Fabricio Jiménez Morales

Data Scientist - Physics PhD

Profile

Data Scientist with a PhD in Physics and a background in Machine Learning and statistical modeling from CERN experiments at the LHC. Skilled in extracting insights from complex datasets, developing predictive models, and solving real-world problems. Currently transitioning from academia to the industry, with recent hands-on project experience. Eager to leverage a strong foundation in research and programming to deliver impactful solutions.

Skills

Technical

- Scientific programming
- Python, C++, SQL, Bash/Linux, Git
- Data viz, exploration, monitoring
- AI / Machine Learning
  - Generative AI / DL architectures
  - Anomaly detection, time series
  - Pytorch, scikit-learn, pandas
- Basic MLOps
- Simulations, Monte Carlo methods
- Particle Physics, Statistics

Communication

- Technical writing
- Student supervision
- Talks to small and large audiences
  - To experts and non-experts
- Scientific project management
- Interdisciplinary team player
- Fluent in Spanish, English, French and Portuguese; basic German.

Work Experience

Independent Data Science Work and Learning [2023 - 24]

- Heart Arrhythmia Detection Tools (hadt)
- Deep Neural Networks with PyTorch course (certificate)

Physics Postdoc | CNRS - École Polytechnique, France [2019 - 22]

- Machine Learning (ML) for Higgs physics at future colliders
  - Modelling and analysis of particle detector simulated data

→ *A combined fit to the Higgs Branching Ratios at ILD* (arXiv)

- R&D for next-generation particle detectors
  - Prepared, tested a prototype with +15k readout channels
  - Improved object identification, time separation

→ *Beam test of a highly granular SiW-ECAL technical prototype for the ILD* (arXiv)

PhD Researcher | U. Clermont-Auvergne, France [2016 - 19]

- In charge of auto-fast monitoring of LHC data (TBs daily)
- Projects developed and coordinated through scientific visits:

Internship | MathWorks, Inc., US

- First implementation: Generalized Additive Models for MATLAB

Secondment | U. of California at Irvine, US

- Gaussian processes for New Physics (NP) searches at the LHC
- Signal detection improved via new kernels and priors

→ Multivariate Analysis Methods for NP Searches at LHC (arXiv)

Secondment | U. of Padova, Italy

- Anomaly Detection and Gaussian Mixture Models (link)

Internships | IPNL, France; Fermilab, US; CERN, Switz. [2014 - 16]

- ML for Higgs physics, detector trigger design, LHC data and simulations analyses (arXiv).

Education

Data Science & AI developer | Le Wagon (bootcamp), France [2024]
PhD, Physics | Clermont-Auvergne University, France [2019]

→ *Model independent searches for New Physics using Machine Learning at the ATLAS experiment at CERN* (link)

→ **EU Marie Skłodowska-Curie Grant** for doctoral research [2016]

MSc, Particle Physics | Paris VII University, France [2016]
BSc, Physics | USB, Venezuela; Lund University, Sweden [2015]

Selected conferences

- **ICHEP** International Conf. in High Energy Physics, Italy [2022]
- **CHEF** Calorimetry for High Energy Frontier, Japan [2019]

Info

Citizenship French and Venezuelan
Location Paris region
Born 1991 (33 years old)

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Book a meeting