

Markus Heimerl

Software Developer

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About

I am a Software Development Engineer at intive GmbH, where I leverage my expertise in programming, hardware design, and computer architecture to develop cutting-edge solutions for the automotive industry.

Prior to joining intive, I worked at VECTOR Informatik, where I honed my skills in developing powerful software solutions for the automotive sector. I engaged with C++ and contributed to testing strategies using Google Test, demonstrating my adaptability and commitment to excellence. My educational journey began with a Bachelor's in Computer Engineering from Ostbayerische Technische Hochschule Regensburg, which equipped me with a solid understanding of programming, hardware design, and computer architecture. I also expanded my knowledge by pursuing a Master's degree in Bioinformatics at the prestigious Universität Tübingen, where I achieved excellent grades before deciding to focus on my professional career.

At intive, I am currently working on "Carmen," a visualization and analysis tool for BMW that facilitates the understanding of internal network communication between different ECUs within a vehicle. Despite the challenges posed by the project's extensive codebase and complex architecture, I am dedicated to delivering innovative solutions and optimizing the tool's performance.

Beyond my professional responsibilities, I am passionate about educating the next generation of students. As a former part-time advanced mathematics tutor, I prepared high school students for their exams, covering a comprehensive curriculum that spans from algebra to calculus. This role perfectly complements my previous experience as a Research Assistant at UKM Universitätsklinikum Münster, where I explored the application of cutting-edge technologies like "BERT" to automatically extract knowledge from biomedical research papers.

My emerging technological interests lie in utilizing autonomous humanoid robots to build dirt cheap housing for everyone and longevity research. My ultimate goal is to apply my expertise in a work environment that fosters professional growth and allows me to make a meaningful impact on society and the world.

Experience

2024–Present **Automotive Developer**, *intive*, Regensburg, Germany.

- Developing and optimizing "Carmen", a visualization and analysis tool for BMW to understand internal vehicle network communication between ECUs
- Leveraging strong C++ skills to enhance tool robustness, efficiency and reliability
- Optimizing and refactoring extensive, complex codebase to improve performance, maintainability and scalability
- Implementing rigorous testing (unit, integration, system) to ensure highest quality and reliability, following SOLID principles
- Collaborating with cross-functional teams of developers, engineers and stakeholders to deliver successful projects

- 2023–2024 **Software Development Engineer**, *VECTOR Informatik*, Regensburg, Germany.
- Developed sophisticated flash bootloader for automotive ECUs, critical for safety and diagnostics
 - Utilized strong C++ skills to enhance tests with Google Test for reliability and effectiveness
 - Engaged with AUTOSAR Classic framework
 - Collaborated with cross-functional teams to solve complex software challenges and meet high quality standards
 - Coordinated with technical experts using Git and Jira to streamline workflow and team collaboration
- 2022 **Academic Tutor**, *OTH Regensburg*, Regensburg, Germany.
- Guided students through complex digital design coursework and practical exercises
 - Conducted in-depth discussions and tutorials on digital technology principles
 - Provided tailored support in combinatorial logic, switching networks, physical circuitry, clocked logic, VHDL
 - Educated students on semiconductor memory, processor architecture, interfaces and communication systems
 - Evaluated student exam readiness to ensure solid subject matter understanding

Education

- 2018–2022 **B.Sc. Computer Engineering**, *OTH Regensburg*, Regensburg, Germany, *Thesis: Development of a RISC-V RV32I Processor with VGA Interface using VHDL*.
- Mathematics proficiency in linear algebra, analysis, statistics
 - Expertise in numerical methods, algorithmic optimization
 - Experience creating sophisticated software and embedded systems
 - Knowledge of advanced algorithms, data structures, AI/deep learning
 - Skills in network security, system design, electronics, robotics, signal processing, high-performance computing

Projects

- transformer An autoregressive, decoder transformer implementation <https://github.com/ratisbonrobotics/transformer>
- simulator A drone simulator <https://github.com/ratisbonrobotics/simulator>

Certifications

- 2021 Aerial Robotics, Coursera
- 2021 TOEFL iBT 105/120 - English C1 Level

Volunteering

- 2019 TEDxOTHRegensburg Organizer
- Recruited and coached renowned expert Dr. Max Plach for talk "How CRISPR lets us take the next step in evolution"
 - Managed event IT infrastructure, implemented online ticket system with WordPress
 - Secured sponsorship from InterNetX GmbH through effective communication and relationship-building

Skills

Programming C++, C, Python, VHDL, Verilog, Git, AUTOSAR, Google Test
Web HTML, CSS, JavaScript, WebGL, Three.js, WordPress
Software Jira, LaTeX, MATLAB, Simulink
Soft Skills Agile Methodologies, Mentoring, Mathematical Modeling, Research, Tutoring

Languages

English C1 Level
German Native

TOEFL iBT 105/120