CES Chair for Embedded Systems

Prof. Dr. J. Henkel

Diplom- / Master- / Bachelorarbeit

OpenCL/CUDA Reliability Analysis

Image Source: NVIDIA

Reliability models are very computational intense. Billions of transistors in a microprocessor operate at billions of operations per second. However, to estimate reliability, we need to estimate the lifetime of a system, i.e. how the system will look like after 10 years. We need to handle the computational complexity by parallelizing the models.

Goals:

- Work on current research topics
- Explore parallelism in reliability models scientifically as well as from a programming perspective

Potential Thesis Topics (open for discussion!)

- Improving the performance of state-of-the-art reliability models by employing massive parallelism on graphic cards via OpenCL/CUDA
- Employ moderate parallelism in reliability models via OpenCL for CPUs
- Hardware implementation using FPGA and OpenCL.

Skills acquired with the Thesis

- Explore Parallelism in complex programs
- Work in a research environment
- Technical writing

Skills required for the Thesis

- Programming skills in C
- NO OpenCL/CUDA experience required

Start Date

Immediately or within a couple of months.

Language

English or German.

Supervision:

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