Rodrigo Zúñiga

Website & Portfolio: rnzch.com | Links: links.rnzch.com | Email: rodrigozuniga3010@gmail.com

Education

Universidad Peruana de Ciencias Aplicadas — Lima, Peru
Bachelor of Science in Mechatronics Engineering, — Top 20% of class — Mar. 2022 – Jul. 2027

Innova Schools — Lima, Peru
High School Diploma — Peru Champs Excellence Scholarship — Mar. 2015 – Dec. 2021

Experience

Founder & Technical Lead — Jan. 2025 – Present
Lisa AI — Python , LangGraph, Flutter, Qdrant, MQTT, MCP, mem0 — *Lima, Peru*

- Architected conversational AI ecosystem integrating cloud/local LLMs with IoT via Model Context Protocol.
- Designed dual-hardware hub + SmartLink devices with local ML inference and MQTT connectivity (30+ devices).
- Implemented multimodal processing and cross-platform connection (web automation, Chromecast).
- Building companion Flutter app for system customization and remote access to AI + smart home features.

Software Engineer — Mar. 2025 – Present
LinkSite — Next.js, NestJS, PostgreSQL, Redis, Kafka, Elasticsearch, Docker, Kubernetes — *Lima, Peru*

- Built scalable event platform with AI-assisted generation using Google Gemini + LangChain.
- Optimized frontend with Next.js (App Router, RSC), reducing load times by 40%.
- Engineered resilient backend with PostgreSQL, Redis, and Elasticsearch; added Kafka for real-time workflows.
- Automated CI/CD pipelines with GitHub Actions and Kubernetes for multi-env deployments.

Cybersecurity & Systems Intern — Mar. 2025 – Jul. 2025
UPC — Azure, OAuth2, JWT, RBAC/ABAC, Burp, OWASP ZAP — *Lima,Peru*

- Disclosed major vulnerability, leading to internship in the IT security division.
- Migrated legacy auth to OAuth2 + Azure AD; secured transport with TLS 1.3 and mTLS.
- Secured APIs via Azure API Gateway + Kong with rate limiting, validation, and logging.
- Conducted penetration tests and threat modeling (STRIDE, OWASP ZAP, Burp).

Hardware & Embedded Systems Engineer — Nov. 2024 – Present
Runakall Energy — KiCad, ESP32, Arduino IoT, FreeRTOS, MQTT — *Lima, Peru*

- Developed modular hardware for exercise-to-electricity system with IoT telemetry.
- Designed PCBs for sensors + motor drivers; integrated ESP32 + Arduino Nano 33 IoT.
- Programmed firmware in C/C++ with FreeRTOS for multitasking and I^2C/SPI/UART comms.
- Validated prototypes via bench tests, load simulations, and thermal analysis.

Software Engineering Intern — Jan. 2024 – Nov. 2024
Fluxo — Go, Spring Boot, gRPC, Istio, CQRS, Docker, Kubernetes — *Lima, Peru*

- Refactored backend into Go microservices with gRPC under Istio service mesh.
- Implemented event-sourced order management with CQRS for scalability + auditability.
- Contributed to Spring Boot modules using DDD principles.
- Deployed containerized services to Kubernetes with Docker + GitHub Actions.

Automation Engineer Intern — Jul. 2023 – Sep. 2024
Pieles Santa Ana S.A.C. — Siemens S7, TIA Portal, WinCC, VFDs — *Lima, Peru*

- Automated curing/finishing lines with Siemens S7 PLCs and HMI integration.
- Built sensor-based modules (temperature, humidity, conveyor) to optimize curing.
- Integrated VFDs, reducing energy use by 12%. Designed SCADA dashboards in WinCC.
- Documented and versioned IEC 61131-3 logic in TIA Portal, performing validation tests, on-site commissioning, and continuous technical support, ensuring change traceability and reliable plant operations.

Notable Projects (20+ on my website)

Bloquick | *Rust, Sled, Svelte* Feb. 2025 – Present
- Lightweight and fast CMS, ready to use. Markdown/media support with reactive rendering in Svelte.
- Extensible through plugins and highly customizable, a modular Rust API and streamlined Docker deployment.

WhatBit | *Flutter, Bluetooth Mesh, libsodium, SQLite* Jul. 2025 – Present
- WhatsApp-like interface on BitChat , integrating a decentralized Bluetooth mesh network with end-to-end encryption, offline-first storage using SQLite + CRDTs, group and multimedia support, efficient P2P synchronization, latency optimization in offline environments, and modularity for future open-source extensions.
- Flutter client with native libp2p bindings; optional hybrid features while preserving serverless design.

