Jorge Enciso

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Education

Colegio Japonés Paraguayo Asunción, Paraguay
High School Diploma, Natural Sciences Track, GPA [10/10], Valedictorian Graduation Date Thesis [Nov 2023]

- Relevant Coursework: Advanced Mathematics, Physics, Mechatronics
- Honors Thesis: *"Niche Modeling with Deep Learning"*
  - Created an automated training pipeline to reconstruct species' spatial distributions from historical occurrence data.
  - Developed and benchmarked models for generalized distribution estimation (Neural Networks, Logistic Regression, Naive Bayes, SVM, Random Forest) and pseudo-absence generation (One-Class SVM, K-means Clustering).

Research Experience

Organization City, State (or Remote)
Position Title Month Year – Month Year

- Beginning with your most recent position, describe your experience, skills, and resulting outcomes in bullet or paragraph form.
- Begin each line with an action verb and include details that will help the reader understand your accomplishments, skills, knowledge, abilities, or achievements.
- Quantify where possible.
- Do not use personal pronouns; each line should be a phrase rather than a full sentence.

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Research Experience

Independent Researcher – ML for Geophysical Forecasting Remote
MHD-informed Multi-Modal Networks for Geomagnetic Forecasting May 2024 – Present

- Developed a multi-modal ML framework using data from LASCO, SDO, ACE, and DSCOVR to predict Dst index and magnetospheric boundaries.
- Engineered transformer-based architecture for satellite time series fusion; integrated MHD constraints into training dynamics.
- Led all aspects: data preprocessing, model design, CUDA kernel optimization, and evaluation.

Independent Researcher – ML for Astronomic instrumentation Remote
CorKit: A Framework for LASCO Coronagraph Calibration Jan 2024 – Apr 2024

- Developed a pipeline for automated image preprocessing and calibration of solar coronagraph data.
- Integrated physics-informed constraints to correct lens artifacts and vignetting in LASCO C2/C3 data.
- Implemented using PyTorch and OpenCV; optimized modules for GPU acceleration.

Independent Researcher – ML for Statistical Mechanics Remote
Vlasov-Maxwell informed Operator Learning for Solar Wind Modeling Jan 2024 – Apr 2024

- Developed a
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Independent Researcher – ML for Celestial Mechanics Remote
Physics informed Neural Networks for Celestial Mechanics: The Family of N-body problems Jan 2024 – Apr 2024

- Developed a
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Selected Projects

LightTorch – Minimal Deep Learning Framework C++, CUDA
Personal ML Framework Project 2024 – Present

- Built from scratch using CUDA C++ and CuDNN for low-level optimization.
- Supports fused forward-backward passes, gradient descent, and custom kernel stacks for asynchronous dataflow.
- In progress: Python bindings via PyBind11 and a compiler for translating to PyTorch models.

Fusion – IO-Aware Kernelized Training Compiler CUDA, C++, Compiler Design
In Development 2024

- Designing an ML compiler for CUDA that stacks kernels with IO-aware behavior and programmatic execution graphs.
- Features include stream-aware optimization, data prefetching, and intermediate representation generation.

Awards & Recognitions

- Silver Medal – National Math Olympiad (8th/9th Division), Paraguay, 2020
- Bronze Medal – National Math Olympiad (10th/11th/12th Division), Paraguay, 2021
- Gold Medal – Regional Physics Olympiad (Advanced Level), Paraguay, 2022
- Silver Medal – National Physics Olympiad (Intermediate Level), Paraguay, 2022
- National Delegate – Ibero-American Physics Olympiad, 2022
- Honorable Mention – NASA Space Apps Challenge Paraguay, 2023
- 2nd Place in Technology – Marie Curie National Science Fair, 2023
- 2nd Place - 1st National Stratospheric Platforms Contest, 2023

Leadership & Activities

Organization City, State
Role Month Year – Month Year

- This section can be formatted similarly to the Experience section, or you can omit descriptions for activities.
- If this section is more relevant to the opportunity you are applying for, consider moving this above your Experience section.

Skills

Languages: Spanish (Native), English (Fluent), Portuguese (Basic), Japanese (Basic)
Programming: C++, CUDA C++, Python, Rust, Bash, Lua
Scientific: Deep Learning, Numerical Optimization, Compiler Design, Geospatial ML, Remote Sensing, Data Fusion
ML Tools: CuDNN, CUDA Toolkit, Triton, PyTorch, Lightning, NVIDIA Modulus, Scikit-learn
Data Tools: Pandas, Polars, Matplotlib, Seaborn, PySpark, cudf, SQL