:
    a. const cv::Mat &input: the input image
    b. cv::Mat &output: here you have to store the result of your threshold algorithm
    c. int threshold: the threshold value
6. In each of these functions you will find a comment like this:
    a. // insert your code here ...
    b. this is the place where you have to insert your code
    c. hint: have a look at the slides from the lecture, this can help you
7. Implement the threshold functionality in “threshold_loop” by using the Mat::at(int i, int j) method to access the image data
8. Implement the threshold functionality in “threshold_loop_ptr” by using a pointer with index to access the image data
9. Implement the threshold functionality in “threshold_loop_ptr2” by using a pointer without index (pointer arithmetic) to access the image data
10. Good luck and feel free to play with the code...