

Joaquín B. González

SW ENGINEERING TEAM LEAD

EXPERT IN AI-DRIVEN PRODUCTIVITY

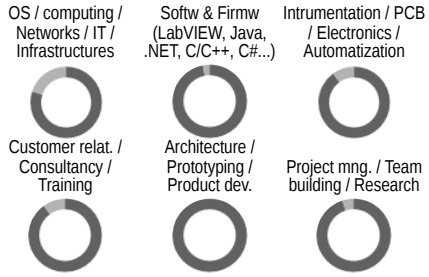
PROFILE

As an organised and highly creative individual, I love the challenges of working within a dynamic and fast paced working environment. The most important skill I got on university was not the technical themselves, but the ability of learn quickly. The knowledge gained from my experience at CERN and working with sensitive clients such as Airbus has shaped my ability to be always looking for improvements in performance, reducing costs and working under deadlines, but at the same way, to adapt quickly, work efficiently, side-thinking creatively and work effectively as part of a team or on my own.

CONTACT

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SKILLS



EDUCATION AND LANGUAGES

UNIVERSITY OF SEVILLA

BSc in Telecommunication and Electronic Engineering
MSc in Telematics

Python/Typescript developer by EPFL

PMP certified by Project Management Institute.

Spanish (Native)
English (Professional - C1)
French (Elementary - A2/B1)

A bit about me (in general) and the position

I am a systems and software architect with 18 years of experience moving from bare-metal **firmware** and **embedded Linux** up through **networking**, cloud services, and **full-stack** front ends. I have developed **embedded software** in **C/C++** for synchronized **IoT** devices, designed **wireless communication protocols**, and built **Python** services on **AWS** and **Docker**. In my current practice I use **agentic AI** and **LLM** orchestration as daily engineering tools, including a multi-agent pipeline with anti-hallucination auditors and 748 automated tests. My work has ranged from signal-integrity and FPGA co-design to cloud-integrated device clusters. As a leader I have managed small teams end to end, acted as a **solutions architect**, and translated **business requirements** into **technical architecture** while presenting to **C-level** stakeholders. I hold a **PMP** certification and rely on **agile** delivery disciplines to keep scope, risk, and quality in balance. What drives me is building connected products that are robust in the field, simple for operators, and fast to evolve.

Some technical skills that you may find interesting

Programming: **C/C++**, **Python**, JavaScript, LabVIEW, C#/.NET, TypeScript, Bash, PowerShell, Java
Embedded & Systems: **firmware**, **embedded Linux**, Yocto, FreeRTOS, ESP-IDF, ESP32, STM32, Raspberry Pi, FPGA, Xilinx, MicroBlaze, ARM, Zynq, RTOS, **IoT**, **wireless**, **networking**, **communication protocols**, **Docker**, WireGuard, OpenVPN
Web & Cloud: Flask, .NET, **AWS**, Apache2/mod_wsgi, Playwright, pytest, GitLab
AI & LLM Engineering: **agentic AI**, **LLM**, prompt engineering, multi-agent orchestration, anti-hallucination auditing, LLM APIs
Methodologies: **agile**, Waterfall, SDLC, **PMP**, hardware-software co-design, test-driven development

LEM International | Senior Innovation Engineer — Feb 22 - Jun 24

Reporting to Dominik Schläfl (Head of Innovation)
Dotted line to Ian McNutt (VP Advanced Engineering)

Delivered **embedded software** and **wireless** connectivity for industrial **IoT** devices, achieving 35 µs clock synchronization over Wi-Fi for cloud-integrated PMU solutions in which one ESP32 hosted the hotspot while two others connected and exchanged 1-to-1 UDP messages with the hub. Developed **firmware** in **C** for EV charging and smart-grid devices on ESP32 with FreeRTOS/ESP-IDF, and evaluated STM32 as a secondary platform. Built an **embedded Linux** energy meter for the DCBM project on BeagleBone Black, and prototyped low-power self-powered sensors with energy harvesting and encryption for secure fleet deployment. Created automated test frameworks in **Python**, C, C#, and LabVIEW for **IoT** edge devices, and built Flask-based **full-stack** sensor UIs. Containerized cloud and edge flows with **Docker** and integrated **AWS** IoT Core, Greengrass, Lambda, and data lakes, focusing on fleet provisioning and authentication. Pioneered R&D in low-power smart sensors and secure **wireless communication protocols** using LoRa, BLE, and Wi-Fi encryption. Conducted technology scouting and future forecasting across 3-, 5-, and 10-year R&D horizons to align sensor, **IoT**, and AI roadmaps with market needs. Led cross-functional teams from ideation to proof-of-concept with **agile** and Waterfall methods, advised product management and executives, and translated **business requirements** into **technical architecture**. Provided **technical leadership** and **team leadership** to junior engineers while collaborating directly with **C-level** stakeholders.

