Luca Anthony Schwarz

lucaanthonyschwarz@googlemail.com | *LinkedIn* | *GitHub* | *ResearchGate* | *Personal Website*

Career Profile

Ambitious *Computer Science* student at Leibniz Universtität Hannover graduating in *June 2025*. Looking for *entry-level opportunities* to develop advanced hardware solutions that make the difference. Experienced in computer architecture, computer design and low-level software development.

Education

Leibniz Universität Hannover Hannover, Germany
Master of Science in Computer Science, GPA TBD, GPA-Thesis TBD *Apr. 2023 – Expected May 2025*

Thesis: Redesign and Optimization of the Floating Point Unit of a RISC-V Processor for Enhanced Synthesis and Integration in a High-Temperature Environment

Selected Coursework: Microelectronics - Chip Design, Architectures for Digital Signal Processing, Design of Integrated Digital Circuits, FPGA Design, Operating System Construction for Multicore Platforms, Application-Specific Instruction-Set Processors

Christian-Albrechts-Universität zu Kiel Kiel, Germany
Bachelor of Science in Computer Science, GPA 3.1, GPA-Thesis 4.0 *Oct. 2019 – Mar. 2023*

Thesis: Parallel Algorithms for Genome-wide Interaction Tests with Estimated Genotypes

Selected Coursework: 3D Computer Graphics, High Performance Computing

Language Skills

Fluent in German and proficient in English (B2/C1).

Experience

Engineering Intern at Dream Chip Technologies Jul. 2024 – Oct. 2024
Dream Chip Technologies - Hardware Design Team *Garbsen, Germany*

- Improved parts of image processing SoC by replacing binary multiplication with custom floating-point multiplication implementation in SystemVerilog
- Changes improved timing and power usage of selected areas of standard-cell chip by 20 percent
- Area of selected modules reduced by up to 15 percent

Undergraduate Research Assistant Apr. 2022 – Mar. 2023
Christian-Albrechts-Universität zu Kiel - Reliable Systems Group *Kiel, Germany*

- Assisted the development team of HybridGWAIS, a software for detecting interactions between genetic variations in the human genome
- Designed, implemented and assessed highly parallelizable general-purpose GPU algorithms
- Found novel highly parallelizable algorithmic approach, which allows for tests on continuous datasets (one of the first tools to do so)
- Increased performance of selected algorithms in CUDA by a factor of up to 43 by using efficient use of hardware resources and advanced hardware features like Tensor-Cores

Projects

Project Course: Application-Specific Instruction-Set Processors | *Software/Hardware Optimization* Apr. 2024 – Jul. 2024

- Optimized baseline LX7 processor by implementing vector processing hardware
- Improved performance per Watt by 300 percent compared to original implementation

RW-Pioneer | *Computer and System Architecture* Jan. 2024 – May 2024

- Designed and tested a fully custom 4-bit computer system in SytemVerilog
- Verified design using Verilator and a model written in C++

Scholarships

Two-time recipient of the Deutschland Stipendium scholarship.

Technical Skills

Programming Languages: C (Advanced), C++ (Advanced), Rust (Intermediate), Python (Intermediate)
Domain Specific Languages: SystemVerilog (Advanced), VHDL (Advanced), GLSL (Advanced), HLSL (Intermediate)
Frameworks and Libraries: CUDA (Advanced), OpenGL (Advanced), OpenCL (Intermediate), D3D (Beginner), OpenMP (Advanced), MPI (Intermediate)
Tools: Cadence Genus, Cadence XCelium, Git, VS Code, Unix/Linux, gdb and kgdb, qemu/kvm, make, UVM, Xilinx Vivado, Verilator
Hardware: Xilinx Artix-7 FPGA, Logic Analyzer and Oscilloscope use