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Specialization

- Software development with C, C++, Python and Rust (including embedded / Firmware).
- Consulting, code-reviews, modernizing the development process (git, CI/CD, automation, immutable infrastructure / Docker).
- Frontend development with Javascript, Typescript and React.
- Backend development with Rust, Elixir, Ruby, PostgreSQL.
- Performance analysis and optimization of architectures, code and databases.
- Algorithm and protocol development.
- Consulting, open-source software. Linux, embedded.

Skills

- **Industries:** Energy, Industrial Diagnostics Systems, Finance, Stock-Exchange, Life Science/Chemical Analysis, IIoT, Advertisement, Risk-Management, HR, Transportation
- **Programming languages:** Rust, Ruby, Python, Typescript, Javascript, C++, C, C#, Kotlin, Java, Erlang, CSS3, HTML5, Smalltalk, SML, Pascal, Perl, PHP, Scala, Go, Assembler (x86, ARM, 68000)
- **Frameworks:** SolidJS, Odoo, React, React Native, ExpressJS, Ruby on Rails, nodejs, jQuery, Android, Django, JSP, ASP.NET, .NET Core
- **Databases:** PostgreSQL, Sqlite, MySQL, LMDB, ODBC, DB2, Oracle, PL/SQL, SQL, HyperTable, NoSQL, Redis, memcached, MS SQL Server
- **Platforms:** Linux embedded, Yocto, Linux, FreeBSD, MS Windows, MS-DOS, MacOS X, RTOS, Enea OSE, Azure
- **Data communication:** MQTT, TCP/IP, Internet, Intranet, SOAP, JSON, XML-RPC, HTTP, MessagePack, Thrift, zeromq, SMTP, IMAP, LDAP, Siren Hypermedia
- **IDEs:** Netbeans, Cincom ObjectStudio (Smalltalk), Microsoft Visual Studio 2012/2015/2017/Code, Eclipse, JBuilder, Atom, vim, Android Studio, IntelliJ IDEA
- **Tools:** Docker, docker compose, github actions, git, subversion, CVS, Jenkins, make, CMake, meson, SoftCM/HMS, Apache, nginx, LaTeX, MS Office, Nuget
- **Methods:** CI/CD, DDD, Scrum, Test-Driven Development, UML, Agile, XP, Kanban, Open Source
- **Languages:** German (mother tongue), English (fluent), French (basics)

List of Projects

July 2024 – **ROSEN via Bluehands, *Software-Developer*, remote**
August 2024

Integrate and query a sensor head via I2C.

Languages	Python
Technologies	I2C, Mock (hardware)
Platforms	Linux, Embedded

April 2024 – **ROSEN via Bluehands, *Software-Developer*, remote**
July 2024

High-level integration of a new sensor-module for turbulent flow measurements into existing control software; refactor control software to ease future integrations with other modules.

Languages	C++ 20, Python (Client)
Technologies	ZeroMQ, meson / CMake, JSON-RPC
Platforms	Linux, Embedded

November 2023 – **LTG via Bluehands, *DevOps*, remote**
March 2024

Refactoring a docker build pipeline of an embedded OS

Languages	C++, Go, bash
Tools	git, docker, docker compose, CMake, meson, Azure Pipelines, Cross-compiling
Platforms	Linux, Embedded, Yocto, Debian, u-boot, devicetree, IMX8

October 2023 – **ROSEN via Bluehands, *Software-Developer*, remote**
January 2024

Implementing mangagement and control software for various subcomponents in industrial automation.

Languages	Python
Technologies	systemd, state-machine
Platforms	Linux, Embedded

July 2023 – **ROSEN via Bluehands, *Software-Developer*, remote**
October 2023

Implementing a tool to control encoder settings via MAX14890E.

Languages	Python
Technologies	SPI, GPIO, MAX14890E
Platforms	Linux, Embedded

January 2023 **PTE Alpha Therapiesysteme GmbH**, *Software-Developer*, remote
– February 2023 Extract and preprocess structural information from a large public webportal via webcrawling / webscraping.

Languages Ruby
Technologies Webscraping, SQLite, HTTP

November 2022 – **LTG/LAWO via Bluehands**, *Software-Developer*, Rastatt / remote
August 2024 Adapt the passenger information system of BVG to a new REST API (HAFAS v2).

Languages C++
Technologies Qt, REST API, VDV 300 / IBIS / VDV 301, HAFAS v2
Tools Qt Creator, subversion, git, meson, CMake, Azure Pipelines, docker, packer.io, Cross-compiling
Platforms Linux, Embedded

April 2022 – **EnBW**, *Software-Developer*, remote / Karlsruhe
December 2022 Implementing and extending a trading system/algorithm for stock-quoted electricity products in Rust. Backtesting.

