

# MATÍAS FERNÁNDEZ LAKATOS

**PhD student in Optical Physics, Msc in Theoretical Physics, Bachelor in Physics**

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## PROFESSIONAL EXPERIENCE

**Researcher and Teaching Assistant at UdelaR**

2015 – Present Fac. Ingeniería, Udelar, Montevideo

- Taught university physics at the Physics Institute (2015 – present).
- Conducted research in multiple projects, including study of long-range properties of the strong nuclear interaction, development of multispectral instruments for remote monitoring of trace gases and other applications, phase object reconstruction from transport of Intensity Equation, creating a new method for phase retrieval using phase-shifting properties and creating a new method of integration from just one derivative.

**Math teacher at International College Punta del Este**

📅 2018 📍 Montevideo

- English classes of Maths for 1st and 2nd grade.

## UNIVERSITY DEGREES

## PhD in Optics

📅 2019 – present      📍 Udelar, Montevideo

- Thesis: Visualization and Characterization of Phase Objects. 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

Currently seeking employment in the field of Artificial Intelligence. 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 8 years of teaching experience and a demonstrated commitment to community service, including participation in housing construction projects and teaching high school classes, I have cultivated strong soft skills. These include effective collaboration, teamwork, adaptable and clear communication, as well as empathy and understanding for others' needs and concerns. These experiences have bolstered my interpersonal skills and ability to comprehend diverse perspectives, benefiting my teaching and professional endeavors.

## ACHIEVEMENTS

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

2016 Msc

**PhD scholarship from the Agencia Nacional de Investigación e Innovación (ANII)**

2019 PhD

**PhD scholarship from the Comisión Académica de Posgrados (CAP)**

2022 PhD

## First author peer-reviewed article

2019 IJMPA Scopus

"On the contribution of different coupling constants in the infrared regime of Yang-Mills theory: A Curci-Ferrari approach" (clickable)

### First author peer-reviewed article

2022 Optik Scopus

"Phase retrieval by amplifying the prism term of the Transport of Intensity Equation with a sliding step function" (clickable)

### First author peer-reviewed article

2023 OLE Scopus

"Common-path quantitative phase imaging by propagation through a sinusoidal intensity mask" (clickable)

## TECHNICAL SKILLS

A word cloud containing the following items: Git, Data analysis, R, Machine Learning, modeling, Digital Image Processing, Linux, Statistical Analysis, LaTeX, Multivariate Analysis, Optimization, and Database Management and Modeling.

# PROG. LANGUAGES

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

