Dr. Fernando Gutiérrez Canales

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Professional Summary

PhD-trained Data Scientist and Python Developer with 5+ years of experience building robust, scalable data pipelines and analytical tools in scientific research environments. Skilled in automating data workflows, designing metrics and monitoring systems, and collaborating across technical and customer-facing teams. Proven ability to turn complex datasets into reliable, maintainable solutions. Eager to contribute to mission-driven organizations like Cozero, where data innovation drives sustainability impact.

Technical Skills

Programming: Python (NumPy, SciPy, Pandas, Matplotlib, Scikit-learn, Astropy), C, Fortran, Bash, R and Shell scripting
Tools & Workflow: Git, Subversion, Docker, Conda, Jupyter, DS9
Data Pipelines: Modular ETL workflows, Data cleaning/monitoring, Custom simulation pipelines
Data Science & Analytics: A/B Testing, Machine Learning, Time-Series Analysis, Bayesian Inference, Monte Carlo Methods and Large Datasets
AI & Automation: LLM-based tools (in progress), AI-assisted analysis, Python automation
Software & Productivity: LaTeX, Microsoft Office, LibreOffice, Vim and nano
Languages: Spanish (native), English (C1), French (good) and German (basic)

Soft Skills

- Cross-functional Collaboration in International Teams
- Technical Project Management & Agile Practices
- Clear Communication of Analytical Results
- Mentorship and Leadership in Scientific Programming
- Creative Problem Solving with Noisy or Incomplete Data

Experience

PhD Researcher
Paris Observatory & Max Planck Institute for Solar System Research
Mar 2022 – Mar 2025

- Developed Python-based simulation pipeline to estimate detection efficiency for planetary transit vetting methods (centroid shifts and double-aperture photometry) in the PLATO space mission.
- Integrated C and Bash modules; published results as part of the PLATO international science consortium.
- Collaborated with over 15 institutions in mission-critical software development and instrument calibration.

Research Intern
ESTEC (European Space Agency), The Netherlands
Summer 2023

- Conducted in-situ CCD measurements for PLATO detector calibration.
- Estimated Charge Transfer Inefficiency (CTI) parameters using DS9 and Python analysis scripts.

Education

PhD in Astrophysics
Paris Observatory & MPS Göttingen
With Honors (Expected 2025)

- Thesis: The PLATO mission: Detecting False Positives using Double-aperture photometry and Centroid Shifts

MSc in Astrophysics
University of Guanajuato, Mexico
GPA: 9.5/10, With Honors (2021)

- Thesis: Homogeneous Analysis of K2 planetary systems hosting USP planets

BSc in Physics
University of Guanajuato, Mexico
GPA: 9.0/10, With Honors (2019)

Conferences & Publications

- Presented at EAS (2024), PLATO Weeks #14 & #15, Journée des Thèses (2022)
- Co-author on peer-reviewed publications on planetary systems and photometric signal analysis
- Submitted: Gutierrez-Canales et al., *Detecting False Positives with PLATO using Double-Aperture photometry and Centroid Shifts*, Dec 2024

Awards

- Erasmus+ Fellowship – ESTEC Internship (2023)
- Full Scholarships & Honors Degrees (2019, 2021, 2025)