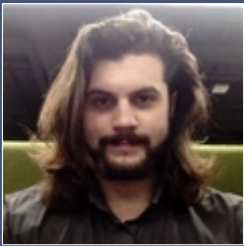


Federico STACHURSKI



◇ ML/AI Researcher & Data Scientist |
Ph.D. in Astrophysics | Machine Learning,
Data Analysis

PROFILE SUMMARY

Data scientist and astrophysics researcher with a PhD from the University of Glasgow. Expert in ML, AI, and scientific computing with hands-on experience in developing generative models and managing TB-scale data systems. Contributed to high-impact research published in peer-reviewed journals and presented at global conferences. Seeking to apply scientific ML expertise to production scale data challenges.

CONTACT DETAILS

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PERSONAL INFORMATION

Citizenship: **Italian**
Languages: **Italian (Native), English (Native), Spanish (Intermediate)**

SKILLS

- **Programming:**
Python(Advanced), PostgreSQL, Linux (Terminal Commands, Bash/Shell), IDL (IMD) Programming, C, C++
- **Machine Learning & AI:**
Pytorch, Keras, sklearn, Tensorflow, Generative Models
- **Tools & Technologies:**
Git, VSCode, Tableau, Docker/Singularity, Microsoft Office, GeoPandas, HTCondor, LaTeX, Alteryx, Jupyter/Spyder IDE
- **Soft Skills:**
Strong multi-language Communicator, Collaborative Team Player with Proactive Mindset, Strong Task and Time Manager, Problem Solver

WORK HISTORY

DATA SCIENCE, Kaggle

2025–Present

- ◇ Kaggle Competitor, dedicated Git Repository here: github.com/FedericoStachurski/kaggle-projects
- ◇ **Titanic - Machine Learning from Disaster**: SCORE: 0.77990, Leaderboard (3663/15337)
- ◇ **House Prices - Advanced Regression**: SCORE: 0.14593, Leaderboard (2614/4829)

UNIVERSITY RESEARCH ASSISTANT, University of Glasgow

2024–Present

- ◇ Spearheaded optimization of the *gwcosmo* cosmology pipeline, reducing runtime by over **25×** through strategic code refactoring and data streamlining, enabling analysis of galaxy catalogs **100×** larger than previously feasible.
- ◇ Built and deployed an ML pipeline called *CosmoFlow*, a novel generative model framework for astrophysical inference, achieving computation times in seconds delivering **100×** faster performance than classical tools.
- ◇ Developed and maintained a PostgreSQL database managing **10+** TB of galaxy survey data, with custom indexing and asynchronous query support, cutting query latency from minutes to under **10** seconds.
- ◇ Authored Python tutorials for a **50+** member team on implementing generative algorithms and database access using SQLAlchemy.
- ◇ Chaired technical discussions in the LIGO–Virgo–KAGRA Cosmology subgroup, coordinating across **5+** institutions to align on development milestones and prioritize upgrades.
- ◇ Assisted in the preparation of funding proposals with international collaborators, contributing technical documentation and outlining project objectives for research initiatives.
- ◇ Mentored **3+** junior researchers and PhD students, offering hands-on guidance on ML models, preprocessing pipelines, statistical validation
- ◇ Managed undergraduate astrophysics labs (A1, A3) for **60+** students annually, leading tutorials, preparing lab material, and evaluating coursework with consistent positive feedback.

ONLINE TUTOR, Superprof.com

2020–Present

- ◇ Delivered **120+** hours of high-rated tutoring sessions; recognized as an Ambassador for consistent performance.

INTERNSHIPS, LPI & Queen's University

2018–2019

- ◇ Lunar and Planetary Institute (2018): Assessed Martian water via remote sensing data (Houston, TX).
- ◇ Queen's University (2019): Analyzed solar prominences with SOHO/SDO data (Belfast, UK).

EDUCATION

PH.D. ASTROPHYSICS AND DATA SCIENCE, University of Glasgow

2020–2024

- ◇ Thesis: Cosmological parameter inference using gravitational waves and ML

M.Sci. PHYSICS AND ASTRONOMY, University of Glasgow

2015–2020

- ◇ First-Class Honours. Thesis: Detectability of lensed gravitational waves from Galactic neutron stars

PUBLICATIONS

- ◇ **Cosmological Inference using Gravitational Waves and Normalising Flows**
Phys. Rev. D 109, 123547 (2024)
- ◇ **Blinded Mock Data Challenge for Gravitational-Wave Cosmology-I: Assessing the Robustness of Methods Using Binary Black Holes Mass Spectrum**
arXiv:2412.14244 (2024)
- ◇ **GWSim: Python package for creating mock GW samples for different astrophysical populations and cosmological models of binary black holes**
arXiv:2210.05724 (2023)
- ◇ **Quantitative assessment of water content and mineral abundances at Gale crater on Mars with orbital observations**
A&A 637, A79 (2020)
- ◇ Other contributions: <https://inspirehep.net/authors/1975108>

AWARDS

- ◇ ACME European support (2025): European funded project support
- ◇ Ph.D. College Scholarship (2020): prestigious CoSE scholarship
- ◇ Astronomy Prizes 2 & 3, Tannahil Bequest (2015 - 2019): top academic performance during undergraduate studies and best Master's thesis

CONFERENCES AND INVITED TALKS

- ◇ GR16 & Amaldi24 (Glasgow, 2025): Presentation
- ◇ EuCAIFCon (Cagliari, 2025): Poster
- ◇ NCBJ (Warsaw, 2024): Invited Talk
- ◇ LIGO–Virgo–KAGRA (Toyama, 2023): Presentation
- ◇ Bayesian Deep Learning (Paris, 2022): Poster
- ◇ LPSC (Houston, 2019): Presentation
- ◇ EPSC (Berlin, 2018): Poster

REFERENCES

Dr. Christopher Messenger (Ph.D. Supervisor) christopher.messenger@glasgow.ac.uk
Prof. Martin Hendry (Ph.D. Supervisor) martin.hendry@glasgow.ac.uk
Dr. Rachel Gray (Postdoctoral Supervisor) rachel.gray@glasgow.ac.uk