

# Exercise Sheet 7

Discussion starts from Wednesday, June 12, 2019

## 7.1 Task Handling

Based on the "hello\_world\_opengl" example on exercise sheet 5, let one kernel do the following:

- Create three inputs, out of which two are used for `cl_int` values and the third one encodes one of 5 operands (+, -, \*, /, ^).
- Create an output, in which the result of the computation should be stored.
- Program a kernel, which stores the value resulting from the two inputs and the encoded operand in the output.
- Fill the three inputs with random values and encoded operands.

## 7.2 Conway's Game of Life with OpenCL

Create your own version of Conway's Game of Life, in which you outsource computations by means of OpenCL. You may again start from the "hello\_world\_opengl" example on exercise sheet 5. For a better understanding, refer to the game rules provided on exercise sheet 4 and the related OpenMP implementation.

- Implement your own version of Conway's Game of Life.
- Keep in mind that you can use auxiliary functions inside of a kernel.
- Take the memory model of OpenCL into consideration (host/global/constant/local/private memory).
- Compare the performance of your OpenCL implementation with the OpenMP implementation provided together with exercise sheet 4.

**General Information:** Further information can be found under <https://ls12-www.cs.tu-dortmund.de/daes/lehre/lehrveranstaltungen/sommersemester-2019/rechnerarchitektur-ss19.html>. Submitting solutions to the exercise sheets is not required.