

# Chris Pahl

## Senior Software Engineer & Linux Expert

Software Generalist · Loves learning & teaching · Hates complexity · Hobby Open Source developer · Team player & self-driven · Well organized · Made enough mistakes to be good in debugging · Pragmatic tester · Looking for remote work or office work close to Bamberg



## Work Experience

### Head of Software Architecture

»»» | German Bionic GmbH

📅 April 2025 – Present

📍 Litzendorf, Germany

- Overview over Cloud infrastructure, IT-Security and general architecture decisions & review of architecture proposals.
- Re-design mobile data transmission to use higher compression ratios, better scaling (1000+ devices) and 50x performance of before.
- Porting our internal OS to CM5 & arm64 and lead migration to Zephyr for MCU based projects (e.g. control system on STM32H7).

### Engineering Manager Software

»»» | German Bionic GmbH

📅 May 2022 – April 2025

📍 Augsburg, Germany

- Managing a team of (up to) 5 people (Cloud and Embedded devs)
- Driving architectural decisions for Cloud & Embedded.
- Implementation of monitoring & alerting infrastructure based on Prometheus and Grafana for both device fleet and Cloud infra.
- Firmware maintenance (e.g. kernel update) to support new product generations and development of completely new products.
- Further hiring of developers and interns, including onboarding.
- Sideproject: Automation of the annual 360° Feedback Evaluation.

### Senior Software Developer

»»» | German Bionic GmbH

📅 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.
- Integrate Modems, WiFi and other hardware into our Firmware/OS.
- 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 GmbH

📅 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.

📍 Litzendorf, Bamberg

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## Skills

### Languages

German



English



### Programming

Go



Shell



C/C++



Python



Elm



Javascript



### Operating System

Linux



Zephyr



FreeBSD



Windows



### Disciplines

Optimization



Debugging



Cryptography



Distributed Computing



Architecture



Testing



### Fields

Backend



Embedded



Frontend



Infrastructure



Data Science/AI



- 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)

## Python Engineer

ad | **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.
- Debug & support issues on customer side and make debugging easier using Grafana dashboards and Email-Notifications.

## Workshops & Presentations

### The 10 debugging commandments

📅 2025 / 📄 Slides

Checklist & algorithm to solve hard debugging problems.

### Psychology in Software development

📅 2025 / 📄 Slides

List of common cognitive bias and other bugs in our brain software.

### Go & Linux Quiz

📅 2024 / 📄 Slides

Various fun-focused quizzes about Go pitfalls, Bash and Linux.

### Performance & Optimization

📅 2023 / 📄 Slides

Optimization tricks, CPU architecture, Allocations, I/O, Concurrency

### Bash & Shell Programming

📅 2021 / 📄 Slides

Bash & Linux intro. Crowd Programming on a QR-Code PDF generator.

### Git & die Wolke

📅 2019 / 📄 Slides

Basic git intro to teach mechanic/electronics colleagues git & GitHub.

## Open Source Projects [Selection]

**timeq**

🔗 **Fast & persistent priority queue**

📅 2023-now

- 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

- 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

- 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 · Elm · TLS · OpenAPI · gRPC · Caddy · JWT · OpenAPI · AWS EC2 / ECR / IAM / S3 · SQL · Websockets · Docker (+Compose) · Ansible · k8s (Basics)

### Databases, Queues & Related

PostgreSQL · SQLite · Influx · TimescaleDB · Redis · NATS / Jet-Stream · Badger · Barman · Parquet

### Monitoring/Alerting/Tracing

Grafana · Prometheus · Loki · Jaeger · cadvisor · umami

### Embedded

RaspberryPI · CM3/CM4s/CM5 · STM32H7 · Yocto · u-boot · OSTree/OTA · MQTT · systemd · Boot time optimization · device tree

### Daily Tools

git · lazygit · Neovim · Typst · Zsh · Sway · kitty · ssh · jq · make · task · pprof · WoodpeckerCI · Slack · Remarkable2 · Zettelkasten

## Hobbies

Table tennis · Cooking · Tattoos · Metal · Hiking · Biking · Books · Computers (surprise) · Art · Cats

## Articles

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