Kristoffer O. W. Nordström

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Objective I'm looking forward to tackle your testing and verification challenges at the intersection of FPGA, SW, and embedded systems. Leveraging a decade of experience in space, railways, and communication applications to drive excellence in your projects. I want to contribute in a collaborative environment that provides growth opportunities.

Practical Experience

Development Engineer 2017-12 – current
Super Computing Systems AG, Zürich

Test Engineer for an interlocking system's subsystems. These subsystems where directly or over ethernet connected FPGA modules whose firmwares were developed according to EN50128: either SIL0 or SIL4.

- I derived and written the test specifications from the requirements for the various subsystems according to their safety requirements.
- I designed and implemented the test harness (FPGA boards with custom VHDL code) and the test cases.
  - Connected through PCIe to host computer with custom *Linux* drivers
  - DUT connected through Ethernet or GPIO pins
  - Test cases have been written in *Python* and the test scripts orchestrated through *pytest*).
- I was working on verification tasks for various application specific documentation
- Writing design documents for the application generating software

Proof-of-concept to connect multiple ADC through a FPGA with DMA to an NXP iMX8 SoM. The task included requirements facing various units at the customer, adapting kernel modules and user-space software to show the data transfers.

I was assigned the role of *Technology Ambassador*. Supporting the management team with strategic decisions concerning our technology stacks. Amongst others:

- supporting technology roadmap, e.g., high-level synthesis, test-automation with vu-nit
- organizing the annual internal *Hackday*

Maintainer sltoo.dev 2018-02 – current

Added traceability features to *rmtoo*. Improvements with package managing lead to the fork *sltoo*. Accepted speaker at SWISSED21.

FPGA Development Engineer 2015-06 – 2017-11
nanoTronic GmbH, Lyss

Software Engineer in a customer project. Upgrading an ethernet and STM32 based legacy application to a wireless solution on a ESP32 chip. Mainly responsible for refactoring the C/C++ code-base and requirements engineering with the customer.

FPGA firmware verification engineer on an ESM/Orion sub-system, see Artemis I. I was responsible for ensuring the firmware conformed to the specifications (ECSS) written by the customer and derived in-house works.

Software Engineer 2015-04 – 2015-06
Helveting Engineering AG, Neuenhof

FPGA Development Engineer 2014-01 – 2014-12
Super Computing Systems, Zürich

For an application in biochemical analysis:

- Development and verification of data and control paths for a high-speed digital receiver in VHDL
- Porting Existing code to a 7 Series Xilinx FPGA

Education

MSc ETH in Electrical Engineering and Information Technology 2011-09 – 2013-01
ETH Zürich, grade average: 5.18

Focus Microelectronics and Communication

Master's thesis: *Tuneable Operational Transconductance Amplifier in Deep Submicron CMOS*. A tunable OTA for a LTE+ baseband filter has been successfully designed in a 28 nm node. Grade: 5.5.

Semester thesis: *Turbo Decoder Implementation for Evolved EDGE*. Group-project for a stand-alone turbo decoder ASIC for EEDGE. Chip was manufactured with UMC 0.18 µm node and successfully tested. See C. Benkeser et al., *"Turbo decoder design for high code rates"*, 2012. Grade: 5.25.

BSc ETH in Electrial Engineering and Information Technology 2006-09 – 2011-08
ETH Zürich, Major: Micro- and Optoelectronics, grade average: 4.57.
Erasmus exchange year at Lund University (LTH), 2008/2009.

Coursework

iDesign Architect's (2018) and Project Design Master Class (2020), DDC (2023)

Black Box Testing Software Testing Foundations (2024)

Systems Architecting, SE Training (2023)

Technology & Tooling

Languages

VHDL, Python including pytest, poetry

C/C++, PSL, Bash

Web-Stacks Astro, HTML/JS, MySQL

SystemVerilog, SystemC/HLS, P-org *first contact*

German, Swedish *native*, English *highly proficient*

Tools

Codebeamer ALM, Docker, git

Systems (Ubuntu, CentOS), various build tools (Jenkins, github, SCons, . . .)

References

On demand.