

CEDRIC P.-E. MANOUAN

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WORK EXPERIENCE

Research Associate (AI & Robotics Lab)

Summer-Fall 2023

Carnegie Mellon University Africa

Kigali, Rwanda

- Postgraduate Researcher assisting Prof. David Vernon with the realization of the Situation Model Framework in the CRAM Cognitive Architecture using a Joint Episodic-Procedural-Semantic (JEPS) Associative Memory
- Contributed to the reshaping the project into a Semantically-modulated Joint Episodic-Procedural Working Associative Memory
- Implemented a Behavioral Episode Model adapting the Robotics Transformer architecture.

Graduate Research and Teaching Assistant

Fall 2022 & Spring 2023

Carnegie Mellon University

Remote from Kigali, Rwanda

- Assisting Prof. Bhiksha Raj in [11785 - Introduction to Deep Learning](#):
 - * Prepared and Co-Lead the [CNN homework assignment \(HW2P2\)](#)
 - * Prepared and Co-Lead the Language Modeling homework assignment (HW4P1)
 - * Mentorship of project teams
- Assisting Dr. Moise Busogi in [04800-AB Machine Learning for Earth Observation \(ML4EO\)](#)
 - * Research project in ML4EO supervised by Dr. Moise Busogi:
[Reba: Rethinking Malaria Prevention Through Satellite Earth Observation](#)

Software Engineering/Data science Intern

May 2021 – July 2021

Zindi

Remote from Senegal

- Data science competitions preparation

Developer Intern (BSc. end project)

April 2019 – June 2019

Project of Digital Solutions for the opening up of Rural Areas and e-Agriculture (PSNDEA)

Abidjan, Côte d'Ivoire

- Built an Internet of Things (IoT) system for data acquisition in a cassava field; System design used a Raspberry Pi running tensorflowJS
- Developed a NodeJs REST/CRUD API using MySQL to manage both sensors and farmers inputs
- Developed and deployed a regression model to predict the yield of a given field based on real-time and stored data

EDUCATION

Master of Science | *Information Technology - Applied Machine Learning*

August 2021 – May 2023

Carnegie Mellon University - College of Engineering

Kigali, Rwanda

- [Research Methods in Engineering](#); [Deep Learning/Speech/& Natural Language Processing](#); [Leading and Managing Technology and Innovation](#); [Applied Stochastic Processes](#); [Strategic Use of Digital Information in Enterprises](#); [Recomender Systems](#); [Data Structures and Algorithms](#)

Master of Science (Semester 7) | *Information Systems and Software engineering*

October 2019 – March 2020

Ecole Supérieure Africaine des TIC (ESATIC)

Abidjan, Côte d'Ivoire

- Software Engineering; Graphs and transportation networks; Optimization methods; Markov chains and queueing theory; Distributed programming

Bachelor of Science | *Systems, Computer Networks and Telecommunications*

October 2016 – September 2019

Ecole Supérieure Africaine des TIC (ESATIC)

Abidjan, Côte d'Ivoire

- Linear algebra; Statistics & Probabilities; Operation Research/Linear optimization; Comp Networks; Project Management; Signals processing; Object-Oriented Programming; Web Development; Electronics; ICT Law

SKILLS

Programming - Software/AI Engineering

- Data manipulation and visualization: Pandas, Plotly, Matplotlib, Seaborn
- Machine learning: NumPy, Scikit-learn, Lightgbm, Xgboost
- Deep learning: PyTorch/Lightning, Transformers
- API development: Flask, FastAPI, NodeJS

C++

- Data structures and Algorithms

Bash scripting/task automation

SELECTED PROJECTS

NLP & Robotics - Sequence2Sequence Robotics Transformer 1 | *CMU-Africa* Fall 2023

PyTorch re-implementation of RT-1 for the generation of actions represented as sequences of text tokens composed of the parameters to a CRAM generalized action plan.

Project link: [Behavioral Episode Model \(Seq2Seq RT-1\)](#)

Course projects - Recommender Systems | *CMU-Africa* Fall 2022

- Developed a Content-Based Recommender system for scientific papers as part of my personal project.
[Check project report](#) | [Check source code](#)
- Contributed to the development Session-based, Context-aware Recommender System in an Online Travel Domain.
[Check Project report](#)

Course project - Data Structures and Algorithms (DSA) | *CMU-Africa* Fall 2022

Proposed and implemented a solution to the Array merging problem.

Project report: [Array Merging](#)

Data science competition - Image classification | *ZINDI* Fall 2020

Developed a machine learning model to classify Tuberculosis and Normal X-Ray images for an educational purpose.

Ranking: 7th/104, [Click and look for team DataLabCI on the leaderboard](#)

Project link: [Tuberculosis X-Rays classification](#)

Data science competition - Audio classification | *ZINDI* Fall 2020

Contributed to the development of a machine learning model to classify audio utterances in Luganda and English from Uganda.

Ranking: 7th/255, [Click and look for team wakanda on the leaderboard](#)

Project link: [GIZ-NLP-Agricultural-KeyWord-Spotter](#)

Data science hackathon - Image classification | *ZINDI* Fall 2020

Contributed to the development of a machine learning model to identify whether a person in an image is wearing a face mask or not.

Ranking: 3rd, [Click and look for team TheCIA on the leadernoard](#)

Project link: [Face mask classification](#)

1st prize Hackathon Level 2 (48h) - Image recognition | *ESATIC* May 2018

Contributed to the development of a deep learning model to recognize West African bank notes and coins.

1st prize Hackathon Level 1 (24h) - Cryptography | *ESATIC* May 2017

Contributed to research and writing (in C++) the encryption algorithm behind an executable program.

LEADERSHIP & COMMUNITY INVOLVEMENT

International Conference on Learning Representations

Spring 2023

Volunteered at ICLR 2023, actively contributing to assisting attendees, and ensuring smooth operations.

Acknowledged with a certificate of appreciation available [here](#).

Rwanda, Kigali

Mastercard Foundation Scholars Program

Fall 2021 - Spring 2023

Completed the Marketplace Readiness Leadership Training Programme.

Check my certificate of completion [here](#).

Rwanda, Kigali

Data Science Club

December 2021 – November 2022

Lead and coordinator

Rwanda, Kigali, CMU-Africa

- Participants recruitment for Zindi UMOJAHACK 2022 (enrolled 30+ new users)

Data Science Côte d'Ivoire

2020 – Present

Free tutoring for local students/AI enthusiasts

Côte d'Ivoire, remote

Zindi University ambassador

June 2020 – July 2021

Côte d'Ivoire, remote

- Participating in competitions and hackathons on the platform (username : [_MUFASA_](#))
- Co-lead of the platform development group (improvements and new ideas)
- Participants recruitment for UMOJAHACK 2021 (enrolled 15+ new users)

Co-founder of the Internet of Things and Artificial Intelligence club

2019

ESATIC

Abidjan, Côte d'Ivoire