Adrián Oswaldo Salazar González

Email: adrian.salazar.gonzalez05@gmail.com
LinkedIn: linkedin.com/in/AdrianSalazarGonzalez05
Mobile: +52-812-3375-855
GitHub: github.com/adrianSalazar050
Website: adriansalazar.dev

Professional Summary

I am a Mechatronics Engineer focused on control systems development and intelligent automation. My experience ranges from modeling and tuning PID controllers to designing cascade control architectures and proposing advanced strategies such as MPC or Adaptive structures. Moreover, I have worked with Siemens PLC-based automation strategies, implementing python-based data analysis and communication methods in manufacturing and robotic environments to support intelligent decision-making and system optimization.

Education

- **Instituto Tecnológico y de Estudios Superiores de Monterrey** NL, México
  B.S. in Mechatronics Engineering; GPA: 9.6; Scholarship 100% by Nemak *July 2023 - June 2027*

Skills Summary

Languages	Python, MATLAB, C++
Platforms	Windows, Ubuntu, Arduino, Raspberry, supabase
Skills	SolidWorks, Blender, Plant Simulation, Tulip, Tia Portal, Electronics, 3D Printing, 3D modeling, Laser Cutting
Soft Skills	Teamwork, Leadership, Responsibility, Streamlining Processes, Effective Communication

Experience

- **MIT - TEC. FrED Factory**
  Lead Project Manager of Device *July 2025 - Present*
  - **Coordination and mechatronic areas**: Coordinated a team of over 30 people divided into five different areas: mechanics, electronics, computer vision, control systems, and programming.
  - **Development of the Device**: Worked with the FrED Device team on the integration of the five mechatronic areas to update and validate the functioning of FrED Nano, the newest functional prototype in FrED Factory MTY
  - **Research and project proposals**: Worked on different proposals for research projects for the Team Device 2026
- **VantTec. Unmanned Aerial Vehicle (UAV)**
  Mechanic and Manufacturing Engineer *March 2025 - Present*
  - **CAD modeling of UAVs for competition**: Used SolidWorks to model and design the different UAV parts for its construction.
  - **IMAV Field Modeling**: Modeled all the objects for IMAV (International Micro Air Vehicle Conference and Competition) indoor competition in SolidWorks. Achieved a general assembly and passed it to DAE format for further GAZEBO simulations
- **Cyclicall ITESM**
  Data Engineer *February 2026 - Present*
  - **Developed connections and databases to enable bidirectional communication between ABB robots and supabase**: Used supabase to create a database in order to receive coordinates and status from ABB robots, allowing the system to receive information and send instructions in exchange. This allows an AI agent to send commands and control the robots using advanced feeding techniques, achieving autonomous operations based on PLC signals and AI information. The core tools used are Python libraries for sockets and supabase, and RAPID code in RobotStudio from ABB.

Projects

- **Development of HORUS, an industrial low-code application for robotic work-cell supervision and control**: Built a full-stack on-premise industrial application for configuring, supervising, and operating robotic manufacturing cells. Developed the frontend in React with a fully custom design system and a FastAPI (Python) backend, using Supabase/PostgreSQL for configuration, hardware catalog, and audit data with role-based access control. Implemented a hardware-agnostic robot motion layer that communicates with ABB controllers over TCP through a custom RAPID SocketServer program, with additional support for UFactory xArm, and integrated Siemens S7 PLC I/O via Snap7 to enable operator-authored event sequencing of the cell. Engineered software workspace safety using computational geometry (Shapely) to validate robot motions against operator-drawn safety zones, a 4-point least-squares TCP calibration solver, and visual low-code wizards for pick-and-place and palletizing routines. Packaged the system as a Windows desktop product using Electron, which supervises the backend as a bundled sidecar process. (March 2026 - Present)
- **Research. Developed VERA (Vision for Enhanced Robotic Automation) proposal for a flexible manufacturing learning factory**: Trained computer vision models of YOLO with segmentation methodology to identify pieces and their heights, achieving dimension perception; thus, allowing to calibrate the models to get the centroid of each object and transform its coordinates for a collaborative Ufactory robot scale so it can operate in an autonomous workflow. Moreover, worked on a low-code GUI for operator-cell communication, enabling the operator to supervise the process while the robot works in synergy with the camera perception. The achieved result was a learning factory system for high-mix low-volume productions with low-code GUI for management. (July 2025 - December 2025)

- **Control Systems development for FrED nano, a fiber extrusion device**: Worked on the modeling of FrED nano subsystems using MATLAB: DC motor spooler, extruder hotend. Developed working PID control strategies for each system and built a cascade control architecture to control the extruded fiber diameter, in which another PID was introduced as a master, and programmed the subsystems' PID as slaves in the same architecture. The programming tools were Arduino, as the actuators and sensors were managed by an Arduino Mega, and Python, to connect and receive the information using a GUI. (July 2025 - February 2026)
- **FrED Factory Digitalization for AI-Agent**: Worked on the digitalization of FrED Factory Lab, creating a Python middleware for supabase - ABB Studio connection in order to allow the robot to move by an AI Agent commands. This was achieved using a Python socket and RobotStudio to program a RAPID code waiting for instructions, to then use Python in order to receive and send data from supabase. (January 2026 - On progress)
  Used SolidWorks to model the whole laboratory in order to create a digital twin. The result was a full realistic assembly with all stations and units present in the room, allowing the team to pass the files to Process Simulate and generate the actual digital twin of the manufacturing line. (July 2024 - December 2024)

Publications

- **Designing for Flexibility: Training Students in Low-Code Interfaces and Smart Manufacturing**: Accepted. **Authors:** De la Cruz Rangel, María Fernanda; Salazar González, Adrián Oswaldo; Peña Zuñiga, Gabriela Lizeth; Reyna Vargas, Diego Fernando; Villareal De la Garza, Alfonso; Ramírez-Cedillo, Erick (December 2025)
- **Closing the Gap Between Coding and Deployment: Evaluating a Low-Code GUI for Cobot Pick-and-Place and Palletising Tasks**: Accepted under final reviews. **Authors:** Adrián Salazar, Alfonso Villarreal, Lizeth Peña, Fernanda De la Cruz, Erick Ramírez-Cedillo1, David Romero, Ciro A. Rodriguez1 (May 2026)

Certifications

- **CSWA** (Certified SolidWorks Associate)
- **WIS** Welding Inspection Specialist by AWS B5.5.
  Provided by 5G-RAMS student chapter of AWS (American Welding Society)

Languages

- **Spanish.** Native
- **English.** C1 - Certified by TOEFL IBT