Languages Rust, Python
Technologies AWS S3/EC2, Deutsche Börse M7, XML, Trading

December 2021 – now **CelticGold AG**, *Software-Entwickler*, remote
Development of an Odoo module for acquiring cryptocurrency payments via Kraken (payment acquirer).
Development of an Odoo module for shipping via Deutsche Post API (delivery).

Languages Python, Javascript
Technologies PostgreSQL, Odoo / OpenERP, FastAPI, Microservices

December 2020 – now **INTI Ltd**, *Software-Architect*, remote
Development of an online gold/cryptocurrency exchange. Full-Stack.

Languages Elixir, Rust, Ruby, Javascript, Typescript
Technologies Phoenix, Event Sourcing, PostgreSQL, Crypto, SolidJS, Trading / Order book

December 2020 – July 2021 **Software AG, Darmstadt, *Software-Developer*, remote**
Development of embedded software (thin-edge.io) for distributed devices in industry (IoT device management, cloud connectivity). Support the development team with Rust in embedded Linux environment.

Languages	Rust
Technologies	Industry IoT, MQTT, Cloud
Platforms	Linux, Embedded

March 2020 – March 2021 **Aizu Ltd, *Fullstack-Developer*, remote**

Development of back/frontend of aizu.uk.

Languages	Rust, Javascript, Typescript, SQL
Technologies	PostgreSQL, Redis, Microservices, Svelte
Tools	git
Platforms	Linux, Web

January 2020 – March 2020 **LTG via Bluehands, *Software-Developer*, Karlsruhe / remote**

Development, maintenance and testing of a public transportation passenger information system. Temporary replacement for a colleague.

Languages	C#
Technologies	.NET, ASP.NET core, Mono, SOAP
Tools	git, Azure DevOps, Nuget
IDEs	MS Visual Studio 2017
Platforms	MS Windows, .NET, Azure, Linux, Embedded

August 2019 – November 2019 **Open-Xchange, *Software-Developer*, Finland / remote**

Development and maintenance of open source project deltachat-core-rust ("chat over IMAP").

Languages	Rust, C
Tools	github
Platforms	Linux

July 2018 – **LTG via Bluehands, Software-Developer, Karlsruhe / remote**
August 2019

Development, maintenance and testing of a public transportation passenger information system.

Languages C#, C++

Technologies .NET, ASP.NET core, DirectX, OpenGL, Mono, SOAP, Docker, Skia, Harfbuzz

Tools git, Azure DevOps, Nuget, Docker

IDEs MS Visual Studio 2017

Platforms MS Windows, .NET, Azure, Linux, Embedded

April 2018 – **Bluehands GmbH & Co.munication KG, Software-Developer, Karlsruhe**
July 2018

Developing a client/server application for the verification of the authenticity of products using a spectrometer.

Languages C#, T-SQL

Technologies ASP.NET core, MS SQL Server, WPF, Siren, Azure Blob Storage

Tools git, MS VS Team Services, Nuget

IDEs MS Visual Studio 2017

Platforms MS Windows, .NET, Azure

November 2017 – **Dr. Armin Roehrl, Software-Developer, Remote**
March 2018

Optimizing a crypto-coin trading platform. Optimizing the trading algorithms.

Languages Javascript (NodeJS), Rust

July 2016 – **Agilent Technologies via Ferchau Engineering, Software-Developer, Waldbronn**
July 2017

Developing software components of a web-application (server/firmware, client, Android app) for the purpose of monitoring, controlling, diagnostics and maintenance of Agilent HPLC modules ▷ Implementation, documentation, testing and bug-fixing of Javascript/Typescript components ▷ Development of testing strategies ▷ Extending the client/server interface (HTTP/JSON) in firmware ▷ Implementing an Android app (Kotlin).

Languages Typescript, C++, Kotlin, Javascript, Java, C#

Technologies React, Redux, JSON, HTTP, Websockets, CSS3, HTML5, Responsive, USB, Anko, Canvas

Tools CMake, git, npm, yarn, Gradle, Jira, Jenkins, Greenhills, Sass, HP SoftCM, Kanban

IDEs Visual Studio 2012/2015/Code, Android Studio, IntelliJ IDEA, vim

Platforms Android, Browser, Firmware (embedded), Enea OSE, Win32, KNOX

November 2016 **Alfred Pracht Lichttechnik GmbH, Consultant, Remote, Karlsruhe**

Technology consulting of web-based solution

Languages Typescript, Javascript

Technologies HTML5, CSS3, Mithril, nodejs, JSON, HTTP

Tools git, npm

Platforms Browser, Server

May 2015 – May 2016 **KarmicHub, CTO, Architect, Developer, Remote**

Design and implementation of the internet platform KarmicHub ▷ Prototyping ▷ Database design ▷ REST interface specification ▷ Backend implementation (Rust) ▷ Design and implementation of frontend (Javascript) ▷ Testing.

