

Markus Heimerl

Embedded Systems Engineer

Contact

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🌐 [markusheimerl](#)

Technical Skills

Programming

C/C++, Python, VHDL/Verilog

Architectures

ARM, RISC-V

Signal Processing

State Space Models, Kalman Filters

Hardware

PCB Design, FPGA Development

Safety-Critical

AUTOSAR, MISRA C

Protocols

SPI, I2C, UART, CAN

Languages

German

Native Speaker

English

C1 Level (TOEFL iBT 105/120)

Certifications

Aerial Robotics

University of Pennsylvania (2021)

Professional Summary

Embedded Systems Engineer with strong background in signal processing, bare-metal firmware development, and hardware-software co-design. Passionate about pushing the boundaries of embedded systems.

Professional Experience

Automotive Developer

intive GmbH, Regensburg

May 2024 - Present

- Developing safety-critical ECU network diagnostic and visualization tool for BMW
- Leading refactoring effort to improve performance and maintainability

Software Development Engineer

Vector Informatik GmbH, Regensburg

Jul 2023 - Dec 2023

Contributed to bootloader development with OTA capabilities for automotive MCUs

Digital Design Teaching Assistant

OTH Regensburg

Mar 2022 - Dec 2022

Supported students in comprehensive digital design course and evaluated exercise sheets

Technical Projects

Real-Time Flight Control System

github.com/markusheimerl/quad

2021 - Present

Designed complete autonomous quadcopter featuring custom PCB, bare-metal firmware, and experimental state space model implementation for state estimation. System integrates IMU sensor fusion, motor control and vision.

High-Performance State Space Models

github.com/markusheimerl/ssm

2024

Implemented optimized C/CUDA state space models for embedded deployment.

RISC-V Processor Implementation

Bachelor's Thesis

2022

Designed complete RV32I processor in VHDL with custom peripherals, VGA controller, and DMA. Implemented hardware debugging interface and achieved stable 100MHz operation on Xilinx Artix-7 FPGA with comprehensive testbench verification.

Education

B.Sc. Computer Engineering

OTH Regensburg

2018 - 2022

Focus: Embedded Systems, Signal Processing, Real-Time Control, Computer Architecture

Volunteering

Event Organizer

TEDxOTHRegensburg

Mar 2019 - Aug 2019

- Recruited speaker for the event
- Implemented online ticketing system for seamless attendee experience
- Contributed to sponsorship acquisition efforts