

# Chris Pahl

## Software Engineer & Linux Expert

Software Generalist • Open Source developer since 2010 • Loves to mentor • Quick & always hungry learner • Likes a good challenge • Pragmatic tester • Fighting against complexity on a daily base • Agile in the original sense • Keen eye for details • Likes boring tech



## Work Experience

### Engineering Manager Software @ German Bionic Systems

May 2022 – Present

Augsburg, Germany

- Driving architectural decisions for Cloud & Embedded.
- Implementation of monitoring & alerting infrastructure based on Prometheus and Grafana for both Device Fleet and Cloud.
- Firmware maintenance (e.g. kernel update) to support new product generations and development of completely new products.
- Further hiring of developers and scaling up teams.
- Tooling to do the annual 360° Feedback Evaluation.
- Managing a team of up to 5 people at the same time.

### Senior Software Developer @ German Bionic Systems

September 2021 – May 2022

Augsburg, Germany

- Heavily refactor backend codebase inherited by a contractor to fit requirements by cutting it down to a third of its size.
- Build infrastructure for data analysis using a data lake on AWS S3 and NATS-based services to upload sessions as CSV files.
- Interviewing, onboarding & mentoring of new hires and interns.
- Design and implementation of a RPi-based hardware box, guiding workers through the production process using a Web frontend.
- Debugging of critical difficult issues like sudden freezes.

### Software Developer @ German Bionic Systems

April 2019 – September 2021

Augsburg, Germany

- Design and Implementation of »exOS«, an atomically update-able, embedded Linux distribution based on Yocto for the Raspberry Pi, using OSTree and u-boot with small footprint and fast boot time.
- Design and Implementation of different firmware services in Go (UI, Telemetry, Monitoring, Control System interaction and more).
- Implemented an animated, vectorgraphic UI-Framework using libcairo with many custom widgets and dynamic frame rate.
- Building Infrastructure to manage a fleet of devices, including OTA assignment, metadata CRUD and per-device configuration.
- Development & testing of firmware updates with fixes & features.

### Open Source Developer

September 2018 - April 2019

Augsburg, Germany

- Working on brig (self employed; see Projects below)
- Implementation of first usable prototype.

📍 Augsburg

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## Skills

### Languages

German



English



### Programming

Go



Shell



C/C++



Python



Elm



Rust



### Operating System

Linux



FreeBSD



macOS



Windows



### Fields

Optimization



Debugging



Cryptography



Disitributed Computing



Architecture



Testing



### Fields

Backend



Embedded



Frontend



Infrastructure



Data Science



## Python Engineer

📅 February 2017 – September 2018

🌐 [adnymics GmbH](#)

📍 Munich, Germany

- Developed a highly configurable recommendation engine that chooses products based on order, history, toplist and many more.
- Refactoring and optimizations of new and existing services.
- Debug & support issues on customer side and make debugging easier using Grafana dashboards and Email-Notifications.

## Workshops

### Performance & Optimization

📅 2023 (English)

🌐 [Slides](#)

📍 [GitHub](#)

- 5 day workshop with optimizations tips & tricks around CPU, Memory, I/O and Concurrency as well as teaching of general ideas.
- Infos about how to design programs cache friendly & allocate less.
- Sideproject was the implementation of a Key-Value store.

### Bash & Shell Programming

📅 2021 (English)

🌐 [Slides](#)

📍 [GitHub](#)

- Useful knowledge for developers new to Linux.
- Crowd Programming as final task to code a QR-Code PDF generator.
- Held several times due to popular demand.

### Git & die Wolke

📅 2012 (German)

🌐 [Slides](#)

📍 [GitHub](#)

- Introduction to Git Basics and selected advanced tooling.
- Introduction to code hosting platforms with GitHub as example.
- Using git as file synchronization tool using git-annex.

## Open Source Projects (Selection)

**timeq**

🌐 [Fast & persistent priority queue](#)

📅 2023-now

📍 [GitHub](#)

- Simple & yet highly optimized; used in embedded devices.
- Uses memory mapped I/O with very low memory consumption.
- Written in readable & well tested Go, roughly 3k LOC.

**brig**

🌐 [Secure, versioned file sharing based on IPFS](#)

📅 2016-2019

📍 [GitHub](#)

- Using Content Addressed Storage to allow several versions of a file.
- Secure & compressed transmission using fast streaming engine.
- FUSE filesystem allows easy & seamless access to remote files.
- 50k LOC, Written in Go, additional Web frontend in Elm.

**rmlint**

🌐 [Fast duplicate file cleaner for Unix](#)

📅 2010-2020

📍 [GitHub](#)

- Highly parallelized hashing and sieving of candidate files.
- UI (»Shredder«) implemented with GTK+ and Python.
- Written in C, roughly 20k LOC.

## Education

**MSc (ø 1.4) Computer Science**

📅 2014 – 2016

📍 Augsburg, Bayern

**BSc (ø 1.8) Computer Science**

📅 2010 – 2014

📍 Hof, Bayern

## Tools & Libs

### Web & Cloud

HTML • CSS • Bootstrap • JS • HTTPS • OpenAPI • gRPC • JWT • Caddy • Hugo • AWS EC2 / ECR / IAM / S3 • zxcvbn

### Databases

PostgreSQL • SQLite • TimescaleDB • Influx • Redis • NATS / JetStream • Badger

### Monitoring & Alerting

Grafana • Prometheus • Loki

### Embedded

RaspberryPI CM3 • u-boot • Yocto • OSTree • ATtiny • Qemu • MQTT

### Daily Tools

DroneCI • docker • git • docker compose • Neovim • Typst • Zsh • Cap'n Proto • Sway • btrfs • ss • jq • make • task

## Hobbies

Table tennis • Cooking • Tattoos • Metal • Hiking • Biking • Books • Everything related to computers • Art • Cats

## Articles

- **2016:** »brig«: Ein Werkzeug zur sicheren und verteilten Dateisynchronisation. 🌐 (PDF, German)
- **2014:** Algorithmik und Evaluation des Musikempfehlungssystems libmunin. 🌐 (PDF, German)