

# Martín Ribelotta

*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 HMI.
  - 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

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