Languages Rust, Javascript

Technologies React, Mithril, JSON, REST, nginx, LMDB, HTML5, CSS3

Tools git, npm, bower, grunt, gulp, cargo

Platforms Browser, FreeBSD, DragonFlyBSD

January 2013 – October 2015 **Simplifi Holding, Consultant, Architect, Developer, Remote, Forth Worth (USA)**

Developing and optimizing a mission-critical system ▷ Design and implementation of a real-time bidding (RTB) platform in C++ ▷ Migrating RTB components from Ruby to C++ ▷ Implementing new service interfaces to RTB hubs ▷ Implementing a scalable webserver using libuv (C++) ▷ Design and implementation of a Big-data system (Rust, Hypertable) ▷ Design and implementation of an efficient log-structured merge-tree database (Rust).

Languages Rust, C++11, Ruby

Technologies Hadoop, Hypertable, Bigdata, Protocol Buffers, msgpack, Apache Thrift, JSON, libuv, HTTP

Tools git, Continuous Integration

Platforms Linux

January 2010 – December 2011 **Simplifi Holding, Consultant, Developer, Remote, USA**

Performance optimization and development of reporting components ▷ Developing a scalable storage component for profile matching in a real-time bidding system (C++ with Ruby interface) ▷ Optimizing performance of profile matching in C++ and Ruby ▷ Developing reporting components in Ruby and C++.

Languages C++, Ruby

Technologies Redis, In-memory Database, HTTP, CSV

Tools git

Platforms Linux

February 2009 – May 2009 **Collective Media**, *Consultant, Developer*, Remote, USA

Essential performance optimization of reporting backend (by factor 1000) ▷ Performance analysis and tuning of reporting backend (PostgreSQL) ▷ Design and implementation of a custom high-performance log-structured merge-tree database (LSM) for reporting in C and Ruby ▷ Connect reporting engine (backend) to frontend via webservice.

Languages	C, Ruby, SQL
Technologies	Log-Structured Merge Tree Database, PostgreSQL, HTTP, CSV
Tools	git
Platforms	Linux

June 2008 – November 2008 **hello2morrow GmbH**, *Developer*, Remote

Implement Website hello2morrow ▷ Enhance existing CMS application ▷ Customize to new design (from Photoshop).

Languages	Ruby, Javascript, HTML, CSS, SQL
Technologies	Ruby on Rails, PostgreSQL, jQuery
Tools	git
Platforms	Linux

January 2008 – May 2008 **Personifi L.P.**, *Developer*, Remote

Developing a scalable HTTP crawler ▷ Requirements analysis ▷ Architect and implement highly-concurrent HTTP crawler ▷ Administration.

Languages	Erlang, C, Ruby
Technologies	HTTP, DNS, Cluster
Tools	git
Platforms	Linux

February 2008 **Dr. Armin Roehrl**, *Developer*, Remote

Implementing a special highly-concurrent HTTP proxy (10.000+ connections) to decouple slow backend processes (batch jobs).

Languages	Erlang
Technologies	HTTP, Proxy
Tools	git
Platforms	Linux

November 2007 – December 2007 **Approximity GmbH**, *Developer*, Remote

Implementation of stromverbraucherpool.de website ▷ Familiarize with existing code base ▷ Customizing.

Languages Ruby, SQL

Technologies Ruby on Rails, MySQL

February 2007 – September 2007 **metacreaTIC**, *Consultant*, Tiefenbronn

Project Consulting and Management ▷ Requirements analysis ▷ Client contact (USA) ▷ Project management.

January 2007 – May 2007 **My Sites Oy**, *Architect, Shareholder*, Remote

Developing and optimizing a scalable web platform ▷ Full-stack performance analysis and optimization of a web application (Backend, Frontend) ▷ Design of the cluster architecture and database ▷ Developing the Javascript frontend.

Languages Javascript, Ruby, SQL

Technologies Ruby on Rails, AJAX, Prototype, PostgreSQL, Sharding

Platforms Linux, Browser

March 2007 **Personifi L.P.**, *Developer, Sysadm*, Remote

Deployment and administration of a RSS newsfeed searchengine on Linux cluster

Languages Ruby, Python

Technologies Ferret ("Lucene")

Platforms Linux-Cluster

October 2006 – November 2006 **My Sites Oy**, *Developer*, Remote

Flash-based video streaming ▷ Analysing existing solutions for video streaming ▷ Installing and testing a streaming flash server.

Technologies Flash, Real Time Messaging Protocol (RTMP), lighttpd, HTTP

January 2006 – March 2006 **Personifi L.P.**, *Developer*, Remote

Developing a RSS crawler with web interface ▷ Developing a RSS newsfeed crawler and search engine ▷ Design and implementation of the distributed backend architecture. Interface to personality backend cluster ▷ Implementation of web frontend (Google ig/news clone).

