Princy Ranaivomanana, PhD

Applied Data Scientist | Machine Learning Scientist | Astrophysicist

📍 Netherlands · Open to EU/International Roles

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PROFESSIONAL SUMMARY

An applied data scientist and astrophysicist with a strong analytical overview and a passion for **turning complex data into reliable insights**. With a dual PhD in Astronomy & Astrophysics (Radboud University & KU Leuven), I **specialise in time-series analysis, unsupervised machine learning, and large-scale data validation**. I design robust analytical pipelines, detect meaningful patterns in noisy real-world data, and translate advanced quantitative methods into clear, actionable technical insights. Python-based data science, statistical modelling, and cross-dataset integration are core parts of my daily work. I am now **seeking an applied data scientist position** where I can further apply this blend of research rigour, software engineering, and machine-learning expertise to deliver tangible solutions in a data-driven organisation.

CORE SKILLS

- **Data Science & Analytics**: Time-series analysis, anomaly detection, clustering, exploratory data analysis, statistical validation

- **Machine Learning**: Unsupervised learning (t-SNE, DBSCAN, K-Means), model evaluation, feature engineering

- **Programming**: Python (Pandas, NumPy, Scikit-learn), SQL, Bash, Git

- **Statistics**: Bayesian inference, hypothesis testing, error propagation, uncertainty quantification

- **Data Engineering (Applied)**: Large-scale dataset integration, cross-matching heterogeneous sources, data quality checks

- **Communication**: Technical reporting, presenting, mentoring

PROFESSIONAL EXPERIENCE

1. **PhD Researcher – Data Science & Quantitative Analysis**

    Radboud University & KU Leuven | Oct 2021 – Sep 2025

- Designed and deployed **end-to-end data analysis pipelines** for multi-epoch datasets (> millions of records), improving data reliability through rigorous outlier detection and statistical validation.

- Built and validated an **unsupervised machine learning workflow** (t-SNE + clustering) to identify rare patterns in high-dimensional data.

- Performed **cross-dataset integration and reconciliation** across heterogeneous sources, identifying and correcting inconsistencies and producing a refined dataset of ~1,700 high-confidence candidates.

- Applied **time-series modeling techniques** (Fourier/Lomb–Scargle methods) to extract periodic signals from noisy observational data.

- Authored peer-reviewed **technical reports documenting** methodology, assumptions, and limitations–demonstrating strong analytical rigour and reproducibility.

Impact (Industry Translation): - Improved signal detection and classification accuracy in noisy, incomplete data - Reduced false positives through systematic validation and uncertainty analysis - Delivered reproducible analytical outputs suitable for downstream decision-making

2. **Teaching Assistant – Data Analysis & Scientific Computing**

   Radboud University & KU Leuven | Oct 2021 – Sep 2025

- Reviewed and assessed technical reports and Python codebases for data analysis courses
.
- Mentored students on data cleaning, statistical reasoning, and result interpretation.

- Communicated complex quantitative concepts to non-expert audiences.

EDUCATION

PhD, Astronomy & Astrophysics (Dual Degree): Radboud University & KU Leuven | 2021 – 2025

MPhil, Astronomy: University of Manchester, United Kingdom | 2020 – 2021

MSc, Astronomy: University of Antananarivo, Madagascar | 2016 – 2017

BSc, Physics: University of Antananarivo, Madagascar | 2012 – 2015

TOOLS & TECHNOLOGIES

Python · Pandas · NumPy · Scikit-learn · SQL · PyTorch · TensorFlow · Keras · Git · LaTeX

SELECTED STRENGTHS FOR INDUSTRY

- Translating ambiguous problems into structured analytical workflows

- Working with imperfect, real-world data at scale

- High standards for statistical validity and reproducibility

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CERTIFICATION

- Oxford machine learning school 2025 – Certificate

- Oxford machine learning school 2023 – Certificate

- Advanced Machine Learning and Signal Processing – Certificate

- Data Analysis with Python – Certificate

- Exploratory Data Analysis for Machine Learning – Certificate