

Martín Ribletta

*Embedded Systems Engineer –
Aerospace & Critical Systems*

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Professional Summary

Embedded Systems Engineer with 15+ years of experience in aerospace, IoT, and industrial systems. Expertise in flight software, secure update systems, FPGA-based flight computers, and mission-critical communication protocols. Experience in delivering robust end-to-end embedded platforms under strict reliability and lifecycle requirements.

Professional Experience

- 2022–Present **Freelance Embedded Developer / Contractor, Remote**
- Reduced update time by 80% using Ethernet bootloader on STM32H7.
 - Designed multi-port Ethernet hubs and data acquisition boards (KiCad).
 - BLE indoor positioning using ZephyrOS in nRF series.
 - Secure UEFI firmware development for Intel/Qualcomm platforms.
 - AWS Lambda + RDS back-end integration for smart farming.
 - MicroPython was ported to the legacy Zephyr RTOS for remote control.
 - Aerospace/IoT projects: f-prime port to Zephyr, debug bridge for MSP430, in-flight update systems, HAL packages for SAMV71 and MSP430-FRAM.
- 2011–2022 **Embedded Systems Engineer / Contractor, Emtech S.A., Bahía Blanca / Bariloche / Remote**
- LEON3 flight CPU in ProASIC3 FPGA; FreeRTOS/SafeRTOS/RTEMS ports.
 - DSP radar simulation in VHDL (ModelSim/Questa).
 - PCIe-based acquisition systems on Virtex6; Zynq7000 SoC instrumentation subsystems.
 - LoRa IoT gateway design and Cortex-M4 RTOS stack with aerospace reuse.
 - Qt+QML Wayland Compositor for Industrial HMIs.
 - HTTPS stack for ZephyrOS devices; firmware for laser communication payload.
 - HW-in-the-loop CI for firmware validation; remote FPGA programming tool.
- 2009–2011 **Embedded HW/SW Developer, EyCON S.A., Bahía Blanca**
- Redesigned GPS tracker hardware and firmware.
 - Developed RFID ticketing terminals and QtWidgets kiosks for public transport.

Technical Skills

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|-------------|--|
| Programming | C/C++, Python, Rust (intermediate), VHDL/Verilog, ASM (x86/ARM/RISC-V) |
| RTOS | RTEMS, FreeRTOS, SafeRTOS, Zephyr, VxWorks, RT-Thread, eCos, OSEK |
| FPGA / HDL | ProASIC3, Spartan6, Virtex6, Zynq7000; ModelSim/Questa simulation |
| Comms | LoRa, BLE, MQTT, custom protocols adapted for aerospace telemetry |
| Linux | Embedded Linux (Buildroot, Yocto, OpenWRT), driver dev, secure boot |
| EDA | KiCad, Altium, OrCAD, Eagle |
| Tools | CMake, Make, CI/CD, GDB, JTAG/SWD, Git |

Talks & Courses

- RISC-V on Microcontrollers — SASE 2022 slides
- MicroPython on EDU-CIAA — PyCON-AR 2016 YouTube
- Software Licensing in Embedded Systems — UTN 2015
- Embedded Linux Driver Development — SASE 2011
- Cortex-M3 Introduction — UTN FRBB 2011

Education

2004–2011 **Bachelor's in Electronic Engineering (incomplete)**, *UTN FRBB*, Bahía Blanca
Completed 4 of 5 years

Personal Projects

- Personal Consulting / Design Services
- Technical Blog
- Cortex-M Standalone Monitor
- Embedded Logging System
- Executable Loader for Embedded Devices
- Cortex-M7 Arduino-Compatible Board
- Cortex-M7 Industrial CPU System
- iMX-RT Low-Cost Board (WIP)
- Embedded IDE
- Cortex-A9 Developer Board

Languages

Spanish Native

English Fluent reading/writing, conversational speaking