Chris Pahl

Software Engineer & Linux Expert

Software Generalist • Hates complexity • Loves learning & teaching •
Hobby Open Source developer • Team player & self-driven • Well orga-
nized • 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 infastructure, IT-Security and general archi-
tecture decisions & review of architecture proposals.
- Re-design data transmission to use higher compression rations,
better scaling and much smaller performance needs.
- Porting 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)
- 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.

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.

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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 (⌀ 1.4)   Computer Science
📅 2014 – 2016   📍 Augsburg, Bayern

BSc (⌀ 1.8)   Computer Science
📅 2010 – 2014   📍 Hof, Bayern

Tools & Libs

Web & Cloud
HTML • CSS • Bootstrap • Elm • HTTPS • OpenAPI • gRPC • Caddy • JWT • OpenAPI • AWS EC2 / ECR / IAM / S3 • SQL • Websockets • Docker (+Compose) • Ansible

Databases, Queues & Related
PostgreSQL • SQLite • TimescaleDB • Influx • Redis • NATS / JetStream • Badger • Barman • Parquet

Monitoring/Alerting/Tracing
Grafana • Prometheus • Loki • Jaeger • cadvisor • umami

Embedded
RaspberryPI CM3/CM4s/CM5 • STM32H7 • Yocto • u-boot • OS-Tree/OTA • MQTT • systemd • Boot time optimization • device tree

Daily Tools
`git` • `lazygit` • Neovim • Typst • Zsh • Sway • kitty • `ssh` • `jq` • `make` • `task` • `pprof` • WoodpeckerCI • Slack

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)