

Alexander Röben

Systems Engineer / Architect

Infrastructure · Security · Embedded Systems · Private Cloud · DevOps · AI

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I develop, implement and operate complex technical systems across the entire technology stack: from hardware and kernel-level development through Linux infrastructure and platforms to applications. I bring together Embedded Linux, low-level software development, cybersecurity and identity & access management, AI infrastructure and industrial test systems to deliver reliable solutions that remain maintainable over the long term.

Since 2017, I have worked in research, industrial quality assurance and product development. I am currently designing and building my own decentralized, heterogeneous data centre. This brings together architecture, implementation, secure operation and traceable documentation.

Professional experience

Owner · since 2025

RoebTec Solutions · engineering practice alongside employment

- Establishing the practice and pursuing independent development projects in software, embedded systems and infrastructure.

Embedded Systems Engineer · since 05/2024

M+F Technologies GmbH

- Built an embedded Linux system based on Debian; shaping and implementing the architectural transition from Windows Embedded Compact 2013 to embedded Debian.
- Integrated a real-time kernel; ported and optimised device drivers.
- Maintained products and developed software in C#; designed CI/CD for embedded devices and implemented automated quality assurance.

HIL Test Systems Engineer · 11/2020 to 04/2024

Molex CVS Bochum GmbH · direct employment

- Developed hardware and software for HIL test systems; designed a test-system concept spanning mechanics, electrical engineering and software.
- Advised production teams and improved quality-assurance processes in an IATF 16949 / ISO 9001 environment.
- Developed analysis and maintenance tools; supported rework and solutions focused on energy efficiency and cost savings in an ISO 14001 / ISO 50001 environment.

HIL Test Systems Engineer · 04/2019 to 10/2020

Excellence AG · assigned to Molex CVS Bochum GmbH

- Developed hardware and software for HIL test systems.
- Provided technical support to production and validation; contributed to quality assurance in an IATF 16949 / ISO 9001 environment.

Research Associate · 12/2017 to 04/2019

Westfälische Hochschule · part-time alongside studies

- Developed embedded software for the “Smart Energy Grid Ruhr” research project.
- Adapted Debian Linux for a Cyclone V ARM/FPGA SoC; developed C/C++ drivers and integrated the system.

Skills profile

Systems Architecture

Shape the architectural transition from Windows Embedded Compact 2013 to embedded Debian. Design federated HIL systems using runners and PLC integration. Connect hardware, kernel, platform and application layers around requirements, maintainability and operational risk.

Private Cloud & Distributed Infrastructure

Own decentralized, heterogeneous data centre under construction: virtualization, networking, storage architecture and service platform. Debian/Linux, KVM/libvirt/QEMU, backup/recovery and HA services; Keycloak, SSO/OIDC, segmentation and least privilege.

Software & DevOps

C/C++, C#, .NET, Python and PowerShell; SQL/MySQL, GitLab CI/CD, reproducible builds, release engineering and version-controlled documentation with MkDocs.

Test & Verification

HIL/SIL, test automation, Modbus, log analysis and production support. Electrical test-system planning with QElectroTech; quality work in an industrial standards environment.

Embedded & Low-Level

Debian root filesystems, Yocto, real-time kernels, driver integration, ARM/FPGA, Cyclone V, CAN and hardware/software diagnostics. Prototyping: electronic assemblies, PCB design, mechanical design and demonstrators.

AI & Compute

Self-hosted GPU infrastructure, local models and LocalAI; MCP tools, agent architecture and controlled approvals. Remote visualization with GStreamer, Sunshine and Moonlight.

Technical Leadership & Team Coordination

Onboard colleagues, coordinate technical work and support engineering decisions. Represent shared technical concerns and align the people involved. Leadership through practical collaboration and technical responsibility.

Education & languages

B.Sc. Microsystems Engineering · 10/2011 to 12/2016

Westfälische Hochschule · final grade: "gut" (good)

Bachelor's thesis: design and implementation of CAN bus communication between a battery management system and a DC-coupled energy storage system; automation using Raspberry Pi and Windows 10 IoT.

Master's studies · 10/2017 to 01/2020

Westfälische Hochschule · Microsystems Engineering / Embedded Systems. Studies paused; no completed master's degree.

Languages

German: native · English: professional working proficiency.

Detailed project portfolio: roebtec.solutions/projects/en/