MATÍAS FERNÁNDEZ LAKATOS

PhD in Optical Physics & Msc in Theoretical Physics & MSc in Big Data (in progress)

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PROFESSIONAL EXPERIENCE

Internship

📅 2025 – present   ⚲ Gradiant

- Implementation of new anomaly detection models in Big Data contexts.
- Cybersecurity, UEBA: User and Entity Behavior Analytics, data pipelines, real-time large-scale data processing, AI models: Unsupervised Variational Autoencoder, anomaly and threat detection.

Researcher and Teaching Assistant at UdelaR

📅 2015 – 2024   ⚲ Fac. Ingeniería, Udelar, Montevideo

- Taught university physics at the Physics Institute (2015 – 2024).
- Conducted research in multiple projects, including study of long-range properties of the strong nuclear interaction, development of multispectral instruments for remote monitoring, phase object retrieval involving a new method and creating a new method of integration from just one derivative.

UNIVERSITY DEGREES

MSc Tecnologías de Análisis Masivo de Datos: Big Data

📅 2024 – present   ⚲ USC, Santiago de Compostela

- Courses on Large-Scale Databases, Technologies for Managing Unstructured Information, Computing Technologies for Big Data, IoT, Statistics, Data Mining, Data Visualization, Business Intelligence, and Applications and Use Cases in Business.

PhD in Optics

📅 2019 – 2024   ⚲ Udelar, Montevideo

- Thesis: Visualization and Characterization of Phase Objects (clickable) Courses on Laboratory of fundamental electronics and scientific instrumentation, Coherent Optics, **Reinforcement Learning**, **Computer Image Processing**, **Computational Multivariate Statistics** and **Deep Learning for Computer Vision (cs231n)** . Advisors: PhD. José A. Ferrari, PhD Erna Frins and PhD Gastón A.Ayubi.

MSc in Quantum Chromodynamics

📅 2016 – 2018   ⚲ Udelar, Montevideo

- Thesis: Rol de los diversos acoplamientos en la cromodinámica cuántica infrarroja (clickable) Courses on Statistical Mechanics, Quantum Field Theory I and II, General Relativity. Advisors: PhD. Nicolás Wschebor and PhD Marcela Peláez.

Bachelor's Degree in Physics

📅 2011 – 2015   ⚲ Udelar, Montevideo

ABOUT ME

My experience lies in image modeling and programming, skills honed during my Ph.D. in Physics through several research projects. I have furthered my knowledge through Machine Learning and related subjects with courses such as cs231n, Reinforcement Learning, Computational Multivariate Statistics, and Computer Image Processing, which have enhanced my expertise. I have shared my insights through talks and presentations at events and conferences, refining my communication abilities.

With 9 years of teaching and community service, including housing projects and high school classes, I've honed teamwork, communication, and empathy, strengthening my interpersonal and professional skills.

ACHIEVEMENTS

Master's scholarship from the Comisión Académica de Posgrados (CAP, 2016)

PhD scholarship from the Agencia Nacional de Investigación e Inovación (ANII,2019)

PhD scholarship from the Comisión Académica de Posgrados (CAP,2022)

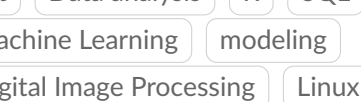**Member of the National System of Researchers in Uruguay (SNI, 2024).**

4 first author peer-reviewed articles.

clickable, 2019, IJMPA Scopus
clickable, 2022, Optik Scopus
clickable, 2023, OLE Scopus
clickable, 2024, SPIE

Author peer-reviewed article

clickable, 2024, IOP Science
clickable, 2025, OLT

TECHNICAL SKILLS

Git | Data analysis | R | SQL
Machine Learning | modeling
Digital Image Processing | Linux
Statistical Analysis | LaTeX
Multivariate Analysis | Optimization
Database Management and Modeling

PROG. LANGUAGES

Python
MATLAB
OpenCV
PyTorch
Tensor Flow
Scikit
Linux/Bash
R
C/C++