BRANDONE FONYA

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EDUCATION

Carnegie Mellon University **Aug 2024 – Dec 2025**
M.Sc. in Engineering Artificial Intelligence
CGPA: 3.71/4 – Top 1% class rank

ICT University **Oct 2022 – May 2024**
B.Sc. in Software Engineering (Honors)
CGPA: 3.65/4 – Ranked 1st out of 70 students in the Computer Engineering Department.

Siantou University Institute **Sep 2020 – Jul 2022**
Higher National Diploma in Software Engineering
Grade: Distinction – Ranked 3rd out of 536 students in Cameroon (2022 National Exams).

RESEARCH EXPERIENCE

Research Assistant **Sep 2025 – Present**
The Upanzi Network, Digital Public Infrastructure Research Lab, Rwanda
Developing a generative precision oncology pipeline for Africa. Integrating multi-omics, clinical, and environmental data to generate high-fidelity synthetic datasets using VAEs, Bayesian networks, and diffusion models.

Summer Research Intern **Jul 2025 – Sep 2025**
Autonomous Intelligence Lab, Westlake University, Hangzhou, China
Developed MedBLIPNet3D, a text-prompted 3D prostate MRI segmentation framework using MedicalNet ResNet-18 and PubMedBERT, utilizing cross-attention fusion (MedQFormer) for prompt-conditioned segmentation.

Graduate Research Assistant **Jun 2025 – Dec 2025**
CMU & Makerere University CHS (Joint Research), Rwanda & Uganda
Conducted research on low-cost tuberculosis screening using deep learning on solicited cough sounds for early TB detection in low resource settings.

TEACHING

Graduate Teaching Assistant (18-661 Introduction to Machine Learning) **Jan 2026 – Present**
Carnegie Mellon University
Leading recitations and weekly office hours for graduate students. Assisting with the mathematical foundations of ML, grading exams, and designing assignment rubrics.

Graduate Teaching Assistant (18-662 Principles and Eng. Appl. of AI) **Jan 2026 – Present**
Carnegie Mellon University
Leading recitations and weekly office hours for graduate students. Assisting students in building learning, reasoning and intelligent agents, grading exams, and designing assignment rubrics.

Graduate Teaching Assistant (18-751 Applied Stochastic Processes) **Aug 2025 – Dec 2025**
Carnegie Mellon University
Supported students in mastering core stochastic concepts. Responsibilities included grading, leading review sessions, and facilitating technical discussions.

PROFESSIONAL EXPERIENCE

Graduate IT Associate – Full Stack Developer **Aug 2024 – May 2025**

Carnegie Mellon University

Architected and scaled the CMU-Africa job board using the MERN stack. Migrated legacy Java systems to Node/Express.js and implemented data visualization dashboards for administrative tracking.

Automation Systems Engineer Intern **Oct 2023 – Feb 2024**

Inter African ORION Insurance and Reinsurance Ltd.

Designed and implemented desktop software in Visual Basic and python ontop company's systems, streamlined insurance data workflow, optimized document retrieval, and embedded data visualization for insight-driven operations.

PUBLICATIONS

Belekollie, T., **Fonya, B.**, Mugume, E., Tucker, C.
"Robust Non-Invasive Tuberculosis Triage Using Audio Embeddings from Solicitated Cough Sounds."
IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) Workshops, 2026. **Oral Presentation**.

Fonya, B., Tagha, N., Rugumbira, M., Busah, I., Aiken, E.
"Optimizing healthcare facility distribution in Rwanda: a data-driven approach."
European Journal of Public Health, Vol 35, Issue 4, 2025. IF: 4. doi.org/10.1093/eurpub/ckaf161.1554

SELECTED PROJECTS

CAM-FD: Improving Adversarial Robustness without Sacrificing Generalization *MSc Research Capstone*

Developed a Curriculum Adversarial Mixup framework with Feature Denoising. Integrated TRADES KL divergence and adversarial weight perturbation to improve domain generalization in vision.

Zero-Shot Neural Priors for EEG Decoding *Fall 2025*

Designed a framework to learn subject-invariant neural priors from large scale HBN data. Achieved robust zero-shot task transfer for EEG-based biomarkers. (In consideration for MIDL 2026).

Robust Non-Invasive Tuberculosis Triage Using Audio Embeddings from Solicitated Cough Sounds *Summer 2025*

A robust Tuberculosis triage pipeline to diagnose TB positive coughs from solicitated cough sounds only, in low resource settings with high prediction confidence.

SKILLS & CERTIFICATIONS

Technologies	Python, C/C++, JavaScript, Java, Git, MATLAB, LaTeX, Wandb, SQL
Frameworks	PyTorch, TensorFlow, NumPy, Flask, Scikit-learn, GeoPandas
Certifications	AWS Cloud Foundations, Google Project Management
Languages	English (Native), French (Advanced)

ACHIEVEMENTS & INTERESTS

- **Achievements:** AMLD Africa 2026 Reviewer; B.Sc. Department Valedictorian; Cameroon PremierDev Tech Award Winner (2023); ICT University Fellowship of Excellence; Member, IEEE.
- **Interests:** Deep Learning, Computer Vision, Medical Imaging, Generative AI.