Alexandre Santos

Python Engineer | Industrial Automation Specialist | Backend & OT-IT Integration

Pedro Leopoldo, MG – Brazil | Remote | LinkedIn Profile

PROFESSIONAL SUMMARY

Industrial Automation specialist with 15+ years of experience and Python Engineer since 2020, specializing in backend services, OT-IT integration, and high-availability systems. Proven track record delivering enterprise solutions for major manufacturers including Fiat, Vale, Saint-Gobain, Gerdau, Sherwin-Williams, and Cleveland Cliffs. Expert in distributed systems architecture, process simulation, cloud deployment, and test automation. Experienced collaborating with global teams across United States, Honduras, and India, managing complete product lifecycle from concept through production deployment.

TECHNICAL SKILLS

Languages & Frameworks	Python 2.7+, FastAPI, Ignition 8 (Perspective/Vision), JavaScript
DevOps & Cloud	Docker, Git, AWS, Oracle Cloud Infrastructure (OCI), CI/CD pipelines, VPS deployment
Industrial Protocols	MQTT, OPC-UA, Sparkplug B, Modbus, Profibus, OT-IT integration
Testing & Quality	Playwright (E2E testing), Unit testing, Process simulation, Test automation
Databases	Oracle, PostgreSQL, MySQL, MongoDB, Azure SQL
Methodologies	SOLID principles, Agile/Scrum, REST API design, Microservices architecture

PROFESSIONAL EXPERIENCE

Python Engineer

Salem Automation (via BairesDev) | January 2025 – Present | Remote

- Re-architected complex legacy industrial automation application into modular, maintainable Python codebase following SOLID principles
- Designed and implemented continuous-process simulator for safe validation of control logic, enabling comprehensive testing without impacting production systems
- Developed configurable simulation interface allowing clients to customize input parameters and execute diverse operational scenarios, from normal operations to critical failure conditions for comprehensive system behavior analysis
- Implemented end-to-end test automation using Playwright framework, simulating all possible operator interactions within Ignition applications to ensure reliability and detect regressions early
- Deployed multiple isolated Ignition server instances using lightweight Docker containers, enabling parallel testing environments and development workflows

- Provisioned and managed Oracle Cloud Infrastructure (OCI) VPS instances, deploying supporting tools and applications with complete infrastructure-as-code approach
- Implemented structured, query-ready logging architecture using Python logging best practices, improving troubleshooting efficiency and system observability
- Collaborated effectively with distributed global team across United States, Honduras, and India time zones, ensuring seamless project delivery

Industrial Automation Engineer

Sherwin-Williams (via Stefanini) | 2022 – 2024 | Brazil & Remote

- Architected and delivered enterprise downtime-tracking platform using Python and Ignition, providing real-time operational visibility across manufacturing facilities
- Implemented end-to-end IoT data pipeline: Ignition → MQTT → Azure SQL, enabling cloud-based analytics and reporting
- Developed production-grade FastAPI microservice with comprehensive Swagger documentation and unit test coverage, following REST API best practices
- Created KQL (Kusto Query Language) queries feeding real-time Power BI dashboards, delivering actionable insights to operations and management teams
- Provided tier-2/3 support for automation systems, reducing incident response time and improving system reliability

Automation Analyst

Various Clients (Fiat, Vale, Saint-Gobain, Gerdau) | 2010 – 2021 | Brazil

- Led end-to-end industrial automation projects for Fortune 500 manufacturers, managing complete lifecycle from requirements gathering through commissioning
- Specialized in SCADA and PIMS integration using Wonderware suite (InTouch, Historian, System Platform), implementing scalable solutions for process monitoring and data acquisition
- Designed and implemented HMI systems following ISA-101 standards, ensuring intuitive operator interfaces and compliance with industry best practices
- Integrated Schneider Modicon PLCs using Modbus, Profibus, OPC, and OPC UA protocols, establishing reliable communication infrastructure
- Managed automation systems for HVAC, energy monitoring, and fire protection in industrial and commercial facilities, ensuring operational safety and efficiency

EDUCATION

Master of Science in Information Technology (M.S.)

University of the People | 2022 – 2026 | GPA: 3.43

Bachelor of Science in Electrical Engineering

UNI-BH, Brazil | 2017

WES Equivalency: Regionally accredited U.S. Bachelor's Degree | GPA: 3.34 | 213.5 credit hours