




# Jean Lucien Randrianantenaina

 Beravina, Fianarantsoa, Madagascar  
 [rjlucienaina@gmail.com](mailto:rjlucienaina@gmail.com)  
 +261 34 58 981 64

 [Jean Lucien Randrianantenaina](#)  
 [fahazavana.github.io](https://fahazavana.github.io)  
 [Fahazavana](#)

## Experience

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- Jan. 2025 – Present **ML/AI & Back-end Developer**  
Arato, Fianarantsoa, Madagascar
- AI/ML Development: Designed and deployed AI models (RAG, chatbots); built recommendation and NLP solutions; fine-tuned models for optimal performance.
  - Built data scraping pipelines (Selenium); automated workflows (n8n); streamlined processes to minimise manual work.
  - Back-end Services: Developed scalable back-end systems; designed RESTful APIs; ensured secure and efficient data management.
- Jan. 2025 – Present **Part-time Lecturer**  
University of Fianarantsoa, Madagascar
- Delivered lectures in Linear Algebra and Mathematics for Artificial Intelligence.
  - Developed course materials and supervised student projects, assignments, and examinations.




## Education

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- 01/2024 – 12/2024 **MSc in Machine Learning and Artificial Intelligence**  
Stellenbosch University, South Africa  
Grade: 78/100
- 06/2019 – 01/2024 **MSc in Mathematics and Applications – Fundamental Mathematics**  
University of Fianarantsoa, Madagascar  
Grade: 14.25/20
- 09/2022 – 06/2023 **MSc in Mathematical Sciences – Fundamental Sciences**  
African Institute for Mathematical Sciences (AIMS), Cameroon  
CGPA: 3.52/4
- 11/2015 – 04/2019 **BSc in Mathematics and Applications – Fundamental Mathematics**  
University of Fianarantsoa, Madagascar  
Grade: 14.69/20

## Research Projects

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- 2024 **Conditional Flow Matching (CFM) in Feature Space (MSc Project)**   
Supervisors: Dr Shane Josias and Prof. Willie Brink
- 2024 **Optimization of the UNet Architecture for Brain Tumour Segmentation with Genetic Algorithm (MSc Project)**  
Supervisors: Dr Aurelle Tchagna Kuanou and Dr Joelson Randriamparany
- 2023 **Carmichael Number (MSc Project)**   
Supervisor: Prof. Florian Luca
- 2019 **Radical Resolution of Polynomial Equation (BSc Project)**   
Supervisor: Prof. Solo Rajaofetra Randriamahaleo

## Certifications

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- 07/2023 **Business Management**  
ESMT Berlin, II Africa, IIP – Limbé, Cameroon  
One-month intensive course in business management and soft skills development.
- 01/2022 – 07/2022 **Back-end Developer**  
SAYNA & OIF: DCLIC Programme 1.0 – Fianarantsoa, Madagascar  
Six months of training in website development: HTML5, CSS3, JavaScript, Node.js, MySQL.

## Publications and Talks

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- Publication **There Is No Carmichael Number of the Form  $2^n p^2 + 1$  with  $p$  Prime**  
Florian Luca and Jean Lucien Randrianantenaina, INTEGER, Volume 23 (2023) [↗](#)
- Talk **Fermat's Last Theorem, with  $n = 4$**   
Presented to AIMS Cameroon Students

## Awards and Scholarships

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- 2024 **Google DeepMind Scholarship**  
Fully funded Master's Programme in Machine Learning and Artificial Intelligence at Stellenbosch University
- 2023 **Industry Immersion Programme (IIP) Scholarship**  
Fully funded programme on business management, offered by AIMS, II Africa, ESMT Berlin, Germany
- 2022 **MasterCard Foundation Scholarship**  
Fully funded Master's Programme at AIMS Cameroon
- 2022 **D-CLIC Programme**  
Programme funded by the Organisation Internationale de la Francophonie (OIF) and SAYNA

## Projects

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- 07/2024 **Reinforcement Learning** [↗](#)  
Implemented Q-Learning, SARSA, and two variants of Deep Q-Network algorithms to solve the mini-grid problem using Gymnasium and PyTorch.
- 07/2024 **Neural Machine Translation** [↗](#)  
Developed a neural machine translation model and further trained an existing pre-trained model (opus-mt-en-af) to translate engineering assessments from English to Afrikaans.
- 06/2024 **Byte Pair Encoding (BPE) and Trigram Language Model** [↗](#)  
Implemented a trigram language model for language identification and Byte-Pair Encoding (BPE) for language similarity analysis.
- 02/2024 **Movie Recommender System**  
Built a large-scale recommender system using probabilistic matrix factorisation, trained on the 25M MovieLens dataset. Implemented from scratch using Python, Numba, and NumPy.
- 2023 **MK-Forum** [↗](#)  
Developed a web forum dedicated to mathematics. Built the front-end using HTML, CSS/Bootstrap, and JavaScript. The back-end uses Python/Django and MySQL. Includes features like user accounts, posts, comments, and a voting system.
- 2022 **Unbeatable TicTacToe** [↗](#)  
Developed a Tic-Tac-Toe game using HTML, CSS, and JavaScript. Features an unbeatable computer opponent using a combination of random placement and a min-max algorithm based on difficulty level.
- 2021 **Bellman-Kalaba GUI** [↗](#)  
Developed a graphical user interface for graph representation and short-path finding using the Bellman-Kalaba algorithm with Tkinter/Python.

## Skills

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Language Skills	Malagasy (Native), French (Fluent), English (Upper-Intermediate)
Programming Languages	Python, JavaScript
Frameworks, Libraries, Runtimes	PyTorch, TensorFlow, JAX, Pandas, Scikit-Learn, Langchain, Django, Flask, FastAPI, Bootstrap, Node.js, Vue.js
Database	MySQL, PostgreSQL, Chroma, MongoDB
Version Control	Git
Other Skills	LaTeX, HTML, CSS/SASS, MS Office