

Ezequiel T. Centofanti

DATA SCIENTIST · AI ENGINEER

Paris, France

☎ (+33) 6 26 32 27 82 | ✉ ezececentofanti@gmail.com | 🌐 centofantieze | 📄 ezequiel-centofanti

Summary

PhD candidate developing AI methods to solve ill-posed inverse problems in astrophysics. Experienced in taking research from theory to production-ready code, with a track record of published results and industry-grade open-source software. Looking to apply rigorous ML methodology to high-impact data science and AI engineering challenges.

Skills

Programming	Python (PyTorch, TensorFlow, NumPy, Scikit-Learn, Matplotlib, pytest, PyPI packaging), JAX, Matlab, C/C++.
Statistical methods	Bayesian inference, probabilistic modelling, Markov chain Monte Carlo sampling, uncertainty quantification.
Tools & Platforms	Git, GitHub Actions, SLURM, High-Performance Computing (HPC), Linux/Unix, Docker, LaTeX.
Communication	Technical writing, bibliography, scientific publications, and presenting results to mixed audiences.
Languages	English (Fluent), French (Fluent), Spanish (Native), Italian (Intermediate).

Experience

CEA & Université Paris Cité - PHD RESEARCHER MACHINE LEARNING AND AI FOR ASTROPHYSICS 2023 - Present - Paris, France

- Designed an SVM **ML classifier** for stellar spectral types using features derived from the telescope's instrumental response; improved classification accuracy from **75% → 90%**.
- Developed a lightweight, modular Python package for radio-interferometric simulations, following **industry-grade software** engineering standards: unit tests, documentation, CI/CD, Docker, PyPI packaging.
- Proposed a novel training strategy for data-driven point spread function modelling enabling phase-retrieval, achieving a **10×** error reduction.
- Implemented a **generative forward model** for galaxy shear estimation, demonstrating unbiased predictions with lower variance than state-of-the-art CNN approaches, improving precision for weak-lensing measurements in next-generation surveys.
- Mentored** an M2 student on the development of an ML optimization framework for an automatic positioning of radio interferometer antennas.
- Submitted and published **multiple first-author papers** in peer-reviewed scientific journals.
- Teaching** practical lab sessions on electronics to 20+ engineering students at Polytech Paris-Saclay.

Inria, OPIS Group - AI RESEARCH ENGINEER 2022 - 2023 - Paris, France

- Built scalable **Deep Unrolling** solutions for inverse problems with **PyTorch** on **HPC**, delivering reproducible open-source implementations.

CEA, CosmoStat Laboratory - RESEARCH INTERN (M2) 2022 - Paris, France

- Point spread function optimisation in **TensorFlow** for the European Space Agency's *Euclid* telescope.

Thales Group & IMT Atlantique - ENGINEERING INTERN (M1) 2021 - Brest, France

- Extracted micro-Doppler features for UAV detection/classification, using Matlab and Python.

Education

CEA & Université Paris Cité - PHD IN MACHINE LEARNING & AI FOR ASTRONOMICAL IMAGING 2023 - Present - Paris, France

- Advisors: Dr. Samuel Farrens & Dr. Jean-Luc Starck.
- Research Focus: Developing AI methods for optical and radio astronomical imaging.

IMT Atlantique - DIPLÔME D'INGÉNIEUR 2022 - Brest, France

- Specialised Master (SISEA) in systems, automation, and advanced signal processing (Co-accredited with Univ. Rennes 1 & CentraleSupélec).
- M2: Mathematical and Computational Engineering: Deep Learning, Computer Vision, Optimization, and Numerical Methods.

University of Buenos Aires - ELECTRICAL ENGINEERING DEGREE 2019 - BsAs, Argentina

- Focus on Analogue/Digital Electronics, Signal Processing, and Control Systems.

Honors & Awards

2023	Distinguished Student , University of Buenos Aires	Argentina
2021	Academic Distinction , International Double Degree Program	France/Argentina
2020	EIFFEL Excellence Scholarship , Awarded by the French Ministry of Foreign Affairs	France

Interests

In my free time I like painting, playing guitar and building effects pedals, and playing tennis.