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SUMMARY

- Embedded Systems Engineer with 10+ years of experience in Zynq UltraScale+ MPSoCs, embedded Linux, microcontrollers, and safety-critical systems.
- Strong background in architecting high-reliability software and real-time communication pipelines in space, SatCom, medical, and IoT domains.
- Skilled in C, C++17, Rust, Python, Yocto, PetaLinux, and cross-platform toolchain development.

WORK EXPERIENCE

Embedded Software Engineer — Vyoma GmbH
Sep 2024 – Present — Munich, Germany

Project: Flamingo-2 Satellite Payload (Gen2)

- Led end-to-end architecture of the payload flight software on AMD Zynq UltraScale+ MPSoC, integrating COTS hardware with custom payload I/O.
- Drove board bring-up (device tree, drivers, Linux subsystems) and owned the Yocto/PetaLinux platform, including CI/CD pipelines, reproducible SDKs, and toolchains.
- Designed a distributed Rust/Python/ZeroMQ microservices architecture for deterministic mission operations.
- Architected the CoaXPress imaging pipeline, defining PL–PS interfaces and enabling AXI DMA → `udmabuf` → `uio` high-rate frame ingestion; collaborated closely with FPGA engineers.
- Implemented Rust FFI for frame-grabber SDKs and camera simulators to support automated hardware-in-the-loop testing.
- Designed the real-time RTP/UDP downlink and RS-422 state-machine protocol for reliable payload–OBC communication.
- Designed and implemented the storage manager and eMMC data-handling architecture, including middle-layer services for reliable image and telemetry persistence.
- Led debug and integration sessions across FPGA, software, and hardware teams to resolve DMA stalls, timing issues, and interface mismatches.
- Reviewed ICDs, ECSS/CCSDS requirements, and vendor documentation, ensuring technical alignment across suppliers and mission partners.
- Recruited and mentored FPGA, hardware engineers; established technical processes, evaluation frameworks, and agile development practices.
- Managed vendor collaboration for COTS components and oversaw `zcu104` prototyping for early payload integration.

Embedded Software Engineer — VITES GmbH
Jun 2021 – Aug 2024 — Ottobrunn, Germany

SatCom On-The-Move (Ku-band)

- Developed SOTM modem software in C/C++17 with multi-threading, IPC, and asynchronous networking (libuv).
- Designed and integrated RF signal-processing workflows on Xilinx RFSoC for high-speed Ku-band satellite Tx/Rx.

- Implemented key HAL components (PLL, UIO, ADC/LibIIO, SPI, I2C) and RF control modules for full modem operation.
- Built Yocto-based Linux distributions, SDKs, and kernel patching workflows for the embedded platform.
- Implemented deterministic A53–R5 communication using RPMsg and developed automated system tests using Docker/Robot Framework.

PREVIOUS EXPERIENCE

Embedded Software Engineer — B1 Engineering Solutions (2018–2021)

- Developed IEC 62304–compliant safety-critical software using C/C++11 on STM32F7 with Keil RTX5.
- Designed CAN-based pump control algorithms and coordinated multi-pump system behavior.
- Implemented and maintained HAL layers for sensors, pumps, and device-level peripherals.
- Built robust non-volatile memory handling, watchdog recovery flows, and system reliability features.
- Produced UML architecture/design documentation and enforced software quality via Polyspace static analysis.

Embedded Engineer — Mediola AG (2018) Integrated Selve RF, ESP8266/STM32-based IoT gateway.

Embedded Engineer — Baudisch Intercom GmbH (2017–2018) Developed embedded Linux video/audio intercom software using GStreamer, PJSIP, C++11.

Software Engineer — Broadridge (2011–2014) C++ and MS SQL–based financial data processing.

EDUCATION

Hochschule Bremen, Germany
Master of Science, Electronics Engineering – Microsystems (2014–2016)

JNTU Hyderabad, India
Bachelor of Technology, Electrical and Electronics Engineering (2007–2011)

SKILLS

Programming: C, C++11/17, Rust, Python, Shell
Code spaces: Keil uVision5, VS Code, Qt Creator 5.0
Interfaces: CoaXPress, AXI DMA, `udmabuf`, I2C, SPI, UIO, UART, CAN, Ethernet, USB, RTP/UDP, RS-422
Embedded Linux: Yocto, PetaLinux, U-Boot, Device Tree, Drivers
RTOS: Keil RTX5, FreeRTOS
SoCs: Zynq UltraScale+ MPSoC/RF-SoC, STM32, NXP-iMX8, ESP32
Toolchains: Yocto SDK, Crosstool-NG, Docker, GitLab CI, CMake
Debug/Test: GTest, Robot Framework, Wireshark, PCAN, GDB, Valgrind
Documentation: UML, Enterprise Architect, Polarion
Languages: English (C1), German (A2)

TRAINING

Embedded DevOps — Build Systems and CI/CD (2023)
Linux Kernel and Device Driver Programming — LK Foundation (2024)

HOBBIES

Raspberry Pi/ESP32 projects, cycling, chess, reading.