- Integrated serial wired ports into **wireless**/mobile communication systems.
- Guided junior engineers in **agile** workflows and **IoT** firmware development.

COGITO INSTRUMENTS | Application Engineer

Aug 18 - Aug 21

Directly reporting to CEO Philippe Lambinet and COO Eric Jumelet

Led end-to-end delivery of **embedded software** for AI-driven industrial systems, including the DCblue machine vision system for a pick-and-place robot, later commercialized with SunRock Technologies. Designed and shipped the Core1 hardware platform, a modular FPGA-based neuromorphic system that replaced closed National Instruments frameworks and delivered up to 50% faster bus communication and up to 100× faster training and inference. Wrote **firmware** in ANSI **C** and developed **communication protocols** including SPI, I2C, Ethernet, EtherCAT, TCP/IP, and custom bus interfaces. Delivered the Visual Inspection Package (VIP) for 100% automated surface quality inspection and integrated it into the client's production bench. Acted as a **solutions architect**, translating **business requirements** into **technical architecture**, and worked directly with **C-level** executives during customer visits and feasibility assessments. Used **agile** and Waterfall to manage software and hardware teams, saving up to 9 weeks of development time. Provided **technical leadership** and **team leadership** for multidisciplinary projects and trained customers on product use. Conducted pFMEA risk analyses for the DCblue machine vision system and managed resource allocation and hardware procurement.

- Designed mezzanine adding Ethernet, EtherCAT, SD-card, and expansion power for full system validation.
- Delivered certification-ready Core1 first prototype five weeks before deadline.
- Wrote production-grade automated test suites in **C** and C# for neural hardware.

CERN | Senior Electronics Engineer

Jul 15 - Jun 18

Oversaw by Dr. Michael Moll (SSD team lead) and Dr. David Barney (CMS HGCAL project lead)

Rewrote the TCT+ control software into a fully parallel producer-consumer architecture, improving data-taking throughput by 8× on an already-optimized experimental setup. Designed and implemented the 2017 beam-test data storage pipeline for the CMS HGCAL—50 TB/week, 2.1 Gb/s sustained and 8.6 Gb/s peak throughput on CERN EOS—with zero storage-related downtime. Configured centralized secure storage on CERN EOS with Web, SFTP, SMB, and NFS access. Wrote LabVIEW test/control software for frontend ASICs and set up **Linux**/Windows file services and **networking** for test benches feeding high-throughput data pipelines. Improved the eTCT experiment's signal-to-noise ratio by 23 dB through electromagnetic mitigation and waveguide-based shielding. Mentored interns and led multidisciplinary teams, providing **technical leadership** and **team leadership** for detector collaborations.

- Wrote modular LabVIEW programs for SiPM sensor characterization and thermal control.
- Designed cooling plate and metallic box for edge-TCT setup in Autodesk Inventor and MATLAB.
- Co-authored JINST paper on sub-100 ps RPC timing with gaseous detectors.

AICIA | Expert Technician

Oct 08 - Jun 15

Reporting to Dr. Fco. Rogelio Palomo

Wrote **embedded software** and **firmware** in **C** on a MicroBlaze soft core to revive an inoperable FPGA-based laser interrogator, turning it into a functional demonstrator. Redesigned the electronics and PCB for the TMBragg 3 interrogator, achieving 400× faster laser tuning and over 10× better precision and repeatability. Developed master-slave **communication protocols** and ad-hoc libraries for LabVIEW and UART, adapting research prototypes into market-ready products. Optimized signal integrity and impedance matching for the TMBragg interrogators. Delivered two advanced prototypes and a technology demonstrator for acousto-optic delamination detection in carbon fiber structures, and collaborated with CERN on fiber-optic sensors in neutron radiation environments. Contributed to the technology later patented by Temai Ingenieros.

- Detected signals at −60 dB SNR recovered via hardware improvements and signal processing.
- Placed FBG sensors in CERN's nTOF neutron beam, proving inertness to radiation.

UNIVERSITY OF SEVILLA | Systems Engineer

Aug 10 - Jun 15

Reporting to Dr. José Manuel Gordillo (Head of Fluid Mechanics research group)

Administered private **networking** and a server farm for **Linux**-based supercomputing clusters, supporting numerical simulations and aerospace research for the Fluid Mechanics research group. Redesigned the internal network, implemented firewall policies and cybersecurity protocols, and automated server tasks with Bash and PowerShell scripts. Virtualized clusters with VMware and provided L1-L3 support while mentoring student projects. Provided **team leadership** for the IT division and delivered cybersecurity training.

- Wrote Java backend for early warning of server crashes or looming overload conditions.
- Managed backup and printing services across **Linux**/Windows servers for the research group.
- Implemented teleworking tools and supercomputation systems for multiple research groups.