

*As a technical lead and software architect for embedded systems, I love to work in interdisciplinary, distributed teams. I gathered experiences in working together with colleagues from Germany, Serbia, Switzerland, Portugal etc. when successfully leading the software developments for IIoT devices or a module of a patient monitor. In my last project, I enabled a team to develop the firmware of a smoke detector.*

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## Personal Information

Name Adrian Winterstein  
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Nationality German



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## Professional Experience

2023 – Present **Software Architect & Developer**  
Self-employed ([Project Reference](#))

Freelance project work with a focus on embedded software architecture and software development with C++. In addition, consulting and implementation in the areas of CI and testing with Pytest and CppUtest as well as infrastructure with Ansible and Docker.

Project:

[Optical Beam Smoke Detector \(C++ with FreeRTOS on Arm Cortex\)](#)

2021 – 2023 **Lead Embedded Software Architect**  
Zühlke Engineering GmbH ([Employer's Reference](#))

Architect and technical lead in the area of device creation in remote projects with a focus on C++ (bare metal / RTOS), CI & testing and firmware updates:

- Guidance of international software development teams
- Responsibility for the software architecture
- Responsibility for the conception and implementation of test environments for device developments (implemented with Pytest)
- Coaching the technical lead in a project

Additionally, besides the project work: Career coaching for colleagues in the embedded software development group.

Projects:

- [Architecture Consulting for Coffee Machines \(C, C++ Bare Metal\)](#)
- [Digital Traffic Beacon \(C++ with FreeRTOS and AWS IoT Core\)](#)
- [Sensor Connection for Patient Monitor \(C++ with FreeRTOS, Qt\)](#)

- 2018 – 2020    **Expert Software Engineer**  
Zühlke Engineering GmbH ([Employer's Reference](#))
- Software Engineer for system projects. In the Tech Lead role responsible for the firmware development of an IoT device for the predictive maintenance of railway infrastructure:
- Responsibility for software architecture and quality
  - Interdisciplinary work at system level
  - Requirements engineering with the customer's product owner
  - Leadership responsibilities for five software developers
  - International cooperation with colleagues from Serbia
- Additionally, besides the project work: Supporting new colleagues through C++ training and mentoring. Conducting interviews with applicants.
- Projects:
- IoT Device for Rail Switches (C++ with FreeRTOS on ARM Cortex)
  - GUI Component of a Test Stand Software (PyQt on Linux)
  - Security Platform (C++ on Linux with Yocto)
- 2016 – 2017    **Software Engineer**  
Zühlke Engineering GmbH ([Employer's Reference](#))
- Software development and consulting for embedded systems with a focus on C++. Gradually taking on more responsibility for project success and direct client communication.
- Projects:
- Test Stand for an Oven (NI Teststand and C++ on Windows)
  - Platform for Lab Analysis Devices (C++ and Python on Linux)
  - Tea Machine (C++ with FreeRTOS on Arm Cortex)
  - Prototype for a Coffee Machine (C++ on Arduino)
  - Architecture Review of Industrial 3D Printers Control (C++ and Qt)
- 2014 – 2015    **Junior Software Engineer**  
Zühlke Engineering GmbH ([Employer's Reference](#))
- Software development for embedded systems as a young professional (C, C++ and Qt). Collaboration in agile projects and taking over initial responsibilities in communicating with customers and support of a junior colleague.
- Projects:
- Diagnostic Tool for High-end Converters (Qt on Android)
  - Control System for Chillers (C++ with FreeRTOS on Arm Cortex)
  - System for Tracking Transported Goods (C with FreeRTOS on Arm)

- 2013 – 2014    **Research Assistant**  
German Cancer Research Center ([Employer's Reference](#))  
Research in the field of computer-assisted interventions. Development of an ultrasound-based assistance system for minimally invasive implantation of markers around a tumor. Implementation and evaluation of the system in cooperation with medical personnel. Publication of the research results.  
Project: [Navigated Implantation of Radiation Markers \(C++ and Qt\)](#)
- 2011 – 2013    **Research Assistant**  
Center for Adv. Security Research Darmstadt ([Employer's Reference](#))  
Research in the fields of IT security and image processing, in a joint project of Fraunhofer IGD, Darmstadt University of Applied Sciences, the Federal Criminal Police Office and industrial partners. Publication of the research results.  
Project: [Detection of Ears on 3D Profile Images \(MATLAB\)](#)
- 2007 – 2014    **System Administrator & Web Designer**  
Self-employed  
Side-jobs in the areas of system administration of client-server environments and CRM systems and web design for multiple clients:  
  - Human resources and management consultancy
  - Law firm
  - Seminar organiser

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## Certifications

- 07 / 2019    **Certified Professional for Software Architecture (CPSA-F)**  
International Software Architecture Qualifications Board ([Certificate](#))
- 06 / 2015    **Certified Tester (CTFL)**  
International Software Testing Qualifications Board ([Certificate](#))
- 11 / 2014    **Certified Professional for Requirements Engineering (CPRE FL)**  
International Requirements Engineering Board ([Certificate](#))

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## Awards

- 05 / 2014    **Preis des Fachbereichs Informatik (h\_da)**  
For the best master's thesis ([Award](#))

11 / 2012 **CAST-Förderpreis IT-Sicherheit 2012**  
First in the category bachelor's theses and student projects (Award)

06 / 2006 **Förderpreis für Schüler der Heinrich-Emanuel-Merck-Schule**  
For the best high-school graduate (Award)

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## Education

04 / 2014 **Master of Science** (*ECTS Grade: A*)  
Darmstadt University of Applied Sciences

2012 – 2014 **Studies of Computer Science (M.Sc.)**  
Darmstadt University of Applied Sciences  
*Master's thesis:* Development of a System For Navigated Implantation of Radiation Therapy Markers

02 / 2012 **Bachelor of Science** (*ECTS Grade: A*)  
Darmstadt University of Applied Sciences

2009 – 2012 **Studies of Computer Science (B.Sc.)**  
Darmstadt University of Applied Sciences  
*Bachelor's thesis:* Development of an Algorithm for the Detection of Ears on 3D Profile Images

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## Civilian Service

2006 – 2007 **Civilian service in a retirement home**  
Sozialzentrum Ohlystift

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## Digital Skills

Programming	<b>C++</b> , <b>Python</b> , C, Rust, MATLAB, Perl
Libraries	<b>Qt</b> , <b>Boost</b>
Testing	<b>Pytest</b> , <b>Google Test</b> , Cpputest
Microcontroller	<b>ARM Cortex</b> , Arduino
Operating Systems	<b>FreeRTOS</b> , <b>Linux</b> , ZephyrOS
Documentation	<b>LaTeX</b> , <b>Markdown</b> , Polarion, Asciidoc
Processes	<b>Agile Entwicklung</b> , <b>Scrum</b> , Test-Driven-Development, V-Modell
Buildsysteme	<b>CMake</b> , Yocto, Make
DevOps	<b>Continuous Integration</b> , <b>Ansible</b> , <b>Docker</b> , Azure DevOps, TeamCity, Jenkins, Vagrant, Chef
Tools	<b>Git</b> , <b>Bash</b> , <b>Visual Studio Code</b> , <b>QtCreator</b> , Subversion, Atlassian Toolsuite

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## Language Skills

German	Mother-tongue
Englisch	Proficient