

Placide Dushimerugaba

Electronics, Telecommunications & AI Engineer

Kigali, Rwanda

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PROFESSIONAL SUMMARY

Motivated and impact-driven Electronics and Telecommunication Engineer with a strong foundation in **Artificial Intelligence, deep learning, embedded systems, and digital communications**. Experienced in designing **low-cost, high-performance engineering solutions**, including AI-driven airspace surveillance, anti-jamming systems, underground mining communication, and IoT innovations. Recognized as a **self-driven learner, problem solver, and community leader**, passionate about developing technologies that strengthen Africa's digital transformation.

CORE COMPETENCIES

- Artificial Intelligence (CNNs, RNNs, RL)
- Embedded Systems & IoT Development
- Digital Signal Processing (DSP) & SDR Systems
- Data Analysis (Python, Pandas, NumPy)
- Microcontroller Programming (C/C++, Arduino, ESP32)
- MATLAB Modeling & Simulation
- Telecommunication Systems & FHSS
- Edge AI Deployment (NVIDIA Jetson AGX Orin)
- Git/GitHub & Version Control

PROFESSIONAL EXPERIENCE

Applied AI Researcher – Center of Excellence

University of Rwanda – College of Science and Technology | Oct 2024 – Present

- Designed an **AI-driven airspace surveillance system** using SDRs and deep-learning models (CNN/RNN/RL) deployed on NVIDIA Jetson AGX Orin.

- Developed an **anti-jamming drone navigation system** using FHSS and advanced digital communication principles.
- Conducted research on intelligent security systems for critical African infrastructures.

IoT & Embedded Systems Training Coordinator

Giants Electronics Group, Kigali | Jun 2023 – Present

- Directed and mentored engineering teams across **8+ IoT and embedded projects**.
- Trained students in microcontrollers, circuit design, IoT communication, and system debugging.
- Strengthened the university's technical innovation culture through hands-on leadership.

AI-Enhanced Precision Farming (Internship)

IoT African Centre of Excellence, Kigali | Jun 2024 – Sep 2024

- Applied AI and IoT to optimize agricultural processes and crop monitoring.
- Worked on sensor integration, model deployment, and real-time agricultural data analysis.

Electrical & Electronics Projects Coordinator

UNIPOD Rwanda, Kigali | Apr 2024 – Sep 2024

- Coordinated cross-functional teams to develop electronics and AI-powered systems.
- Designed and analyzed underground communication prototypes using DSP and AI-based noise filtering.

KEY PROJECTS & ACHIEVEMENTS

- **AI-Driven Airspace Surveillance System:** Created a low-cost drone and anomaly detection system using SDRs and deep learning, offering an affordable alternative to expensive radar systems.
- **Anti-Jamming Navigation System:** Engineered FHSS-based drone navigation resistant to RF interference for critical infrastructure protection.
- **Underground Mining Communication:** Developed acoustic/low-frequency communication using DSP filtering, C/C++ firmware, and Python noise-reduction models.
- **Smart Fire Detection System:** Built a real-time fire/smoke detection solution using CNNs, OpenCV, and Raspberry Pi.

- **Telemedicine Queue Management App:** Designed a Java application that reduced patient waiting time and improved hospital flow.

EDUCATION

B.Sc. (Hons.) Electronics and Telecommunication Engineering

University of Rwanda – College of Science and Technology | 2022 – Present

- Extracurricular learning: *Introduction to Statistical Learning, Dive into Deep Learning.*
- I am an active member of the engineering innovation labs.

High School Diploma – PCM (Physics, Chemistry, Mathematics)

Petit Séminaire Saint Léon Kabgayi | 2014 – 2021

CERTIFICATIONS

- **Bridge Program Certificate** – Carnegie Mellon University Africa (2025)
- **Databases for Developers: Foundations** – Oracle Dev Gym (2025)
- **Machine Learning, Data Structures & Algorithms, Git Training** – Simplilearn (2025)

LEADERSHIP & COMMUNITY ENGAGEMENT

- Chief & Control System Specialist – **Tuombe Hydropower Generation Project** (2024 – Present)
- Chief – **Giants Electronics Group**, UR-CST (2024 – Present)
- Mentor & Project Lead for multiple student engineering initiatives.

TECHNICAL SKILLS

- **Programming:** Python, Java, C/C++, MATLAB, SQL
- **AI Tools:** NumPy, Pandas, Matplotlib, OpenCV, TensorFlow/PyTorch (experience)
- **IoT/Embedded:** Arduino, ESP32, Raspberry Pi, Blynk, AWS IoT, Google Cloud IoT
- **Hardware:** SDRs, sensor integration, circuit design, NVIDIA Jetson
- **Other:** Git/GitHub, Linux, communication protocols

PERSONAL VALUES

- Integrity & responsibility
- Innovation with purpose
- Resilience & continuous learning

MISSION

To engineer **affordable, intelligent, and scalable AI systems** that strengthen Africa's security, safety, and digital future.

VISION

To help build a **safer, smarter, and more self-reliant Africa** through advanced AI and embedded technologies.