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## EDUCATION

**Federico Santa María Technical University**  
Valparaíso, Chile  
**B.S. in Electronic Engineering**  
GPA: 76%

**M.S. in Electronic Engineering**  
GPA: 92%  
Specialty: Machine Learning.  
Thesis: "Protein functions prediction using Deep Learning."

## SKILLS

### PROGRAMMING LANGUAGES

- Python
- C
- C++
- MySQL
- SQL

### FRAMEWORKS

- PyTorch
- TensorFlow
- Keras
- Pandas
- Threading
- OpenCV
- NVIDIA Deepstream

### CLOUD

- AWS
- Snowflake
- GCP

### OS

- Linux
- OS X

### CONCEPTS

- Machine Learning
- Computer Vision
- Natural Language Processing
- IoT
- Forecasting
- Functional Programming
- Object-Oriented Programming
- Parallel Computing
- GPU-Accelerated Computing
- Generative AI

## LANGUAGES

Spanish Native Speaker  
English Level CEFR C1

# Nicolás Ignacio Fredes Franco

## EXPERIENCE

### DEUNA

Remote, Mexico

#### Lead Data Scientist

Since September 2024

- Implementation of a transformer-based forecasting algorithm for predicting transactional volume time series at multiple levels of temporal granularity. This solution generates forecasts up to two weeks in advance for intervals of 15 minutes, 1 day, and 1 week. In each case, achieving results with an R<sup>2</sup> metric above 0.9.
- Ideated, designed, and implemented a correlation-based model (leveraging mutual information among commercial transaction time series) to identify quantifiable relationships for "Athia," a multimodal generative LLM. This solution provided data-driven "reasoning seeds" for AI agents to explain variable behaviors, using multi-threading and GPU-based processing. It processed data from 15+ variables for KFC Ecuador in around 10 seconds.

### SPOT

Santiago, Chile

#### Computer Vision Engineer.

February 2024 - September 2024

- Developed an algorithm (Deepstream) to analyze security cameras in self-checkout areas for retailers such as Walmart Mexico and OXXO. The algorithm generates alerts for possible theft situations, such as people paying for only a portion of their products or passing by without paying. It was capable of processing up to 10 cameras in real time per Nvidia Jetson Xavier, with each camera operating at around 5 FPS. Additionally, the alert delay time on the platform was less than 10 seconds.

### EPAM Systems

Remote, USA

#### Senior Data Scientist

May 2023 - October 2023

- Optimized the product prices for TBC Corporation across both physical and digital outlets by leveraging data analysis, estimating cross elasticities, and developing a decision algorithm for their price strategy.

### WALMART Chile

Quilicura, Chile

#### Senior Data Scientist

November 2021 - November 2022

- Developed an autonomous algorithm (SQL & Python) for e-commerce products prices recommendation. Switching from a manual system with a latency of up to 6 months to daily price changes.
- Implemented Machine Learning (Python) models to evaluate the annual change in the product assortment, increasing the range of products considered by 200%.
- Optimized a code (SQL & Python) for competitors' promotions price recognition, making it 12 times faster and increasing its accuracy from 50% to 80%.

### LAMNGEN Ltda.

Valparaíso, Chile

#### Artificial Intelligence Specialist

January 2020 - November 2021

- Accomplished a consultancy for the "Digital strategy for chemical products" of Virutex-Ilko company, creating a roadmap of the indispensable projects for its digital transformation towards the 4.0 industry.
- Developed an AI algorithm (Python) in IoT devices to replace the fault detection system of a Torre S.A. production line. Switching from faulty manual registration with 10-minute delays to an automated method of vision algorithms connected to a unified database with real-time data availability with a maximum delay of 1 second and 95% accuracy.

## PAPERS & WORKSHOPS

### Journal Paper in IEEE ACCESS

DOI: [10.1109/ACCESS.2021.3094723](https://doi.org/10.1109/ACCESS.2021.3094723)

- "HGAN: Hyperbolic Generative Adversarial Network".

July 2021

### Workshop LatinX in AI at NeurIPS December 2019 in Vancouver, Canada

- Expositor of the hyperbolic neural networks used in a GAN architecture.