

Edison A. Santillán

Electronics and Automation Engineering

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PROFESSIONAL SUMMARY

Machine Learning Engineer and Data Scientist with 8+ years of experience designing intelligent software systems using Python, TensorFlow, scikit-learn, NumPy, and pandas. I specialized in predictive modeling, neural network design, time-series forecasting, and computer vision. Skilled in implementing data pipelines, RESTful APIs, and real-time inference systems deployed on Azure and DigitalOcean. Strong foundation in control systems and IoT integration, with proven ability to bridge embedded engineering and data-driven intelligence. Passionate about turning complex datasets into actionable insights and AI-powered automation.

EXPERIENCE

Electrician | Advanced City Electric – New York, United States

Apr 2025 – Oct 2025

- Skilled Electrician with hands-on experience in commercial electrical installations, sensor systems, low voltage systems and electrical maintenance.
- Background in electronics and automation provides strong technical troubleshooting capabilities and understanding of modern electrical systems.

Python Developer & Co-founder | Diartech Solutions – New York, United States

May 2019 – Apr 2025

- Engineered end-to-end AI pipelines in Python, encompassing data ingestion (ETL), preprocessing, feature extraction, model training, validation, and containerized deployment.
- Designed and optimized supervised learning models (Random Forest, XGBoost, CNNs, and MLPs) using cross-validation and Bayesian hyperparameter optimization.
- Developed Flask and FastAPI microservices to expose real-time inference endpoints for IoT and edge devices.
- Containerized ML workflows using Docker and GitHub Actions for continuous integration and delivery (CI/CD) on Azure and DigitalOcean.
- Led a cross-functional team architected scalable intelligent IoT systems, integrating embedded sensors with cloud-based AI inference modules.

Research Assistant | National Polytechnic School – Quito, Ecuador*Feb 2023 – Jul 2023*

- Conducted advanced research on distributed consensus algorithms and control theory applied to complex networked systems using Python-based simulation frameworks.
- Designed and implemented multi-agent coordination algorithms leveraging graph-theoretic models and state-space representations to achieve global synchronization and cooperative control.
- Built data-driven simulations and predictive models using NumPy, pandas, SciPy, and scikit-learn to analyze convergence, optimize parameters, and forecast agent behavior.
- Implemented dataset preprocessing pipelines for noise filtering, normalization, and feature extraction, improving model performance and reliability.
- Developed and trained neural network predictors (using TensorFlow/Keras) to estimate consensus convergence time and stability margins under various network configurations.
- Authored and co-authored technical reports detailing state-of-the-art analyses on structural controllability, forced vs. natural coupling, and second-order consensus protocols in interconnected systems.
- Performed Monte Carlo simulations and parameter sensitivity analyses to evaluate the robustness and accuracy of predictive models.
- Deployed a Python-based consensus simulation environment integrating data collection, model training, and visualization dashboards for real-time performance tracking.

Electronics Developer | Blimer S.A.S – Quito, Ecuador*Oct 2020 – Jan 2021*

- Developed electronic prototypes for automotive security systems, including PCB design and wireless communication.
- Programmed ATmega128P microcontroller in C with 2.4GHz RF communication.
- Coordinated with multidisciplinary teams to ensure system safety and reliability.

Research Assistant | Pontifical Catholic University of Ecuador – Quito, Ecuador*Apr 2019 – Jul 2020*

- Developed an electronic system for smart toilets, programmed Raspberry Pi and Arduino using Python.
- Led interactive architecture projects and guided students as electronics programming instructor.
- Project presented at UNAM, winning first place in a contemporary art competition.
- Published research: DOI: 10.14455/ISEC.res.2020.7(1).AAW-08

SELECTED PROJECTS

Iterative Path Planning in Multi-Agent Systems within the ROS-Gazebo Environment – Ecuador

- Developed RRT and RMP path planning algorithms in Python for multi-agent navigation.
- Implemented in ROS on Ubuntu, visualized results in Rviz for effective system analysis.

Emergency Alert Perifoneo System – Machala, Ecuador

- Developed a cloud-based emergency alert system using DigitalOcean and ISSABEL PBX.

- Enabled remote activation via Zoiper for emergencies, enhancing community safety.

Wind Speed and Direction Prediction at Minas de Huascachaca Wind Farm – Azuay, Ecuador

- Developed a Python neural network algorithm for wind speed/direction prediction at 14 turbines.
- Supported strategic decisions and optimization of renewable energy utilization.

EDUCATION

B.S. in Electronics and Automation Engineering

National Polytechnic School – Quito, Ecuador, 2022

CERTIFICATIONS

- Business Model Canvas Course** – Platzi, December 2022 (20 hours)
- Business Model Course** – Platzi, December 2022 (36 hours)
- Python Course** – Platzi, January 2022 (36 hours)
- JavaScript Course** – Platzi, March 2021 (20 hours)
- Advanced Arduino Instructor** – Pontifical Catholic University of Ecuador, December 2019 (20 hours)
- STM32 Microcontroller Programming in C** – National Polytechnic School, September 2019 (20 hours)
- LabVIEW Course** – National Polytechnic School, April 2019 (20 hours)
- Participation in the XXIX Electrical and Electronic Engineering Conference** – National Polytechnic School, November 2019 (24 hours)
- Attendance at the 18th Latin American Automatic Control Congress** – National Polytechnic School, October 2018 (20 hours)
- State Estimation in Nonlinear Gaussian and Non-Gaussian Systems** – National Polytechnic School, October 2018 (16 hours)
- Participation in the XXVII Electrical and Electronic Engineering Conference** – National Polytechnic School, November 2017 (20 hours)

TECHNICAL SKILLS

- Languages:** Python (advanced), C, C++, MATLAB, JavaScript
- Python Ecosystem:** NumPy, pandas, scikit-learn, TensorFlow, Keras, PyTorch, OpenCV, Matplotlib, Seaborn, Flask, FastAPI
- Machine Learning & AI:** Supervised/Unsupervised Learning, Neural Networks (RNN, LSTM, CNN), Regression, Classification, Clustering, Feature Engineering, Model Deployment (Docker + REST API)
- Data Science & Analytics:** Data Cleaning, EDA, Statistical Analysis, Time Series Forecasting, Data Visualization
- Tools & Environments:** Jupyter Notebook, VS Code, Git, Docker, Linux/Ubuntu, ROS, MATLAB
- Cloud & Databases:** Microsoft Azure, DigitalOcean, Google Firebase, MySQL, SQLite
- Soft Skills:** Analytical thinking, teamwork, leadership, research-driven development
- Electronics & Embedded Systems:** PCB design, circuit analysis, PLC programming (Ladder, FBD, SFC, ST), ATmega128P, STM32

- **Programming & Software:** C, C++, Python, MATLAB, Fusion 360, FreeCAD, LabVIEW
- **Soft Skills:** Problem solving, teamwork, leadership, project management

LANGUAGES

- Spanish – Native
- English – B2 (Upper-Intermediate)

PUBLICATIONS

Camacho O., Santillán E., Uribe J., & Ocampo C. (2024). *Sliding Mode Control Approach for H₂ Purity Regulation in High-Pressure Alkaline Electrolyzers.* Paper accepted for presentation at the **4th IFAC Conference on Advances in Proportional-Integral-Derivative Control**, Almería, Spain, June 12–14, 2024.