

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.