

# Alejandro Gonzalvo Hidalgo

BACKEND ENGINEER

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## Personal Information

Date of Birth: 03.09.2003

Nationality: Spanish

Location: Valencia, Spain (willing to relocate)

**EU Citizen – Eligible to work in Switzerland without sponsorship.**

## PROFESSIONAL SUMMARY

Backend engineer with 18 months at CERN, where I developed data analysis tools in Python, web applications in React and CI/CD testing pipelines. Experienced in AWS and Docker. Built my own database engine using Rust. Looking for a team where I can push myself, ship excellent work, and help my colleagues grow.

## PROFESSIONAL EXPERIENCE

### CERN

*Software Developer*

Valencia, Spain (Remote)

Oct. 2025 – Now

- Developing a Python application to migrate 800+ custom websites while preserving layout and styling through pattern recognition across distributed JSON and HTML data.

### CERN

*Software Developer Internship*

Geneva, Switzerland

July 2024 – Sep. 2025

- Implemented CI/CD pipeline to automate testing, release and deployment, cutting feature process time by 90%.
- Developed automated end-to-end and accessibility tests (WCAG AA) using Playwright (JavaScript/TypeScript).
- Implemented a multi-threaded link checker scanning up to 20 URLs/second, successfully analyzing 140,000 URLs.
- Developed a responsive WordPress theme with React and PHP to support +10,000 users at CERN.

### Polytechnic University of Valencia

*Full-Stack Developer*

Valencia, Spain

Sep. 2023 – July 2024

- Developed quantum circuit visualizer using FastAPI, React and Three.js supporting up to 10,000 qubits.
- Developed a distributed quantum network compiler in Python and C++, benchmarking compilation algorithms for performance optimization (see [arXiv:2407.17306v1](https://arxiv.org/abs/2407.17306v1)).

## EDUCATION

### Polytechnic University of Valencia (UPV), ETSINF

*B.S. in Computer Engineering (240 ECTS), GPA 7.1/10*

Valencia, Spain

Sep. 2021 – Jun. 2025

## LANGUAGES

Spanish: Native

English: C2 CEFR

Catalan: Native

French: A2 (Learning)

## STUDENT ASSOCIATIONS

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### European Hyperloop Week | [hyperloopweek.com](https://hyperloopweek.com)

Executive Director & Technical Lead

Europe (Remote)

Sep. 2023 – May 2025

- Led a 50+ member organization, managing event organization and jury recruitment using Agile methodologies.
- Defined long-term roadmap balancing sponsor and participant goals and established award rubrics.

### Hyperloop UPV | [hyperloopupv.com](https://hyperloopupv.com)

Embedded Software Engineer

Valencia, Spain

Sep. 2022 – Aug. 2023

- Developed type-safe, zero-overhead C++20 Hardware Abstraction Layer for STM32H7 peripherals.
- Built real-time battery monitoring firmware managing 72 Li-Po cells with per-cell temperature and voltage tracking for 220V high-voltage system.
- Developed charging algorithm for custom-made chargers, enabling on-board charging and eliminating extraction requirements.

## CERTIFICATES

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### Cambridge English C2 Proficiency

Grade: 213/230

### AWS Certified Cloud Practitioner

Valid until Oct. 2028

## PERSONAL PROJECTS

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### JanQL | Rust, Database Internals, High-Performance I/O

Dec 2025

- Developed a persistent Key-Value store using a Log-Structured Merge (LSM) Tree architecture. Implemented MemTable buffering, Write-Ahead Log (WAL), SSTables and customized compaction policies.
- Implemented CI to automatically perform and save benchmarks on every release, which I then plotted so the performance cost of every feature for basic operations can be visualized.

### Edge AI Human Movement Analysis | Python3, Edge AI, Deep Learning, Gaming

Jan. 2024 – June 2024

- Developed an Edge AI system using NVIDIA Jetson and Python3 for real-time human movement tracking.
- Implemented a gamification where users replicate tracked movements with a score system to evaluate precision.
- Applied the system to sports analysis, improving techniques (e.g., tennis serve) by providing actionable feedback.

### Jam Rivalry | Godot, GDScript, Game Design

May 2020

- Co-developed a cooperative puzzle platformer during a 72-hour game jam. Achieved top 20 placement in gameplay category, featuring asymmetric mechanics and strategic betrayal dynamics between players. See [Jam Rivalry](#).

## PUBLICATIONS

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### Route-Forcing: Scalable Quantum Circuit Mapping for Scalable Quantum Computing Architectures

Accepted to IEEE QCE 2024 | [arXiv:2407.17306v1](https://arxiv.org/abs/2407.17306v1)

## TECHNICAL SKILLS

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**Languages:** Python, Rust, TypeScript/JavaScript, C++, PHP, SQL, Shell Scripting (Bash)

**Frameworks:** FastAPI, React, Three.js, Pandas

**DevOps & Cloud:** AWS, Docker, CI/CD (GitLab CI), Git, Linux System Administration, Automation

**Testing & Methodologies:** End-to-End Testing (Playwright), Unit Testing, TDD, Accessibility (WCAG), Agile