Sunleaf Irrigation | *PIC18F57Q43, Assembly, C, SIM900, LoRa SX1278* Aug. 2024 – Dec. 2024
- Smart irrigation system with PIC18F57Q43 microcontroller, Assembly/C programming for sensor integration, automated irrigation logic and crop monitoring, optimized for low power consumption and water-use efficiency.
- Integrated SIM900 GSM for SMS reporting and real-time web interface with React, implemented LoRa SX1278 telemetry and UART/SPI protocols for efficient sensor communication.

Wood Drilling System | *PLC, Ladder Logic, HMI, TIA Portal, Stepper Motors* May 2024 – Jul. 2024
- Semi-automated drilling system with PLCs (Ladder Logic), HMI for depth/speed/presets, capacitive sensors and limit switches for enhanced safety, reliability, and industrial scalability.
- Step motors controlled via PWM for precise X/Y/Z motion, wiring diagrams, IEC 61131-3 compliant logic, with automatic calibration routines and fault tolerance for industrial operation.

Algorithmic Trading Bot | *TensorFlow, Keras, Pandas, Backtrader, Solidity, Binance API* Apr. 2023 – Jun. 2024
- LSTM–GRU models for crypto (SOL) forecasting using OHLCV and on-chain metrics; achieved 11.43% average monthly returns in 6-month backtests. Deployed live trading via Binance API with adaptive risk management.

Skills

Programming Languages: Python, C/C++, Go, Java, TypeScript/JavaScript, Solidity, Assembly, Rust, SQL
Frameworks & Platforms: Next.js, React, NestJS, Flutter, Node.js, Spring Boot, OpenCV, Svelte, FastAPI
AI, Data & Embedded Systems: TensorFlow, PyTorch, LangChain, LangGraph, Gemini API, HuggingFace, Qdrant, RAG pipelines, Arduino, ESP32, FreeRTOS, UART/SPI/I²C, Pandas, NumPy, scikit-learn, ONNX Runtime
Simulation: MATLAB, Simulink, Simscape, Fusion 360, ANSYS, KiCad, PID tuning, Kalman filters, TIA Portal
Databases & Infrastructure: PostgreSQL, MongoDB, Redis, Docker, Kubernetes, GitHub Actions, Kafka, Elasticsearch, Firebase, Azure AD, OAuth2/JWT, Kong Gateway, Nginx, Terraform, RabbitMQ, Prometheus
Laboratory & Hardware: PCB design and validation, Oscilloscope/Logic Analyzer Diagnostics, Industrial sensors (capacitive, IR, Hall-effect, IMUs), SMT/THT Soldering, Electrical Panel Wiring (IEC 60204-1/61131), FDM 3D Printing, PLCs/Ladder Logic, CNC Machining, NI LabVIEW Instrumentation, SPICE Simulation, SLA 3D Printing

Additional Information

Languages | *Spanish (Native), English (C1 Proficient)* Continual
Leadership & Activities | *IEEE CAS UPC – Student Branch Head of Programming & Research* 2024 – Present
Engineering Blog | *10+ articles & 1,000+ reads* Continual
- **Highlight:** "Lisa AI: From WhatsApp Reminders To Your Personal JARVIS"
- **Highlight:** "How Not to Forget My Own CMS Setup Ever Again"

Open Source Projects | *130+ downloads/week* 2022 – Present
- **3 NPM Packages** | React components, notification systems, and developer utilities
- **4 Python Tools** | Web automation, data processing, AI integrations, and API wrappers
- **2 Web Extensions** | Browser productivity tools and content enhancement extensions
- **GitHub Contributions** | Active mem0 contributor (AI memory layer for Lisa AI ecosystem)

Volunteering | *Tech mentorship, coding bootcamp instructor, community hackathon organizer* Continual
Certifications | *Blockchain Basics (University at Buffalo), CS50: Introduction to CS (Harvard)* 2023 – 2024
Achievements | *UPC Competitive Programming Contest 1st Place - Outperformed 40+ participants* 2023
Athletics | *Official Football Team – Mechatronics Engineering, Defense Position* Present
Personal Interests | *Robotics, AI, Bug Bounty, Competitive Programming, Basketball, Reading* Continual