CEDRIC P.-E. MANOUAN

DEEP LEARNING ENGINEER - AI SPECIALIST

Contact : +225 07 59 20 15 98 | **Email:** cmanouan@alumni.cmu.edu | **Linkedin:** Cédric Pascal-Emmanuel Manouan
Github: dric2018 | **Website:** dric2018.github.io

WORK EXPERIENCE

Consultant - Lead AI Engineer
July 2024 – June 2025

Carnegie Mellon University Africa (CMU-Africa), Wakanda AI, AFRETEC Network   (Remote) Kigali, Rwanda

- Contributed to the drafting of the cross-university research proposal
- R&D: Speech processing, Language modeling, Seamless communication in African languages
- Team Assistant for administrative, monitoring, and coordination tasks

S T Consultant – AI Associate Specialist
April 2024 – *present*

International Finance Corporation (IFC), World Bank Group   Abidjan, Côte d'Ivoire & Remote

- AI and Startup Ecosystem Policy Research (West and Central Africa)
- Evaluation of AI-powered local solutions developed in agtech, healthtech, createch, e-mobility, e-transport, and edtech
- Organized and coordinated stakeholder consultations, workshops, and roundtable discussions engaging diverse stakeholders in collaboration; support with administrative tasks.
- Data Analysis on funding mechanisms, regulatory bareers, and innovation support programs.
- **TTLs**: Mrs. Meritxell Martinez, Ms. Menan Omar

Consultant - Rwanda AI Readiness Assessment (AIRA)
October 2023 – March 2024

Techclick, UNDP & Ministry of ICT and Innovation (MINICT)   Kigali, Rwanda

- Supported the UNDP team with the qualitative assessment of the AI landscape
- Conducted interviews with key informants from government institutions
- Contributed to clarifying the roadmap for the implementation of the National AI Policy

Research Associate (AI & Robotics)
May – December 2023

Carnegie Mellon University Africa (CMU-Africa)   Kigali, Rwanda

- Assisted Prof. David Vernon with the development of a Semantically-modulated Joint Episodic-Procedural (S-JEP) Working Associative Memory
- Proposed and implemented RT1-CRAM, a candidate S-JEP architecture
- Managed and executed compute-intensive jobs on a supercomputer using Slurm for job scheduling and resource allocation

Graduate Research and Teaching Assistant
Fall 2022 & Spring 2023

Carnegie Mellon University (Remote)/CMU-Africa (In-Person)   Pittsburgh, PA/Kigali, Rwanda

- Assisted Prof. Bhiksha Raj in 11785 - Introduction to Deep Learning:
  * Developed automated grading scripts for evaluating ML/DL modules
  * Conducted ablation studies across speech recognition, face classification, and Speech-to-Text using state-of-the-art models
  * Prepared and co-led homework assignments on Image processing and Language Modeling
- Assisted 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

AI Analyst Intern
June 2022 – July 20222

Ivorian Electricity Company (CIE)   Abidjan, Côte d'Ivoire

- Initiated work on EasyBot: (French) Text analysis and classification with NLP techniques
- Data preparation for text messages received from a chat application
- Development of baseline AI models leveraging TF-IDF and BoW

Software Engineering/Data science Intern
April 2021 – July 2021

Zindi   Remote from Senegal

- Supported with the preparation of data science competitions

- Prepared starter notebooks and built baseline ML models

Developer Intern   May 2019 – July 2019
BSc. End-of-Cycle Project - First Class Honors/Mention Très Bien
Project of Digital Solutions for the opening up of Rural Areas and e-Agriculture
(PSNDEA): Thesis (French version only)   Abidjan, Côte d'Ivoire
- Built an Internet of Things (IoT) system for data acquisition in a cassava field;
  System design used a Raspbery 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, CMU-Africa   Kigali, Rwanda

Master of Science (Semester 7) | *Information Systems and Software engineering*   October 2019 – March 2020
Ecole Supérieure Africaine des TIC (ESATIC)   Abidjan, Côte d'Ivoire

Bachelor of Science | *Systems, Computer Networks and Telecommunications*   October 2016 – September 2019
Ecole Supérieure Africaine des TIC (ESATIC)   Abidjan, Côte d'Ivoire

SKILLS

Consulting: AI Policy, AI engineering; project Management.

Programming (Python/C++) & Software/AI Engineering: Data structures and Algorithms; Deep
Learning (PyTorch/Lightning; Transformers); API development (FastAPI/NodeJS), Amazon Web
Services (AWS/EC2), Job scheduling, resource management, and batch script development on HPC
systems (SLURM).

HONORS AND AWARDS

Mastercard Foundation Scholarship   2021 – 2023
To support international students joining graduate programs at Carnegie Mellon University.
Completed the Marketplace Readiness Leadership Training Programme.   Rwanda, Kigali

LEADERSHIP & COMMUNITY INVOLVEMENT

ACCESS Researcher Advisory Committee Member   2023 - 2025
Making suggestions to improve allocations, support, and operations.   Remote

International Conference on Learning Representations (ICLR)   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

Data Science Club   December 2021 – November 2022
President and Coordinator   Rwanda, Kigali, CMU-Africa

Zindi University Ambassador   June 2020 – July 2021
Co-lead of the platform development group (improvements and new ideas)   Côte d'Ivoire, remote

REFERENCES

1. Prof. Bhiksha Raj   Professor, Language Technologies Institute, CMU   bhiksha@cs.cmu.edu
2. Prof. Mark Kryder   Emeritus ECE Professor, CMU   mk6x@andrew.cmu.edu
3. Dr. George Okeyo   Director of Academics, CMU-Africa   gokeyo@andrew.cmu.edu
4. Dr. Moise Busogi   Assitant Teaching Professor, CMU-Africa   mbusogi@andrew.cmu.edu
5. Paul Kenedy   Chief of Staff, Zindi   paul@zindi.africa

FEATURED PROJECTS

Wakanda AI - Advanced Speech Technologies for African Languages (2024-2027) | *CMU-Africa*
Role: Consultant (AI Engineer), Principal Research Associate
$250,000 Research grant to Advance the Inclusive Digital Transformation of Africa,
funded by the Mastercard Foundation through the AFRETEC Network.
- PI: Prof. Bhiksha Raj, Language Technologies Institute, Carnegie Mellon University
- Co-PIs: Dr. Moise Busogi (CMU-Africa), Dr. Abraham Nyete (University of Nairobi)

Artificial Intelligence Policy | *Kigali*   Dec. 2023 - Jan. 2024
Independent analysis of the Rwandan Case:
- A Light Economic Analysis of Rwanda's National AI Policy. Check analysis
- A Strategic Proposal for AI Implementation in Rwanda. Check analysis

NLP & Robotics - Robotics Transformer for CRAM (RT1-CRAM) | *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: S-JEP (RT1-CRAM)

Course projects - Recommender Systems | *CMU-Africa*   Fall 2022
Individual and Collaborative projects
- 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

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, **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, **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 leaderboard**
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.