Adán Flores Ramírez | Robotics Engineer

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EDUCATION

Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM) **Aug 2021 - Jun 2025**

B.S. in Mechatronics Engineering *GPA: 4.0*

- **Relevant Coursework:** Programming of Data Structures and Fundamental Algorithms, Object-Oriented Programming, Multi-Agent Systems with Computer Graphics, Industrial Automation

WORK EXPERIENCE

Google - Cloud Vertex AI **Jun 2024 - Sep 2024**

Incoming Software Engineer Intern *Sunnyvale, California*

Ixmatix Robotics **Aug 2023 - Present**

Software Engineer - AI Integration *Remote*

- Developed a real-time voice assistant in **Python** and **Elixir** using **APIs**: **OpenAI** for response generation, **Google Cloud** speech recognition, and **ElevenLabs** speech generation. Increasing user engagement by 60%. Optimized response time with chunked transfer encoding and multithreading.
- Integrated Google Docs **API** to ease the review of the content generated dynamically with Generative AI in **Node JS**, formatted for interactive h5p content. Content creation efficiency was improved by 50%.

ITESM - Smart Factory **Jan 2023 - Nov 2023**

Robotics Engineer Intern *Monterrey, Mexico*

- Created digital twins of a cyber-physical factory in a Unity VR application (**C#**), communication through Modbus.
- As part of a senior specialization, I oversaw the integration of the cyber-physical factory with **industrial robots** such as Omron, UR, and EAIBot, and a production line controlled with a **PLC** in **Ladder logic**.
- Led as Project Manager, assigning tasks for the students in projects such as Automation, Vision and **VR**.

MAJOR PROJECTS

RoboCup @HOME - Robot Development **Nov 2022 - Present**

- Developing an autonomous service robot to participate in the RoboCup @Home competition.
- Using **ROS** framework. Working on: *1) Behavior Integration:* merge of submodules in a single script (**Python**) to achieve adaptive behaviors *2) Object Detection/Manipulation:* Trajectory planning framework (**C++**) with robot context created using a depth camera, and detections from a **YoloV8** model *3) Human-Robot Interaction:* Implementation of Whisper and **Embeddings** to translate speech into robot commands.

IEEE LARC Open Challenge - Robot Development **Jan 2023 - Oct 2023**

- Autonomous robot for warehouse operations on scale for the Latin American Robotics Competition.
- Developed a Visual SLAM and computer vision processing with a stereo camera for localization (**Python**).
- Implemented a **C++ Dijkstra** algorithm to optimize for the most efficient path for the task.
- Created a custom low-level synchronous serial communication with the microcontroller (**ROS to Teensy**).

SKILLS

Programming Languages

5 years	C/C++, Python
3 years	Java, C#, JavaScript, SQL
1 year	Matlab, Go, Elixir

Technologies

Windows/Linux, Git, API, GenAI, Google Cloud, Azure, PLC, Next js, TensorFlow, Docker, ROS, CUDA

AWARDS

- 1st place - IEEE LARC Open Challenge 2023
- 4th place - Mexico Robocup @Home 2023
- Honorable mention - Hackathon HackMTY 2022
- 5th - First Robotics Competition 2022 Championship Division
- 3rd - Hackathon ChezyCode 2021
- 8th - Selective for International Olympiad in Informatics 2020
- Autonomous Award - FRC Monterrey Regional 20', 21' and 22'
- Gold medal - Mexican Olympiad in Informatics 2019