EDUARDO FRANCO

ENGINEER IN PHYSICS

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Examination	Majors	Institute	Year
Student	Engineer in Physics	ITESM Monterrey	2021-2025

ABOUT ME

I am a resilient and adaptable physics engineering student with a deep passion for both science and the humanities. Overcoming seven surgeries and three herniated discs, I have built a consistent path of discipline, perseverance, and personal growth.

I thrive in challenging environments, whether it's developing high-performance simulations or leading interdisciplinary teams. As a conscious and supportive leader, I aim to elevate both the project and the people behind it. One of my proudest moments was representing Mexico at the 2019 Pan American Games, where we earned first place — a testament to the mental and physical resilience that defines who I am.

PROFESSIONAL EXPERIENCE

Machine Learning Engineer | Caracati Solutions

May 2025 – Present

- Developed **end-to-end LLM-powered agents** capable of querying both structured and unstructured data sources, integrating **LangChain, FAISS**, and **ChromaDB** for semantic retrieval and intelligent response generation.
- Trained document understanding models using **LayoutLM** and embeddings to extract structured information from contracts, invoices, and reports, enabling cross-document knowledge retrieval.
- Integrated retrieval pipelines with **REST APIs** and SQL queries, allowing the agents to fetch real-time business data and provide fact-grounded answers instead of only generative text.
- Designed and deployed a **price catalog optimization system**, leveraging cross-elasticities among SKUs to maximize profitability and improve overall margin while maintaining demand stability.
- Built an **optimization framework for FlexBox (international client, China)** to determine the most efficient container configuration and color selection, reducing costs while aligning production with demand variability.
- Applied **prompt engineering, embeddings, and fine-tuning** to improve model accuracy and consistency in multilingual and domain-specific contexts.
- Automated operational workflows and reporting pipelines using **Python**, improving efficiency and reliability in data processing across departments.
- Led the development of scalable ML modules for demand forecasting, combining classical ML (XGBoost, LSTM) with generative AI insights for better decision support.

Machine Learning – Supply Chain & Forecasting | Delphus Consulting

Apr 2024 – May 2025

- Designed and deployed forecasting models such as **LSTM**, **XGBoost**, and **ARIMA**, enabling robust demand prediction at SKU, category, and store levels across various time horizons.
- Built end-to-end ML pipelines using **AWS S3** and **EC2**, automating model training, prediction, and inventory decision support.
- Performed statistical analysis on supply chain and store-level operations to extract actionable insights and temporal demand patterns.
- Developed and deployed data-driven tools to support corporate planning and inventory optimization for clients including Comercial Treviño, Adosa, Ellaz, JJ Forza, Deacero .
- Contributed to industrial real estate forecasting, projecting price trends to support investment decisions for companies like Prologis.

Research Intern | Tecnológico de Monterrey

Aug 2024 – Jul 2025

- Developing GPU-accelerated physical simulations using CUDA, focusing not only on exploiting parallel computation but also on optimizing algorithmic efficiency to minimize memory and compute resource usage. with the goal of creating an engine that allows users to perform simulations without needing to write extensive code.
- Implement simulations of optics, fluid dynamics, granular systems, electrodynamics, and manifold kinematics in Julia, fully accelerated on GPU and optimized to run with minimal computational overhead.
- Lead the development of **SymmetryX**, which earned **3rd place** at **ExpoIngenierías 2024** at Tecnológico de Monterrey.
- Present **SymmetryX** at **JuliaCon 2025**, becoming the first undergraduate from Mexico and the second overall team after UNAM to be invited to the international conference.

Independent Researcher | Independent Project, Tecnológico de Monterrey Feb 2025 – Jul 2025

- Led the embedded systems development for a student-designed **CubeSat**, coordinating a multidisciplinary team and overseeing integration of communications, sensors, and control logic.
- Designed and implemented low-level drivers in **C** within a **custom Linux kernel**, enabling real-time interaction between onboard systems and ground control.
- Developed a reliable bidirectional communication protocol over **nRF24L01+**, with support for image transmission, command acknowledgment, and fault tolerance.
- Architected a full-stack ground station system with **SQLite**-based command/query backend and automated telemetry parsing.
- Earned **3rd place at ExpoIngenierías 2025** for delivering the first student-built CubeSat prototype with fully integrated software and hardware subsystems.

Technical Skills

Languages	Python, C/C++, Julia, CUDA, Bash
Data Tools	SQL, Excel, Power BI, Pandas
ML & DL Frameworks	PyTorch, TensorFlow, XGBoost, Scikit-learn
AI & LLM Frameworks	LangChain, OpenAI API,Ollama, FAISS, ChromaDB, Embeddings
APIs & Integration	REST APIs (Google Calendar, WhatsApp Business, etc.), FastAPI, Agent-based tooling
Cloud & DevOps	AWS (S3, EC2), Git, Linux (Ubuntu, Fedora)
Other Tools	Docker, LaTeX, Markdown

Languages

- Spanish (Native)
- English (C1-C2)
- French (B2)