# Adán Flores Ramírez | Mechatronics 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:** Analysis of Materials and Manufacturing, Implementation of Mechatronic Systems, Industrial Automation, Design and Development of Robots, Automation of Manufacturing Systems

## WORK EXPERIENCE

**Google - Vertex AI** **Jun 2024 - Aug 2024**

*Incoming Software ML Engineer Intern* *Sunnyvale, California*

- Incoming SWE Summer Internship working on the Google Cloud Vertex AI **Agent Builder** team.
- The team accelerates the creation of high quality generative AI experiences for enterprises with Data Analytics.

**ITESM - Smart Factory** **Jan 2023 - Present**

*AR/VR Research Intern* *Monterrey, Mexico*

- Created a digital twin of the cyber-physical factory in a **Unity AR/VR** application as an immersive learning tool.
- Coauthored "Virtual Twin for the Smart Factory as a tool to enable robotics skills acquisition", presented in the Conference on Learning Factories 2024 in collaboration with the University of Alberta.
- Led as Project Manager, assigning tasks for the Automation, Vision, Manufacturing and VR.

**Catapulta Academy** **Nov 2020 - Aug 2023**

*Unity Developer* *Remote*

- Developing an embedded video game for an educational platform from concept to completion using Unity 3D.
- Enhanced the build size, performance and load times by 80% through code structure and asset optimization.

## MAJOR PROJECTS

**MIT & ITESM - FrED Factory** **Feb 2024 - Present**

- Assembly of a production line with collaborative robots, PLCs, HMIs, sensors and actuators, also simulated in Tecnomatix. Use of additive and conventional manufacturing techniques for the station design.
- Leading the automation area of the project, implementing Software Engineering standards, documentation, Agile project management and innovative AI and data analysis features in the scope of Industry 5.0.

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

- Developing an autonomous service robot to participate in the RoboCup @Home competition.
- Utilizing ROS framework on **Linux** Ubuntu 22.04 and Docker. Working on:
- *1) Manipulation/Object detection:* Using cartesian planning and developing Reinforcement Learning planning for a 6-DOF robotic arm with a depth camera to achieve dynamic grasping with **collision avoidance**.
- *2) Human-Robot interaction:* Fine-tuning of a local LLM model to transform voice commands into robot actions.

**ABB - Robotic Welding Station** **Feb 2024 - Apr 2024**

- Simulating in RobotStudio an industrial welding station following ANSI/RIA and Industry 5.0 guidelines.
- Defined the project scope, financial analysis, quality deployment and risk assessment documentation.

## SKILLS

**Programming Languages**

*5 years* C/C++, Python, C#

*3 years* Java, JavaScript, Matlab

**Technologies**

Windows/Linux, Git, Unity, Process Simulate, SolidWorks, Fusion360, Docker, TensorFlow, GenAI.

## AWARDS

- Qualification to RoboCup at Home 2024
- 2nd place - Mexico Robocup @Home 2024
- 1st place - IEEE LARC Open Challenge 2023
- Honorable mention - John Deere Manufacturing Challenge
- 5th - First Robotics Competition 2022 Championship Division
- 8th - Selective for International Olympiad in Informatics 2020
- Autonomous Award - FRC Monterrey Regional 20', 21' and 22'