

# Ramiyou Karim, Mache

Data Science | Machine Learning & AI | Applied Mathematics | HPC Enthusiast

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## Profile

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Data Scientist & Machine Learning Specialist with 5+ years of experience analyzing complex, large-scale datasets and developing predictive machine learning and deep learning models. Proficient in Python, core data science and ML/DL frameworks, and advanced analytics, with ongoing PhD research in Neural Networks for Fluid Simulation (Applied Mathematics). Experienced in leveraging AI and ML within high-performance computing (HPC) environments. Driven by a passion for applying advanced mathematical and artificial intelligence techniques to solve real-world problems and extract meaningful insights.

## Technical Skills

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- **Programming:** Python (Fluent), SQL, Julia (Basic)
- **ML/DL Frameworks:** PyTorch, TensorFlow/Keras, Scikit-learn, XGBoost, CatBoost, LightGBM
- **Data Analysis & Visualization:** Pandas, NumPy, Matplotlib, Seaborn, streamlit
- **Cloud & Big Data:** Google Cloud Platform (GCP), PySpark (Basic)
- **Other Tools:** Bash, Git, SLURM, LaTeX, Grafana, Paraview (Basic), HTML (Basic)
- **Soft Skills:** Problem Solving, Teamwork, Adaptability, Time Management, Fast Learning, Critical thinking

## Experience

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### PhD Researcher (Applied Mathematics, Data Science / ML) | Forschungszentrum Jülich (JSC), Germany (2021–2025)

- Designed and implemented Physics-Informed Neural Networks (PINNs) and RBF-based neural networks for spherical-domain fluid dynamics.
- Contributed to 2-meter temperature forecasting using advanced DL models
- Built ML classification pipeline for TOAR database station categorization using Pandas, Scikit-learn, XGBoost, CatBoost, LightGBM, KMeans (paper published)
- **Additional Coursework:** Scientific Writing, Scientific Presentation, High Performance Computing with Python, Project Management, CI/CD with git

### Data Scientist Intern - Atos, Senegal (2020 - 2021)

- Developed ML models to detect fraud and manage risk.
- Collected and processed audio for speech recognition tasks.

### Data Scientist Intern - Sonatel (Orange), Senegal (2019 - 2020)

- Processed multivariate network logs for scalable analysis.
- Developed ML-based insights from logs to predict equipment failures
- Developed clustering models to segment customers by lifetime value (CLV) for targeted marketing
- Completed data engineering training, building expertise in Spark, SQL, and Python.

## **Education**

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**PhD in Applied Mathematics** | University of Cologne, Germany (2021 - Present)

**Cooperative Master's in Mathematical Sciences – Big Data & Computer Security** | African Institute for Mathematical Sciences (AIMS), Senegal (2018 - 2020)

**Master's degree in Applied Mathematics** | University of Yaoundé I, Cameroon

**BSc in Mathematics**, University of Yaoundé I, Cameroon

## **Publications**

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- Ramiyou Karim Mache et al. “TOAR-classifier v2: A data-driven classification tool for global air quality stations,” Geoscientific Model Development, 2025.
- R. Karim Mache, Contributing author “Benchmarking Unsupervised learning Keyword Extraction Algorithms from Online Senegalese News”, In book: Intelligent Sustainable Systems, 2024
- R. Karim Mache, Contributing author, “Temperature forecasting by deep learning methods,” Geoscientific Model Development, 2022

## **Certifications**

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- Workshop/Building Transformer-Based Natural Language Processing Application – NVIDIA (2024)
- Deep Learning Specialization – Coursera
- Google Cloud: Big Data and ML – Coursera
- Python Full Stack Masterclass – Udemy
- Machine Learning: Hands-on Python and R in Data Science – Udemy
- Data Science de A à Z, with Python and R – Udemy

## **Honors, Awards & Leadership**

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- **AIMS Scholarship** – Merit-based award for excellence in mathematical sciences.
- **Academic Excellence Award** – Cameroonian Government, for top academic performance.
- Led student initiatives, organized academic/social events, and represented peers at AIMS-Senegal.

## **Languages**

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- English (Fluent), French (Native), German (A2)

## **Hobbies**

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- Football, reading, science films, and staying updated on AI advancements.

## **References**

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- Schröder, Sabine – Forschungszentrum Jülich | s.schroeder@fz-juelich.de
- Dr. Boris Wembe Moafo – Paderborn University | wboris@math.upb.de