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Education

MSc. in Machine Learning and Artificial Intelligence — **Jan. 2024 – Dec. 2024**
Stellenbosch University, South Africa
Relevant courses: Foundations of Deep Learning, Computer Vision, Probabilistic Modelling, Reinforcement Learning

MSc. in Mathematics and Applications – Fundamental Mathematics — **Jun. 2019 – Jan. 2024**
Faculty of Science, University of Fianarantsoa, Madagascar — Grade: 14.25/20
Relevant courses: Numerical Analysis, Optimization, Distributions and PDEs, Stochastic Processes

MSc. in Mathematical Sciences – Fundamental Sciences — **Sep. 2022 – Jun. 2023**
African Institute for Mathematical Science (AIMS), Limbé Cameroon — Grade: 3.52/4
Relevant courses: Statistical Inference, Algebraic Geometry, Number Theory, Cryptography

BSc. in Mathematics and Applications – Fundamental Mathematics — **Nov. 2015 – Apr. 2019**
Faculty of Science, University of Fianarantsoa, Madagascar — Grade: 14.83/20
Relevant courses: Algebra, Analysis, Algorithms, Probability, Statistics, Topology

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) — **2023**
Proposed and implemented a genetic algorithm approach to optimize hyperparameters of the U-net architecture to improve brain tumour segmentation accuracy while reducing the number of parameters.

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

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

Certification

Business Management — **Jully 2023**
ESMT Berlin, II Africa, IIP – Limbé, Cameroon
One month of intensive course for Business Management, and soft skills development.

Back-end developer — **Jan. – Aug. 2022**
SAYNA & OIF: DCLIC Program 1.0 – Fianarantsoa, Madagascar
Six months of course for website development: HTML5, CSS3, JavaScript, NodeJs, MySQL.

Prizes/Awards/Scholarships

Fully funded Master's Program in ML and AI: DeepMind Scholarship. — **2024**

Industry Immersion Program (IIP) Scholarship: AIMS; II Africa; ESMT Berlin Germany. — **2023**

Fully Funded Master's Program, AIMS Cameroon: Mastercard Foundation. — **2022**

Fully Funded D-CLIC 1.0 Programs: SAYNA the Organisation International et de la Francophonie (OIF). — **2022**

Personnal Project

Trigram Language Model and BPE — **Jun. 2024**
From-scratch implementation of a trigram language model for language identification and Byte-Pair Encoding for language similarity analysis.

MK-Forum — **2023**
Creation of a forum dedicated to mathematics, using HTML, CSS/Bootstrap, and JS for the front end, and Python/Django and MySQL for the back end. The project includes user account management, posts, comments, and a voting system.

FCryptos 2023

Implementation of various cryptographic systems using Python, like Shift cypher, Vingenere cypher, SPN, RSA, and ENIGMA machine.

Unbeatable TicTacToe 2022

Implementation of the Tic-Tac-Toe game using HTML, CSS and JavaScript. It has an automated computer player that uses a combination of random placement and min-max algorithm to make each move depending on the chosen level.

Pendu Malagasy 2022

Implementation of the hangman game using Tkinter an Python. The list of words is Malagasy by default but can be changed easily.

Bellman Kalaba GUI 2021

Implementation of a graphical interface for graph representation and short-path finder with the Bellman-Kalaba algorithm with Tkinter/Python.

Skills

Programming

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

Library/Framework/Versioning

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

Language

- English
- French
- Malagasy

References

Available upon request