

# BERTIN NDAHAYO SINGIZWA

## FULL STACK ENGINEER

+(250) 786 949 188 ♦ [bndahayo@andrew.cmu.edu](mailto:bndahayo@andrew.cmu.edu) ♦ Kigali, Rwanda

[Linkedin](#) ♦ [Github](#) ♦ [Portfolio](#)

## PROFILE

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MSc Information Technology student at **Carnegie Mellon University Africa** specializing in Software Engineering and Applied Machine Learning. Published **IEEE researcher** with hands on experience building and deploying scalable, serverless full stack systems using **AWS, Node.js, and React**. Combines strong foundations in **algorithmic analysis** and **system architecture** with practical expertise in **machine learning** and **data analytics** to deliver high impact solutions in fintech, edutech, and social-impact environments.

## EDUCATION

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**Msc in Information Technology** , Carnegie Mellon University Expected 2026

Relevant Coursework: Cloud Infrastructure and Computing, Deep Learning, Data Inference and Applied Machine Learning, Software Architecture and Design, Machine Learning for EO and Embedded Systems.

**Bachelor of Software Engineering**, Adventist University of Central Africa - AUCA 2020 - 2024

Relevant Coursework: Data Structure and Algorithm, Java, Software Testing, Linux, Database (PL/SQL), Big Data Analytics and Software Project Management.

Grade: Grand Distiction

## WORK EXPERIENCE

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**Software Engineer - Remote/Intern** June 2025 – November 2025  
Angaza Center (NGO) *USA, Lincolnshire*

- Developed a Peer-to-Peer (P2P) Training Scheduling System using Node.js (NestJS) and AWS serverless technologies (Lambda, DynamoDB, Cognito) to streamline coordination between trainers and member schools. Designed an optimized DynamoDB data model and serverless scheduling engine to automate availability matching and session validation, achieving sub-200ms latency under concurrent requests.

**Geospatial Data Annotator (Participant)** May 2025  
Alliance of Bioversity International (CIAT) (in collaboration with Minagri, and RSA) *Kigali, Rwanda*

- Contributed to a national Crop Type Mapping Mapathon by performing satellite image interpretation and geospatial data annotation using Collect Earth Online, supporting AI-driven agricultural mapping and model training.

**Software Engineer (Intern)** May 2025 - Aug 2025  
MININFRA – Kubaka Building Permit Management Platform *Kigali, Rwanda*

- Worked with the CDO team as a full-stack developer on the Kubaka Building Permit Management Platform, streamlining the digital submission, review, and approval of construction permits, and collaborating with cross-functional teams to improve transparency, efficiency, and reduce manual paperwork.

**Software Developer** Aug 2023 - Aug 2024  
Huza HR *Kigali, Rwanda*

- Engineered the credit-risk assessment module integrating TransUnion Africa's API, enabling instant loan eligibility checks for 5,000+ users. Optimized PostgreSQL queries to reduce report generation time by 40
- Collaborated with the team to develop and enhance features for the company's HR SaaS platform, directly working on a 1:1 meeting and 360-degree feedback feature within Huza HR's performance module, streamlining performance reviews and driving company growth and revenue.

## Full Stack Developer

Andela - Andela Technical Leadership Program

Jan 2023 - Aug 2023  
*Kigali, Rwanda (Remote)*

- Developed a full-stack e-commerce application using the PERN stack (PostgreSQL, Express, React, Node), gaining end-to-end SDLC experience while strengthening teamwork, communication, and problem-solving skills.

## Web Developer

Association Rwandaise pour la Défense des Droits de l'Homme (ARDHO)

June 2021 – June 2023  
*Kigali, Rwanda*

- Worked part-time as a web developer at ARDHO, building and maintaining web applications for the company's internal operations, producing reports, and improving access to internal information.

## PUBLICATIONS & KEY PROJECTS

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### Mapping Socioeconomic Air Quality Disparities in Rwanda Using Sentinel-5P TROPOMI Data in Google Earth Engine

Co-authored a research paper analyzing air quality disparities across Rwanda's 30 districts using satellite imagery and census data. Designed data ingestion pipeline, implemented statistical models (correlation, regression, and time series analysis), and visualized environmental impact for actionable insights on urban pollution. (*Published in IEEE Xplore, 2025*). ([View Publication on IEEE](#))

**GeoSolar Vision - [WIP]** Developed a GIS-based solar energy potential assessment platform for Kigali, Rwanda, using Google Earth Engine (GEE), satellite imagery and deep learning models. The project aims to identify optimal solar energy locations, support grid stabilization, and map mini smart grid potential in Kigali.

**RISA Keycloak SSO Solution** As part of my Master's practicum, I worked in a team to design and implement a national Single Sign-On (SSO) solution using Keycloak for RISA. The system provides secure authentication, fine grained role-based access control, and seamless integration across multiple applications, enhancing security, centralizing user management, and ensuring compliance for government wide systems.

**Guraride MIS** Developed a web-based Management Information System (MIS) for GuraRide using Spring Boot and Thyme-leaf, enabling efficient bike rental management in Kigali City. Improved operational tracking and rental efficiency for the company. ([View on GitHub](#))

**COGITO E-Commerce** Collaborated with a team to build a fully functional e-commerce platform using PostgreSQL, Express, React, Node, Typescript, and Docker. Enhanced technical expertise in full-stack development, UI/UX design with Figma, and back-end and front-end engineering. ([View here](#))

**E-Ranga** Designed and developed a lost-and-found web application using ASP.NET Core MVC (Dot Net) to help users post and retrieve lost documents efficiently. ([View on GitHub](#))

**Algorithmic Problem Solving:** Actively solving complex algorithmic challenges on LeetCode/Codeforces focused on Dynamic Programming and Graph Theory.

## SKILLS

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**Programming Languages / Skills:** JavaScript, TypeScript, Python, Java, Bash, SQL, C/C++, Data Annotation & Analysis, ML Training. MERN, PERN, MEAN.

**Full Stack Development:** Node.js, Nest.js, React.js, React Native, Spring Boot, Express.js, HTML, CSS, AWS Serverless Architecture, RESTful APIs and SOAP

**DevOps / DB / Tools:** Git, GitHub, GitLab, CI/CD, AWS, Openstack, Azure, Docker, Postman, PostgreSQL, MongoDB, MySQL, Linux, Windows, UNIX and Figma.

**Soft Skills:** Agile, Scrum, Project Management, Communication, Leadership, Time Management, Problem Solving, Teamwork, Creativity, Adaptability, Attention to Details