Adán Flores Ramírez

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Education

Instituto Tecnológico y de Estudios Superiores de Monterrey — Guadalajara, Mexico
Ph.D. in Computer Sciences — *Sep. 2025 – May. 2028*

Instituto Tecnológico y de Estudios Superiores de Monterrey — Nuevo León, Mexico
B.S. Mechatronics Engineering 96/100 — Leadership in Professional Development Award — *Aug. 2021 – Jun. 2025*

Massachusetts Institute of Technology — Remote
Data Science and Machine Learning program (Statistics & Mathematics) — *Dec. 2024 – Mar. 2025*

Work Experience

AI Engineer — Jan. 2025 – Present
Pefai — *Remote*
- Increased revenue from enterprise clients by designing an implementing AI service from scratch in Python and Autogen, to automate the process of web development creation in the full-stack no-code platform.
- Improved hit-rate of AI responses by 30% in benchmarks by refactoring structured outputs to use BAML.
- Optimized computing time of API creation with AI from N^2 to constant, by engineering a parallel agent task distribution within the AI service, understanding and prioritizing business value and applying technology solutions

Undergraduate Research Assistant — Sep. 2024 – Dec. 2024
Massachusetts Institute of Technology - Device Realization Lab — *Cambridge, MA*
- Developing a VR simulator to enhance the performance of factory operations as measured by KPIs, implementing PCA, neural networks, and a fine-tuned SLM as support decision, within Unity.

Software Engineer Intern — June 2024 – Sep. 2024
Google - Cloud AI & Industry solutions — *Sunnyvale, CA*
- Developed core C++ components for a distributed data processing pipeline, increasing data synchronization efficiency and contributing to improved search platform performance.
- Optimized resource consumption for data ingestion processes by refining critical C++ components and implementing rigorous SQL-based end-to-end testing, leading to a more scalable and reliable data infrastructure.

Robotics Software Engineer Intern — Jan. 2023 – May 2024
ITESM - Smart Factory — *Monterrey, Mexico*
- Led a team in developing and integrating behavior coordination algorithms for multi-robot systems using ROS and Python, demonstrating experience in building complex robotics systems and collaborative software development.

Software Engineer Intern - AI Integration — Aug. 2022 – Mar. 2024
Ixmatix Robotics — *Remote*
- Developed and deployed a high-performance, real-time voice assistant platform using Python.
- Optimized the platform's response times, achieving a 25% reduction in latency by implementing efficient data transfer techniques and multithreading in Python, demonstrating a focus on performance optimization.

Research & Publications

Springer LNAI MICAI | *Natural Language Processing, LLMs, LH Task Planning.* — May. 2025 – Nov. 2025
- First author in: A Multi-Stage Pipeline for Reliable LLM-based Robotic Task Planning using Schema-Aligned Parsing and Knowledge Base Grounding. Under review
- Featuring a system which achieves a 96.5% success rate on linguistically diverse command interpretation, outperforming its non-fine-tuned baseline (29.6%) and a top cloud-based model (90.4%).

Taylor & Francis: Production & Manufacturing | *Decision Support Systems, LLMs* — Sep. 2024 – June 2025
- First author in: Immersive Cognitive Factory Twin: Optimizing Industry 5.0 with an Integrated VR, ML, and LLM Framework. Under review. LLM-driven recommendations yielded a 43.9% throughput increase and a 43.6% scrap reduction compared with the baseline

Technical Skills

Languages: C++, Python, C#, R, Java, Javascript, Kotlin, SQL, NoSQL
Frameworks: ROS, Unity, TensorFlow, PyTorch, JAX, React, Node.js, Laravel, Borg, FastAPI, LangChain
Tools: Git, Google Cloud Platform, Docker, Linux, Jira, Postman, Redis, Azure DevOps, Kubernetes