Timo Nicolai

Born August 1994
German

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Education

TU Dresden: Diplom (Equiv. to M. Sc.) Information Systems Engineering **Oct 2016 – (July 2021)**

- Current grade average: 1.1 (best is 1.0).
- Student assistant at the Center for Advancing Electronics Dresden working on:
  - Linux system programming for distributed systems.
  - Optimized mapping of computational tasks to multicore system-on-chips.

TU Dresden: Undergraduate Studies in Electrical Engineering **Oct 2014 – Oct 2016**

KTH Stockholm: Exchange Studies in Electrical Engineering and Computer Science **Jan 2019 – June 2019**

Fördegymnasium Flensburg: Abitur (High School Diploma) **Aug 2005 – June 2014**

- Final grade: 1.0 (best is 1.0)

Work Experience

Kernkonzept GmbH, Dresden: Software Engineering Intern **June 2019 – Oct 2019**

- Designed and implemented an extension to the L4Re microkernel's hypervisor using C++ that:
  - Allows inspection of guest state (e.g. cpu state, page tables) and basic debugging at runtime.
  - Works on several different architectures (x86/x86-64, ARM/ARM64).

ZEISS Corporate Research and Technology: R & D Intern **Aug 2018 – Dec 2018**

- Worked with agile team on manufacturing defect detection machine learning research project.
- Developed software for data acquisition, processing and analysis and for training of deep neural networks.
- Used Python libraries such as PyQt, OpenCV, NumPy, and Matplotlib.

Kernkonzept GmbH, Dresden: Student Employee **Sep 2017 – July 2018**

- Implemented tests for the L4Re microkernel using C++ and extended test scenario infrastructure.
- Created a Lua tool for verification and visualization of L4Re startup scripts.
- Designed and implemented a Python library for visualization and analysis of benchmark data.

SONOTEC GmbH: R & D Intern **Feb 2016 – Sep 2016**

- Used MATLAB to develope and evaluate algorithms for position estimation of ultrasonic sensors.
- Built and debugged hardware prototype boards using Atmel and ARM microcontrollers programmed in C/C++.

Technical Skills

- Programming Languages: C, C++, Python, Haskell, Lua, Bash, Assembly, Verilog
- Tools and Technologies: Linux, Git, Make, CMake

Projects

Complete List at: `Time0o.github.io/#projects`

MPSym: Faster Mapping of Tasks to Multicore Systems

`github.com/mpsym`

- Uses computational group theory algorithms to find and represent symmetries in multicore system-on-chips.
- Can be used to significantly speed up mapping of computational tasks to complex architecture.
- Implemented in C++ with bindings to Python, builds with CMake and setuptools.
- Uses CI/CD pipeline to build/run tests and deploy documentation, test coverage and PyPI packages.

CPPBind: C++ Wrapper Code Generator Using Clang

`github.com/Time0o/CPPBind`

- Uses Clang's LibTooling library to parse and process C++ code.
- Outputs wrapper code in several different languages such as C and Lua.
- Extensible to new languages via a Python API.

Automatic Colorization of Grayscale Images Using Deep Learning

`github.com/Time0o/pytorch-colorful-colorization`

- From scratch PyTorch implementation based on paper by Zhang et al.
- Original VGG network can be replaced by DeepLabv3+ network.
- Works with pretrained weights and includes preprocessing and training scripts for new datasets.

Languages

- German: Native
- English: Fluent

References

Available on request