Venkata Naga Ravikiran Bulusu

Email: bvnravikiran@gmail.com
Mobile: +49 15218204162
Address: Munich, Germany
Blog: `https://ravikiranbvn.github.io`
LinkedIn: `https://www.linkedin.com/in/ravikiranbvn/`

SUMMARY

- Embedded Systems Engineer with 12+ years of experience designing high-performance Linux-based platforms on AMD Zynq UltraScale+ MPSoCs.
- Specialized in architecting reliable high-throughput data pipelines and mission-critical software for Space, SatCom, Medical, and emerging edge computing systems.

WORK EXPERIENCE

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

Project: Flamingo-2 Satellite Payload (Gen2)

- Played a significant role in the architecture and development of the payload flight software stack on AMD Zynq UltraScale+ MPSoC, focusing on the embedded Linux platform and middleware services.
- Owned the embedded Linux platform (Yocto/PetaLinux), including device tree integration, kernel subsystems, CI/CD pipelines, and reproducible SDK/toolchain environments.
- Contributed to the distributed payload software architecture using Rust/Python microservices with ZeroMQ-based communication for deterministic mission operations.
- Architected the high-throughput imaging data pipeline between PL and PS (AXI DMA → `udmabuf` → `uio`), enabling reliable high-rate frame ingestion from the FPGA imaging subsystem.
- Integrated vendor C++ SDK libraries through Rust FFI to support CCSDS/PUS service functionality within the Rust-based mission software architecture.
- Architected the payload storage manager aligned with CCSDS PUS Service ST-06, implementing a reusable storage library over EXT4 file system for reliable persistence of high-volume image and telemetry data.
- Designed and implemented the RTP/UDP downlink path and RS-422 state-machine protocol for reliable payload-OBC communication and deterministic data transfer.
- Recruited and mentored FPGA and hardware engineers while coordinating cross-disciplinary integration and ensuring alignment with ECSS and CCSDS standards (ECSS-E-ST-70-41C, CCSDS 133.0-B-2).

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

SatCom On-The-Move (Ku-band)

- Developed SatCom On-The-Move (SOTM) system software in C/C++17, using a state-machine–driven architecture, multi-threading, IPC, and asynchronous networking (libuv) on AMD 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)

- `Heart-lung machine:` Developed IEC 62304 compliant safety-critical medical software in C/C++ on STM32F7.
- Designed safety-critical pump control algorithms and machine control logic over CAN, coordinating multiple pumps and sensors.
- Designed/refactored and maintained HAL layers for sensors, pumps, CAN and device peripherals to improve reliability and testability.
- Architected non-volatile memory infrastructure for secure persistence and automated recovery of critical settings during watchdog resets.
- Implemented multi-threaded real-time software using Keil RTX5 RTOS with deterministic task scheduling.
- Supported verification and compliance via Polyspace Bug Finder / Code Prover, and produced UML documentation in Enterprise Architect.
- `Jenny Critical Care Unit:` Integrated patient monitoring data and alarms with a Central Monitoring System over Ethernet/Wi-Fi using Qt 5.9 / C++11 / TCP/IP.

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++17, Rust, Python
Embedded Platforms: AMD Zynq UltraScale+ MPSoC/RF-SoC, Rpi4, STM32, NXP i.MX8, ESP32
Embedded Linux & Platforms: Yocto, PetaLinux, U-Boot, Device Tree, Drivers
High-Speed Data Pipelines: AXI DMA, CoaXPress, `udmabuf`, `uio`, RTP/UDP, TCP/IP
System Interfaces: SPI, I2C, UART, CAN, Ethernet, USB, RS-422
Development & Debugging: GitLab CI, Docker, CMake, GDB, Wireshark, Valgrind, GTest

TRAINING

Embedded DevOps — Build Systems and CI/CD (2023)
Linux Kernel and Device Driver Programming — LK Foundation (2024)
From Vision to Deployment: Developing Secure AI-Enabled Linux Devices (Embedded World 2026)
Embedded Linux Security — Secure Platform GyroidOS (Embedded World 2026)