

Mendrika Rakotomanga

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EDUCATION

PhD Researcher in Machine Learning and Applied Mathematics **October 2023 – Present**

🏛️ University of Leeds United Kingdom

- Thesis: *Convective Storm Nowcasting Using Satellite Observations and Object-Based Deep Learning*
- Supervisors: *Prof. Douglas Parker, Dr. Nadhir Ben Rached, and Dr. Cornelia Klein*

AIMS - Tübingen Fellowship Program Data Science & AI **February – October 2023**

🏛️ Max Planck Institute for Intelligent Systems & University of Tübingen Germany

- Research topic: *Bayesian Inference of Gravitational Waves with Machine Learning*
- Research group: *Empirical Inference, led by Prof. Bernhard Schölkopf*

MSc. in Mathematical Sciences (Cum Laude) **September 2021 – December 2022**

🏛️ AIMS & Stellenbosch University South Africa

- Research project: *Studying Star Clusters Using Monte Carlo Simulations and Bayesian Inference*
- Relevant courses: *Data Science, Differential Equations, Network and Graph Theory, Fluid Dynamics*

Master's in Physics and Chemistry (Magna Cum Laude) **July 2017 – October 2020**

🏛️ Ecole Normale Supérieure & University of Antananarivo Madagascar

- Relevant courses: *Computational Physics, Astronomy and Astrophysics, Chemical Physics, Statistics*

SKILLS

Technical skills:

- **Programming, query and markup languages:**
 - Python (PyTorch, TensorFlow, scikit-learn; large-scale, distributed ML training and evaluation)
 - JavaScript (ReactJS, NodeJS)
 - MongoDB, PostgreSQL
 - HTML, CSS, L^AT_EX
- **Agile development practices and Git-based collaborative workflows**
- **HPC workflows using SLURM and HTCondor for large-scale experiments**

Languages: Fluent in English, French and Malagasy. Limited proficiency in German.

KEY PROJECT / PUBLICATION

Rakotomanga, M., Parker, D. J., Ben Rached, N., Anderson, S. R., Klein, C., Wells, S. C.
Object-Based Deep Learning for Probabilistic Convective Core Nowcasting from Satellite Data (in review, QJRMS)

Developed an object-based deep learning framework for probabilistic convective storm nowcasting from geostationary satellite observations across Africa using spatio-temporal Transformer architectures.

EXPERIENCE

Research Software Developer for AI-Based Storm Nowcasting December 2025 – July 2026

📍 University of Leeds

- *Developed and maintained a live AI-based convective storm nowcasting platform for Africa.*

NC-International Visiting Scientist May – July 2025

📍 UK Centre for Ecology and Hydrology

- *Led the deployment and operation of an object-based AI storm nowcasting system in a pan-African operational setting on the UKCEH portal.*

Full Stack Developer September – November 2022

📍 Orange Digital Center Madagascar

- *3-month intensive internship in software development with particular focus on web-based applications*

SELECTED TALKS, CONFERENCES AND SUMMER SCHOOLS

European Nowcasting and Weather Forecasting Conference 2026 May 2026

📍 Danish Meteorological Institute

Denmark

- *Oral presentation on deep learning methods for convective storm nowcasting.*

EUMETSAT Meteorological Satellite Conference 2025 September 2025

📍 EUMETSAT

France

- *Presentation on AI-based convective storm nowcasting within the WISER-EWSA nowcasting testbed.*

ELLIS Summer School AI for Earth and Climate Science September 2025

📍 Friedrich Schiller University Jena

Germany

- *Advanced training on machine learning methods for Earth system science and weather extremes.*

Oxford Machine Learning Summer School 2024 May – July 2024

📍 AI for Global Goals

Online

- *Training on machine learning fundamentals, representation learning, and generative AI.*

Stochastic Numerics and Statistical Learning 2024 May 2024

📍 King Abdullah University of Science and Technology

Saudi Arabia

- *Workshop on stochastic algorithms, optimisation, approximation, and statistical learning.*

AWARDS AND RECOGNITION

Highly Commended – Community Impact and Innovation 2026

🏆 University of Leeds – Faculty of Engineering and Physical Sciences Partnership Awards

- *Recognition for the development and operationalisation of PANCAST for African weather applications.*

Fellowship Programme in Data Science & AI 2023

🏆 Cluster of Excellence Machine Learning & AIMS

- *Fully-funded research fellowship at the Max Planck Institute for Intelligent Systems, Tübingen.*

Mastercard Foundation Scholarship 2021

🏆 Mastercard Foundation & Stellenbosch University

- *Full scholarship for MSc studies in Mathematical Sciences at AIMS South Africa and Stellenbosch University.*