

# Juan Pablo Valenzuela Castro

AI Software Engineer · Fullstack Developer · ML Systems

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## PROFESSIONAL SUMMARY

AI Software Engineer and Fullstack Developer with 3+ years of experience building scalable cloud-native systems, LLM-powered applications, and ML inference pipelines on Google Cloud Platform. Proven track record designing event-driven microservices, REST APIs, and end-to-end data platforms in production environments. Strong background in applied machine learning for real-world domains including precision agriculture and geospatial data processing. Experienced delivering full product lifecycles from backend architecture to deployable Angular/Vue frontends.

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## TECHNICAL SKILLS

**AI & LLMs:** OpenAI API · LLM Integration · RAG Architectures · Multi-Agent Systems · Prompt Engineering · AI Workflow Orchestration

**Backend & APIs:** Python · FastAPI · Node.js · REST APIs · Microservices · Async/Event-Driven Architecture · Docker · CI/CD

**Cloud (GCP):** Cloud Run · Pub/Sub · BigQuery · Firestore · Cloud Storage · Firebase · GCP IAM · Cloud Functions

**Frontend:** Angular · Vue 3 · Nuxt · Ionic · SPA · SCSS · PWA · Capacitor

**Machine Learning:** scikit-learn · MLP · SVM · Computer Vision · Multispectral Imaging · ML Pipelines · Model Deployment

**Data & DevOps:** BigQuery · Firestore · Redis · ETL Pipelines · Linux · Git · Docker · Monitoring

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## EXPERIENCE

### Software Engineer · Monteli LLC

Jan 2023 – Present

- Architected and deployed scalable ETL ingestion and transformation pipelines on GCP (Cloud Run, Pub/Sub, Python, Node.js) processing high-volume data streams for multiple SaaS products and enterprise clients.
  - Designed event-driven microservices supporting LLM-powered AI workflows and automated data processing pipelines with async messaging patterns.
  - Built and maintained production REST APIs for AI/ML inference services, enabling real-time data processing and integration with external systems.
  - Integrated OpenAI API into production workflows: structured outputs, tool use, and orchestration of multi-step AI automation pipelines.
  - Implemented RAG-ready architectures for contextual AI responses using structured and unstructured data sources.
  - Owned full backend lifecycle: API design, Dockerization, CI/CD pipelines, monitoring, and production support.
  - Designed secure API integrations including OAuth flows, JWT authentication, and external service communication.
  - Collaborated cross-functionally to translate business requirements into scalable technical solutions on tight timelines.
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## PROJECTS

### FinOps Multi-Agent Assistant | *Angular · GCP · Firebase · LLM · RAG*

[fin-ops-ai-itztorero.web.app](#)

- Designed multi-agent AI architecture with task routing, memory handling, and tool execution for finance workflow automation.
- Implemented RAG pipeline for contextual responses grounded in structured financial datasets.
- Deployed full-stack application on Firebase Hosting with Angular frontend and GCP backend services.

### AgriLumens — Precision Agriculture ML Platform | *FastAPI · Python · GCP · OpenDroneMap · Computer Vision*

- Built modular ML inference pipeline for multispectral drone imagery: preprocessing, feature extraction, SVM/MLP prediction, and geospatial output generation.
- Designed asynchronous backend services supporting long-running image processing tasks via containerized APIs on Linux/GCP.
- Applied ML models (MLP, SVM) trained on soil spectral data to predict inorganic nitrogen and organic matter — research basis for master's thesis at IPN.

### Big Data Platform (ETL + SaaS Products) | *Node.js · Python · GCP · Cloud Run · Pub/Sub · Firestore*

- Core data platform ingesting, normalizing, and serving datasets consumed by multiple SaaS products and enterprise clients at Monteli LLC.
- Architected distributed processing with event-driven patterns to ensure reliability and horizontal scalability.

### Nauti Test Pro — Mobile Exam Platform | *Vue 3 · Ionic · Firebase · Capacitor · Cloud Functions*

- Mobile-first PWA for nautical licensing exam preparation with timed tests, progress tracking, and subscription-based access.
- Implemented token reward system tied to onboarding steps with Twilio/Firebase Phone Auth for SMS-based 2FA.

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## EDUCATION

### M.Sc. Natural Resources & Environment — Applied ML Focus · IPN (National Polytechnic Institute)

Jan 2024 – Jan 2026

*Research: Soil nitrogen & organic matter prediction from multispectral drone imagery using MLP and SVM models.*

### B.Sc. Software Engineering · ITSON (Technological Institute of Sonora) Aug 2019 – May 2023