

# Josué Leiva

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## PROFESSIONAL SUMMARY

Student of Civil Telematics Engineering (3rd year) focused on the intersection of Hardware and Software (IIoT/OT). Native Linux user (Ubuntu/i3wm) with expertise in C/C++ and manual memory management. Seeking to apply low-level coding skills, systems integration, and control logic in research or industrial environments.

## EDUCATION

### Universidad Técnica Federico Santa María (UTFSM)

*B.Sc. in Civil Telematics Engineering*

Santiago, Chile

Exp. Graduation: 2029

- **Relevant Coursework:** Data Structures & Algorithms, Calculus, Database Management Systems.
- **Achievement:** Technical Editor for the *Propuesta Dominio 5* (National Cybersecurity Forum 2025).

## TECHNICAL SKILLS

**Programming:** C/C++ (STL, Manual memory management), Python (Scripting, Automation), SQL.

**Embedded & IoT:** ESP32, Arduino Framework, Serial Protocols (UART/I2C), HTTP/REST.

**Tools & DevOps:** Linux (Daily driver), Vim (No-LSP workflow), GDB, Valgrind, Git/GitHub, Docker.

**Core Concepts:** RTOS, Data Structures, Networking, OOP, MVC Architecture, Pub/Sub.

**Languages:** Spanish (Native), English (Advanced C1).

## PROJECTS

### Desktop Library Management System

*Stack: C/C++, Qt6, SQLite*

*July 2025*

- Co-designed an **offline-first** desktop application resilient to power outages, integrating the native `sqlite3.h` library (C-Interface) for granular control of SQL transactions.
- Implemented a custom MVC architecture and algorithms for penalty calculations based on date differentials.
- **Technical Challenge:** Diagnosed and fixed a "Ghost Signal" bug (double execution) via deep GDB debugging, refactoring the modal hierarchy and Qt event loop.

### UBike: Bicycle Parking Security System

*Stack: C++, ESP32, Django*

*July 2024*

- Engineered a distributed network of autonomous parking nodes using ESP32 microcontrollers and RFID sensors.
- Developed C++ firmware implementing asynchronous processing to handle network latency, ensuring instant solenoid actuation regardless of server status.
- Integrated REST API with Django for user validation and event logging.

### Hybrid C/X11 Game Engine

*Stack: Native C, X11, Imlib2*

*July 2025*

- Developed a hybrid application bridging standard console I/O with X11 graphical rendering using Imlib2.
- **Resource Management:** Enforced strict malloc/free routines and conducted deep **Valgrind** audits, achieving a runtime free of memory leaks and segfaults.

## RELEVANT EXPERIENCE

### National Cybersecurity Forum

*2024 - 2025*

*Technical Editor & Proofreader*

- Executed technical and argumentative revision of the technical proposal "Dominio 5" (Cybersecurity).
- Ensured structural coherence for high-level documentation.

## AREAS OF INTEREST

- **Professional:** Industrial IoT (Mining/Energy), Edge Computing, RTOS, Numerical Methods.
- **Hobbies:** Analog/Digital Photography, Origami, Calligraphy.