Languages Ruby, Python, Javascript

Technologies Ruby on Rails, Ferret ("Lucene"), jQuery

Platforms Linux-Cluster, Browser

January 2006 – June 2006 **Adfinem (Schernig, Hierl und Lang Management Consulting)**, *Architect, Developer, Remote*
Full-stack development of a human-capital web platform for Human Resources in the Risk-Management sector ▷ Prototyping ▷ Requirements ▷ Developing the complex web platform ▷ Migration and Administration.

Languages Ruby, Javascript, SQL

Technologies Ruby on Rails, PostgreSQL, Mind-Maps, SMTP

2005 **Open Door Investment Advisor, Inc.**, *Developer, Remote, USA*

Develop WWW::Mechanize library for Ruby. Screenscraping.

Languages Ruby

May 2001 – January 2002 **Syngress Publishing Inc**, *Technical Editor and Author, Remote*

Book "Ruby Developers Guide" (ISBN 978-1928994640), 720 pages ▷ Managing the international co-authors ▷ Writing the outline of the book ▷ Technical editing of the complete book ▷ Authoring of 3 chapters.

Languages Ruby

Technologies MS Word

2000 – 2003 **Page-Store Online GbR**, *Developer, Administrator and Partner, Karlsruhe*

Developing the PageStore and WEBfree web sites.

Languages PHP, Perl, Ruby

2000 – 2002 **Merlin.Zwo InfoDesign GmbH**, *Software / Database developer, Karlsruhe*

Permanent position

Languages PL/SQL, Ruby, Java

Technologies Oracle 7,8,9i, Forms, XML

Platforms Suse Linux

Education

- **Karlsruhe Institut of Technology / University of Karlsruhe**, Diplom-Informatik (MSCS) (Ø 1.3). Topics: Embedded systems, computer architecture, system architecture, parallel data processing, biomedical measurement engineering

Publications

- *Improving a Hierarchical Evolutionary Algorithm with Applications in Optimization and Machine Learning*, Diploma thesis, Karlsruhe Institut of Technology, 2016.
- *Yinspire – A performance efficient simulator for spiking neural nets*, Research paper, University of Karlsruhe, 2008.
- *Schillernde Muster – Design Patterns in Ruby*, Linux Enterprise, Edition 09.2003.
- *Ruby Developer's Guide*. Book (ISBN 1928994644), Syngress Publishing, 2002.

Reviews

- Programming Ruby (2nd Edition), Pragmatic Programmers. 2004
- Programmieren mit Ruby, dpunkt.verlag. ISBN 978-3898641517. 2002

Talks

- *Rust – Efficient, Safe and Concurrent*, GPN13, Karlsruhe, Mai 2013.
- *HAMMER File System*, KIT Audimax, Karlsruhe, Januar 2010.
- *Efficient Ruby to Javascript Compilation*, RubyConf 2007, Charlotte / North Carolina, November 2007.
- *Wee Explained - Concepts and Internals*, 2. European Ruby Conference, Munich, Oktober 2005.
- *Ruby QuickStart*, GPN2, Karlsruhe, Mai 2003.

Open source commitment

- Porting and maintaining the Rust compiler and related libraries for DragonFlyBSD. Since 2013.
- DragonFlyBSD committer. Since 2008.
- Ruby committer. Since 1999. Retired.
- Original author of many Ruby libraries, e.g. Ruby/DBI, WWW::Mechanize, xmlrpc4r, postgres-pr, RubyJS, Wee.
- Many own open source projects: <https://github.com/mneumann/>, as well as participating in foreign projects.

Miscellaneous Activities

- Voluntary Childcare *Balu und Du*, Karlsruhe. 2011-2013.

- Childcare *Studieren für Kinder e.V.* Karlsruhe.
- Tutor for system architecture under Prof. Bellosa, KIT. 2009-2010
- Visiting a children's home in the south of Tajikistan for Deutsch-Tadschikische Gesellschaft e.V. 2011.
- Several longish journeys through Central Asia by motorbike and backpack. 2009-2014.
- Participating at the summer school of Fraunhofer-Institute under Prof. Dr. Albrecht Schmidt in Bonn. Developing a People-Searchengine. 2007.
- Internship at Arminco LTD (ISP) in Yerevan, Armenia. 2006.
- Co-organizing the 2nd and 3rd European Ruby Conference (EuRuKo) in Munich. 2004, 2005.
- Participating the Computer Society International Design Contest with the team of University of Karlsruhe. 2004.
- Organizing the 1st European Ruby Conference (EuRuKo) at the University of Karlsruhe. 2003.
- Research assistant, FZI Research Center for Information Technology, Karlsruhe. 2002.