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
📞 (+49)15121340235
✉ sahib@online.de
🐙 sahib
💼 christopher-pahl
🔗 sahib.github.io

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 — adnymics GmbH

February 2017 – September 2018 — 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 — Slides

2023 (English) — 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 — Slides

2021 (English) — 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 — Slides

2012 (German) — 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 (∅ 1.4) Computer Science
2014 – 2016 — Augsburg, Bayern

BSc (∅ 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 • systemd

Daily Tools
DroneCI • docker • `git` • docker compose • Neovim • Typst • Zsh • Cap'n Proto • Sway • btrfs • `ssh` • `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)