Jean Lucien Randrianantenaina

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Jean Lucien RANDRIANANTENAINA
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Education

MSc. in Machine Learning and Artificial Intelligence — **Jan. 2024 – Dec. 2024**
Stellenbosch University, South Africa

MSc. in Mathematics and Applications – Fundamental Mathematics — **Jun. 2019 – Jan. 2024**
Faculty of Science, University of Fianarantsoa, Madagascar — Grade: 14.25/20

MSc. in Mathematical Sciences – Fundamental Sciences — **Sep. 2022 – Jun. 2023**
African Institute for Mathematical Science (AIMS), Limbé Cameroon — Grade: 3.52/4

BSc. in Mathematics and Applications – Fundamental Mathematics — **Nov. 2015 – Apr. 2019**
Faculty of Science, University of Fianarantsoa, Madagascar — Grade: 14.83/20

Publication and Talks

Florian Luca and Jean Lucien Randrianantenaina,"There Is No Carmichael Number of the Form $2^n p^2 + 1$ with p prime", INTEGER, Volume 23 (2023).

Talk at AIMS Cameroon, 2023: "Fermat last theorem, with n=4".
Presented to AIMS Cameroon students.

Research Experience

Movie Recommender System — **Feb. 2024**
Large-scale recommender system, using probabilistic matrix factorization and trained on the 25M MovieLens dataset. Implemented from scratch using Python, Numba and Numpy.

Optimizing U-net architecture for brain tumour segmentation, using Genetic Algorithm (MSc. Thesis) — **2024**
Proposed and implemented a genetic algorithm approach to obtain an optimal U-net architecture, enhancing brain tumour segmentation accuracy while minimizing the number of parameters.

Carmichael Number (MSc. Thesis) — **2023**
Explored the properties of Carmichael Numbers and proved the non-existence of Carmichael Numbers in the form of $2^n p^2 + 1$, where p is a prime number. The result is published in the INTEGER Journal

Radical resolution of a polynomial Equation (BSc. Project) — **2019**
Exploration of the radical resolution method and an explain why there is no general formula to solve polynomial equations of degree higher than five.

Certification

Business Management — **Jully 2023**
ESMT Berlin, II Africa, IIP – Limbé, Cameroon
One-month of intensive course and practice, focused on business management principles and development of essential soft skills.

Back-end developer — **Jan. – Aug. 2022**
SAYNA & OIF: DCLIC Program 1.0 – Fianarantsoa, Madagascar
A comprehensive six-month training program for website development, covering key technologies including HTML5, CSS3, JavaScript, Node.js, and MySQL.

Prizes/Awards/Scholarships

Google DeepMind Scholarship: Fully funded Master's Program, Stellenbosch University, South Africa — **2024**

Industry Immersion Program (IIP) Scholarship: awarded by AIMS, II Africa, and ESMT Berlin, Germany. — **2023**

MasterCard Foundation Scholarship: Fully funded Master's Program at AIMS Cameroon — **2022**

SAYNA and the Organisation Internationale de la Francophonie (OIF): Fully funded D-CLIC 1.0 Programs (2022). — **2022**

Skills

Programming

- Python
- JavaScript
- HTML/CSS/SASS
- LaTeX

Library/Framework/Versioning

PyTorch, TensorFlow, JaX, Pandas, Scikit-Learn, Django, Flask, NodeJs, Bootstrap, Sympy, Git

Language

- English
- French
- Malagasy

Personnal Project

Neural Machine Translation — Jul. 2024
Developed a neural machine translation model and fine-tuned the opus-mt-en-af model to translate engineering assessments from English to Afrikaans.

Trigram Language Model and BPE — Jun. 2024
Implemented a trigram language model for language identification and used Byte-Pair Encoding (BPE) for language similarity analysis.

MK-Forum — 2023
Created a web forum dedicated to mathematics. Developed the front end using HTML, CSS/Bootstrap, and JavaScript, while the back end utilizes Python/Django and MySQL. The forum includes features such as user accounts, posts, comments, and a voting system.

Unbeatable TicTacToe — 2022
Implemented with HTML, CSS, and JavaScript. Used the minimax algorithm and its combination with random moves to create three levels of difficulty.

Pendu Malagasy — 2022
Created a hangman game using Tkinter and Python. The default word list is in Malagasy, which can be easily changed to another language.

Bellman Kalaba GUI — 2021
Developed a graphical user interface (GUI) for graph representation and shortest-path finding using the Bellman-Kalaba algorithm with Tkinter and Python.

References

Available upon request