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Education

- **Universidad de Buenos Aires** Buenos Aires, Argentina
  BS and MS in Computer Science; Average grade: 7.7/10 *Aug. 2015 – Graduating in Dec 2025*
- **Escuela Técnica ORT** Buenos Aires, Argentina
  Technology baccalaureate in Electronics; Average grade: 7.97/10 *Jan 2010 – Dec. 2012*

Experience

CERN - ATLAS experiment - Technical student Geneva, Switzerland

Data Acquisition team Oct 2023 - Dec 2024

- **Data flow simulation**: With the purpose of designing upgrades for the system that processes and stores the experiment's particle collision events (4TB/s), I developed a discrete-event simulation of the system in C++.
- **Containerized environment for experiments**: Developed a docker solution that achieves replicability, enables cross platform interoperability for our simulations and closes the gap between development and production environments.

MercadoLibre e-commerce - Senior Machine learning Engineer Buenos Aires, Argentina

- **Fraud prevention team** Jul 2019 - Sep 2023
  - **Computer vision handwritten number detection from spoof attackers, spammers and evaders**: I came up with a way to leverage MNIST digits to synthesize positive samples and then used them to fine-tune a pre-trained convolutional neural network. This enabled the detection of fraud for the manual review team.
  - **NLP personal data detection from spoof attackers, spammers and evaders**: I modeled the problem as text binary classification. Then, having gathered and labeled data samples, I tested different deep learning architectures. The final model had a 400% impact relative to previous attempts.
  - **Big data distributed computing**: To extract and prepare the terabytes of data for analysis and modeling, I developed a pipeline that runs a series of distributed computing spark jobs on an EMR cluster.
  - **Automatized detection of undelivered product scammers**: I designed and computed tabular features that capture key behavioural patterns. Then I trained and deployed a gradient boosted trees model.
- **Marketplace recommendations team** Aug. 2017 - Jul. 2019
  - **Collaborative filtering models**: Based on the item to item paradigm (i2i) trained and deployed models for supplementary (view to purchase) and complementary (purchase to purchase) recommendations.
  - **Data pipeline development**: With the purpose of computing both datasets and core product metrics, I built and maintained data pipelines that orchestrate the processing of billions of events on a daily basis.

Projects and Professional Development

- **Emergent Misalignment Circuit Analysis (WIP)**: Built tools to trace neural circuits in LoRA-adapted misaligned language models and analyzed transcoder features that drive harmful outputs.
- **ML4Good Bootcamp, Bogotá (April 2025)**: Intensive training on machine learning for social impact, focusing on misuse risks, existential threats, and ethical AI.
- **AI Safety and Alignment Threat Modeling**: Co-authored a blog post analyzing external adversarial attacks and internal AI alignment threats in large language models. Developed an accompanying Colab notebook demonstrating practical model poisoning techniques.
- **Computed tomography image reconstruction**: Simulated x-rays as arrays of pixels that have little information of the original image. To reconstruct the original images, I developed a C++ implementation of the least squares algorithm, based on the singular value decomposition (SVD) matrix factorization.
- **Assembly SIMD image filters**: Implemented and benchmarked versus non-parallel versions.
- **Quadcopter control system**: Developed Proportional-Integral-Differential (PID) control system for Inertial measurement unit (IMU) data. Manufactured an Arduino PCB shield for IMU and aeromodeling controllers connections.
- **Persistence of vision (POV) display**: Implementation of clock interrupt routines for optimized word rendering. Manufactured a LED control PCB shield for Arduino.

Programming Skills

- **Languages**: Python (6 years), C/C++ (3 years).
- **Technologies**: DEVS, Pytorch, EMR, EC2, S3, Hive, Tableau, Arduino.