

NORA EISNER, PhD

Project Management | Data Science | Quantitative research | Time-series analysis

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SUMMARY

Highly skilled and self-motivated data scientist with a PhD in Astrophysics (University of Oxford) and over 9 years of experience using Python to develop innovative solutions for complex challenges. Designed and led a citizen science project that grew to 50,000+ users, demonstrating strong project management and user engagement skills. Proven ability to apply machine learning, Bayesian inference and probabilistic modeling to real-world problems. Excellent at communicating difficult concepts and passionate about driving impact through research at the intersection of data science, software engineering, and project management.

SELECTED SKILLS

Technical: Time-series analysis, Fourier analysis, probabilistic modelling, Bayesian inference, Gaussian processes, linear regression, hypothesis testing, classification, exploratory data analysis, data cleaning/wrangling, project management, machine learning.

Computer Skills: Python (*NumPy, SciPy, scikit-learn, pandas, Jupyter, PyMC, PyTorch, tkinter etc.*), Linux, Docker, unit testing, SQL, data pipelining, Power Point, iMovie, standard machine learning workflows,

General: Communication (written and verbal), research, data visualization (*matplotlib, seaborn, bokeh etc.*), resource management, time management, collaboration, creative problem solving.

EXPERIENCE

Data Scientist | Code Developer | Project Manager

August 2022 – Present

Flatiron Institute, Center for Computational Astrophysics | Princeton University

- **Designed and led a global citizen science project** with 50,000+ users that combined human labels with machine learning to classify over 30 million astronomical objects, resulting in 200+ discoveries and 20+ peer-reviewed publications [[paper](#), [paper](#)]. Demonstrated excellence in leading large-scale projects with significant scientific and user engagement impacts.
- **Developed and implemented ML algorithms and statistical methods** (e.g., CNNs, clustering, Fourier analysis) to detect low-amplitude signals in time-series data (e.g. in the presence of missing data), leading to the identification of hundreds of new astronomical objects.
- **Validated project success and sensitivity** through simulated data and statistical analysis, demonstrating the ability to rigorously evaluate research methodologies and outcomes.
- **Played a key role in cross-functional teams** to enhance data-driven decision-making processes (A/B testing, user research), significantly improving project outcomes and user experiences.
- **Authored 29 publications** and actively contributed to the scientific community by organizing international workshops, leading seminars and press releases enhancing brand visibility and community engagement [e.g., [CNN](#), [Forbes](#)].
- **Managed a team** of 10+ scientists/software engineers and consulted for 3 other citizen science projects, highlighting my ability to lead ambitious research projects.

Data Scientist

October 2018 – April 2022

PhD Astrophysics, University of Oxford

- **Led the development** of a user-friendly, open-source Python module [[github](#), [paper](#), [GUI](#)] encompassing over 15,000 lines of code and attracting over 10,000 users. This tool significantly enhanced data analysis efficiency in time-series astronomy, facilitating collaborative research across multiple institutions and boosting interdisciplinary data-driven projects.
- **Collaborated with astrophysicists across institutions** to develop a probabilistic model using *pyMC*, enhancing the prediction accuracy of multi-stellar system behaviors. This published research [[paper](#), [github](#)], showcases the ability to apply advanced modeling techniques to complex datasets.

- **Mentored a team of junior researchers** in leveraging machine learning techniques (including CNNs) and advanced statistical methods (least-squares optimization, Markov Chain Monte Carlo), leading to three publications [e.g. [paper](#)]. This mentorship highlights a commitment to developing talent and fostering a collaborative research environment.
- **Managed and optimized resource allocation** for major research projects, securing over 500 hours of advanced telescope time and millions of computing hours. Through strategic management and scheduling maximized resource efficiency and project output, demonstrating strong leadership in high-stakes environments.
- **Communicated complex scientific results** to technical and non-technical audiences, including presentations at over 40 international conferences/seminars (to audience of 500+ attendees), the general public, and funding bodies. Experienced in collaborating effectively in both small and large teams and in building strong research teams to address cross-interdisciplinary problems.

Science communicator | Code Developer

March 2021 – December 2022

NASA Ames, Bay Area Research Institute, California

- **Developed and published** engaging Python coding tutorials (+15,000 global views) on time-series analysis, data engineering, and parameter inference. Tutorials effectively translate complex scientific concepts for experts and non-experts and are used for teaching purposes at universities across the USA.
- **Led a team of scientists and communicators** in producing weekly public data analysis teaching videos [[link](#)]. Highlights leadership skills and the ability to collaborate effectively.
- **Researching and implementing user experience and user interface (UX/UI) strategies** that cater to diverse learning styles to advanced diversity and inclusion in STEM.

Product Information Manager

September 2012 – September 2016

Vetrag Ag, Zurich, Switzerland

- **Led a team** of 5 to streamline product information management processes. Implemented and improved data entry and retrieval procedures, boosting overall efficiency. Highlights the ability to optimize workflows for a team environment.
- **Acted as an external consultant** to the company for two years due to my technical expertise.

EDUCATION

PhD in Astrophysics

October 2018 – April 2022

University of Oxford, UK

- Relevant skills: time-series analysis, Bayesian inference, model optimization, symbolic coding.

MPhys and BSc Physics and Astrophysics

September 2014 – June 2018

University of Sheffield, UK

- First class honors (highest score in the year). Study abroad (University of Maryland, USA, 2016-2017).

SELECTED AWARDS

RAS Michael Penston Thesis Prize

2022

- Award for outstanding academic achievement and research excellence in the PhD thesis (2nd place)

Flatiron Research Fellowship & Princeton Henry Norris Russel Fellowship

2022

- Two of the most competitive institutional fellowships in astrophysics in the USA. These fellowships provides complete research freedom to explore cutting-edge applications in the field.

LSSTC Data Science Fellowship

2018

- Competitive fellowship to hone skills in software engineering, statistics, ML, scalable programming, and data management.

PUBLICATION SUMMARY 29 publications (9 first author); 919 citations; H-index: 13

LANGUAGES English, German, Swiss German (all fluent)