

Philipp E.

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EDUCATION

Technical University of Munich

Oct 2024 – Present

Master of Science in Informatics

Munich, Germany

- Ongoing, expected graduation by summer 2027
- Focus Area: Database internals and **systems-level programming**

Technical University of Munich

Oct 2020 – Sep 2024

Bachelor of Science in Informatics (Application Area: Medicine)

Munich, Germany

- Thesis: *Efficient Cross-Platform Columnar Compression*: cost-based **evaluation of compression algorithm implementations** for ARM-based cloud instances (Grade: 1.0)
- Overall Grade: 1.9

EXPERIENCE

Working Student (Testing)

Aug 2025 – Jan 2026

OroraTech GmbH

Munich, Germany

- Extended service for distributed hardware-in-the-loop testing of wildfire detection satellites
- Created dashboards and web interface for other teams to monitor hardware tests (Grafana, Vue.js)
- Expanded satellite test suite, internal utilities, and data visualization tooling (Python, *matplotlib*)

Kernel & Operating Systems Engineer Intern (EC2)

Aug – Oct 2023

Amazon Web Services

Berlin, Germany

- Created a performance data analysis tool using multiple AWS cloud services (EC2, S3, DynamoDB) in **Python**
- Implemented automated hypervisor performance evaluation using industry-standard and custom benchmarks
- Developed release pipeline integration to detect performance regressions before hypervisor deployment to EC2

Tutor – Computer Architecture Lab Course

May – Sep 2022

Technical University of Munich

Garching near Munich, Germany

- Held two exercise sessions per week, teaching C, **x86-64 Assembly** and optimization techniques (SIMD etc.)
- Supported students' learning by answering questions via an internal chat platform
- Reviewed and graded student project work in accordance with assessment criteria

EXTRACURRICULAR ACTIVITIES

Scientific Workgroup for Rocketry and Spaceflight (WARR)

May 2023 – Present

Software Developer – Satellite Student Club (MOVE)

May 2023 – Present

- Contributed to MOVE's **Real-Time Operating System** in C++, including fixes for bugs found while testing
- Created LoRa communication driver, achieving data transmission over 100 km during stratospheric balloon launch

Software Lead (MOVE)

Apr – Oct 2025

- Worked with interdisciplinary subsystem teams to clarify and negotiate software requirements for our satellite
- Supported onboarding and maintained internal knowledge base to improve team efficiency and collaboration

PROJECTS

STONCS CubeSat Payload | *Rust, C++, STM32, Hardware Testing*

Nov 2023 – Aug 2024

- Co-developed an embedded, radiation-tolerant STM32 bootloader in **Rust** for reliable satellite firmware updates
- Enhanced reliability through model checking (Rust/Kani) and hardware-in-the-loop testing scripts
- Created a specialized testing tool to induce radiation-like flash memory corruption for bootloader validation
- Payload launched to orbit aboard Rocket Lab's OTC-P1 mission on March 26, 2025

x86-64 Emulator for WebAssembly | [GitHub](#) | *Rust, WebAssembly, C, x86-64, Python*

Sep 2022 – Jun 2023

- Implemented a minimal x86-64 emulator supporting the 315 most important opcodes ($\approx 9\%$ of total)
- Built **automated test case generation** scripts to validate behavior of instructions/flags against real hardware
- Designed JavaScript API to run basic ELF binaries and handle syscalls per System V ABI
- Created demo web app showcasing program execution and programming playground for a friend's custom language

My open-source work includes **Go**, web development, and many more projects – see [my website](#) or [GitHub](#).