

# Juan Luis Leal Contreras

## Firmware Engineer

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Firmware engineer at Embention, working full time on the autopilot of the Amazon Prime Air delivery drone project: embedded C++ under the JSF standard for flight-critical systems. Previously four years of electronics and firmware R&D with five Springer papers. Outside work I build in Rust: three published crates and Android apps on a Rust core.

### EXPERIENCE

#### Firmware Engineer · Embention

Sep 2024 · present · Alicante, Spain

- Autopilot firmware for the Amazon Prime Air delivery drone project (Embention is a technology partner).
- Embedded C++ under the JSF standard for flight-critical systems.
- HIL/SIL simulation, requirements and traceability, aerospace protocols (Cyphal, STANAG, CAN) and GNSS.
- Day-to-day work in a codebase shared with around 100 engineers. On-site support in Seattle, USA, with the Amazon team.

#### R&D Engineer · Electronics and firmware · CETEM

Mar 2021 · Aug 2024 · Yecla, Spain

- Complete electronics of the sensorized Proteckthor head band, from scratch: circuit, schematic, miniaturized PCB in Altium, Espressif MCU, firmware and testing (prototype).
- ESP32 firmware with ESP-IDF and FreeRTOS (BLE, Wi-Fi, OTA, low power) for 10+ national and EU R&D projects.
- Five Springer papers (two as first author). Open source fixes merged in arduino-esp32 and pysolar.

#### Research collaboration grant · Universidad Miguel Hernández

Sep 2019 · Jul 2020 · Elche, Spain

- Atmospheric data analysis in R: satellite aerosols and Saharan dust intrusions over the Iberian Peninsula.

#### Intern · Mechanical design · Entre2mares

Summer 2017 · Alicante, Spain

- Designed the full structure of an underwater wine cellar in Autodesk Inventor.

### EDUCATION

#### Degree in Industrial Electronics and Automation Engineering

Universidad Miguel Hernández (UMH) · 2016 · 2020

- GPA 8.2/10, top mark (Matrícula de Honor) in six courses. Degree project 10/10, published open access and open source (PLC-ESPLoRa).

### PUBLICATIONS

#### Two-Coil Resonant Wireless Power Transfer System for Smart Recycling Containers

UCAmI 2024 · Springer · first author

#### Ambient Monitoring System for Contagion Risk Assessment of Airborne Transmission Diseases in the Hospitality Industry

UCAmI 2022 · Springer · first author

Plus three more Springer papers as coauthor (2022-2024). Five peer-reviewed in total, full list with DOIs at [juanluisleal.com](http://juanluisleal.com)

### SKILLS

#### LANGUAGES

Rust · C++ (JSF) · Python

#### EMBEDDED

ESP32 · ESP-IDF · FreeRTOS · Cyphal · STANAG · CAN · GNSS

#### PROCESS

HIL/SIL · requirements and traceability · CI/CD · quality gates

#### AI TOOLING

Claude Code · lockpick · rust-template

#### SYSTEMS

Linux · TrueNAS/ZFS · VLAN · WireGuard

#### PCB

Altium · KiCad

### SELECTED PROJECTS

#### solar-clock

Android solar clock with a 100% Rust core (UniFFI). Sub-millisecond solar math.

#### helioxide

NREL Solar Position Algorithm in Rust. 100% branch coverage gate. [crates.io/crates/helioxide](https://crates.io/crates/helioxide)

#### lockpick

Every Rust quality gate in one command. The CI gate of all my Rust repos. [crates.io/crates/lockpick](https://crates.io/crates/lockpick)

#### PLC-ESPLoRa

Browser-programmable 8-relay PLC on two ESP32 nodes linked by LoRa. Open source degree project.

### LANGUAGES

Spanish · native

English · daily work with a US team (B2)

Valencian · C1 certified

### COURSES

Altium Designer + Advanced · Electratraining, 2022

Public speaking and rhetoric · UIMP, 2024