

Markus Heimerl

Systems Engineer

Contact

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🌐 [markusheimerl](https://markusheimerl.com)

Technical Skills

Programming

C/C++, Python (Pytorch/JAX),
VHDL/Verilog

Embedded

Bare-metal, ARM, RISC-V

AI/ML

State Space Models, Transformers,
Stochastic Methods

Hardware

PCB Design, Digital Logic, FPGAs

Automotive

AUTOSAR Classic, ECU Development

Tools

Git, GitHub Platform, KiCad,
GNU Tools

Languages

German

Native Speaker

English

C1 Level (TOEFL iBT 105/120)

Certifications

Aerial Robotics

University of Pennsylvania (2021)

Professional Summary

Results-driven Embedded Systems Engineer with exceptional expertise at the intersection of hardware and software development. Specialized in implementing cutting-edge AI algorithms in constrained environments and optimizing complex systems for automotive and aviation applications. Proven excellence in technical leadership and delivering innovative solutions.

Professional Experience

Automotive Developer

intive GmbH, Regensburg

May 2024 - Present

- Development of BMW's critical ECU network processing and visualization tool
- Spearheaded refactoring effort of complex legacy codebase using agents
- Coordinated cross-functional teams

Software Development Engineer

VECTOR Informatik, Regensburg

Jul 2023 - Dec 2023

- Participated in project focused on flash bootloader development with OTA capabilities
- Contributed to development process optimization initiatives within agile framework
- Collaborated with senior engineers on automotive software development best practices

Academic Tutor - Digital Design

OTH Regensburg

Mar 2022 - Dec 2022

- Supervised weekly practice sessions for digital logic design and VHDL coursework
- Applied evaluation system that improved student preparation for examinations

Key Technical Projects

Quadcopter Control System

github.com/markusheimerl/quad

2021 - Present

Complete flight control system with custom PCB design, state space models, and imitation learning for autonomous flight. Real-time algorithms optimized for embedded systems.

State Space Model Implementation

github.com/markusheimerl/ssm

2024 - Present

Highly efficient C/CUDA implementation for embedded applications with outstanding performance improvements and numerical stability - Proven to replace Kalman Filter - PID controller combination in simulation for quadcopter

Small Language Model

github.com/markusheimerl/slm

2024 - Present

Lightweight language model for neural architecture research

Education

B.Sc. Computer Engineering

OTH Regensburg - 1.x / 1.0

2018 - 2022

Thesis: Development of a RISC-V RV32I Processor with VGA Interface using VHDL

Leadership Experience

Event Organizer - TEDxOTHRegensburg

TEDxOTHRegensburg

2019

Recruited Dr. Max Plach as speaker, secured sponsorship from InterNetX GmbH, implemented ticket systems.