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

📅 June 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 rations, better scaling (1000+ devices) and 50x performance of before.
- Porting our OS to CM5, eSIM & arm64 and lead migration to Zephyr for MCU based projects (e.g. control system on STM32H7).

Engineering Manager Software ⌁ | German Bionic GmbH

📅 May 2022 – June 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

📅 January 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 – January 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 · 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 / JetStream · 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)