

Sebastian Nagel

Software Engineering Lead

I am a freelance software engineer getting excited about functional programming languages, compilers, algebras, interpreters and distributed systems.

Experience

2021 – current **Self-employed / freelance software engineer.**

Working as a lead software engineer on projects in the blockchain research & development space, implementing novel scientific research using functional programming languages (Haskell) and formal methods (Operational Semantics, Property Testing).

2016 – 2020 **Franka Emika GmbH, Munich** - www.franka.de.

2014 – 2016 **KBee AG, Munich.**

2013 – 2014 **Kastanienbaum, Munich.**

Being involved from the beginning in creating the robot programming environment at Franka Emika, KBee and Kastanienbaum, I covered topics like

- **Robot programming language design** created formal syntax and semantics, parsers, type checker and interpreter for a robot programming language mostly written in Haskell
- **Service oriented architectures** design and implementation of a ZeroMQ based Middleware layer, message description language, message code-generation, Haskell tools and C-library
- **REST API server** Haskell backends using Snap and Servant/WAI
- **Web frontends** design and development of single-page applications in JavaScript ES6 and PureScript using React and Halogen
- **Hardware and systems programming** interface with hardware devices over Serial/UART or CAN using C++ and Haskell
- **Embedded Linux** maintaining the cross-toolchain build environment for an operating system
- **Release management and versioning** of the Panda research product, including legal aspects like open-source license compliance
- **Continuous integration and deployment** setting up and maintaining jobs using Jenkins, Docker containers for distribution and orchestration in multiple environments
- **Planning and coordinating**
 - A cloud platform with web application, integrating a robot system with over-the-air (OTA) updates and asset delivery, two teams of 5-6 developers each <https://franka.de/world>.
 - An open-source C++ library for low-level robot control and ROS interfaces, 4-5 people team in an agile Scrum process [frankaemika](https://frankaemika.com).

Munich – Germany

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Education

- 2011 – 2014 **MSc Robotics, Cognition and Intelligence, TU Munich.**
Interdisciplinary course of computer science, mechanical and electrical engineering covering topics like Robotics, Control, Computer Vision and Machine Learning
- 2008 – 2011 **BSc Computer Science, FH Dornbirn.**

Academic

- [Master thesis](#) *A dynamic, distributed and service-oriented robot control architecture*
- [ML project](#) *Segmenting and classifying GPS traces to identify types of transportation*

Skills

- Using daily Haskell, JavaScript, Docker, AWS, Linux, Nix
- Used to Purescript, C, C++, Golang, Python, Java
- Want to use NixOS, Rust

Side projects

- garmin-otp-authenticator Garmin ConnectIQ Widget to generate HOTP/TOTP one time passwords, basically a SHA1 implementation in the MonkeyC language [🔗 ch1bo/garmin-otp-authenticator](#)
- ambicam Python scripts using OpenCV on a RaspberryPi with PiCamera to send illumination data to an “ambilight” setup [🔗 ch1bo/ambicam](#)
- nginx-jwt nginx C module to issue JSON Web Tokens (JWT) as JSON Web Signature (JWS) payload and verify their presence in headers [🔗 ch1bo/nginx-jwt](#)
- sonected.at Occasional technical consultant work for this personal management platform

Interests

- Mountains Sport-, alpine- and ice-climbing, cross-country skiing and hiking the alps
- Science Fiction Some authors I like are Daniel Suarez, Ernest Cline, Philip K. Dick

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