

BALBINO TCHOUTZINE

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RESEARCH PROFILE

Final-year Computer Engineering student at ENSPY (University of Yaoundé I). Working at the intersection of **machine learning research** and engineering: model foundations and learning dynamics, **alignment via fine-tuning**, multimodal clinical prediction, computer vision, geospatial ML, and competitive applied ML.

Seeking: research internship / research visit in a strong international AI lab (e.g. Mila, ELLIS network labs, G-Research research track, university ML groups).

Current focus: leakage-resistant multimodal prediction of MCI-to-dementia conversion (2–5 year horizon) across NACC, ADNI, and Framingham.

RESEARCH INTERESTS

- Multimodal prediction of MCI-to-dementia conversion (clinical, imaging, biomarkers; external validation)
- Model foundations and learning dynamics (e.g. grokking, robustness under label noise)
- Alignment and fine-tuning of foundation models
- Computer vision and multimodal learning
- Geospatial ML and foundation models for Earth observation
- Competitive / large-scale applied machine learning

EDUCATION

Engineer's Degree, Computer Science and Engineering (in progress) Sep 2024 – Jun 2027
ENSPY – National Advanced School of Engineering of Yaoundé, University of Yaoundé I

ING-4 completed (2025/2026), GPA **3.02/4.0**; incoming final year (ING-5). Expected graduation: June 2027.

Relevant coursework: Machine Learning I, Data Analysis, Foundations of AI, Business Intelligence, Multi-Agent & Expert Systems, Probability & Statistics, Algorithms, Databases, Numerical Analysis, Operations Research, Computer Security.

Integrated Preparatory Programme (Mathematics, Physics, Computer Science) Sep 2022 – Jun 2024

ENSPY – University of Yaoundé I

Intensive foundation in mathematics, physics, algorithms, C, and Python.

Baccalauréat C (Mathematics, Physics, Computer Science) Jun 2022

Lycée Classique de Bangangté

RESEARCH EXPERIENCE

Research Intern – Multimodal MCI-to-Dementia Prediction Jul 2026 – Present

Collaboration supervised by Norbert Tsopze; with Pr Melatagia

- Topic: multimodal prediction of **MCI-to-dementia conversion** over a **2–5 year** horizon across **NACC**, **ADNI**, and **Framingham**.
- Goal: build **leakage-resistant**, **externally validated** risk models and identify a minimal useful data package.
- Methods: logistic / Cox models, random forests / XGBoost, calibration, decision-curve analysis, participant-level splits, external validation, SHAP, subgroup fairness checks.
- Data modalities: cognitive / clinical assessments, imaging, genetic and biomarker measures (cohort-dependent).

SELECTED RESEARCH & TECHNICAL PROJECTS

- **Grokking under label noise (ξ)**. Study of grokking dynamics in the presence of label noise; exploratory research notes and experiments ([GitHub](#): Grokk / T_Grokk). Theme: learning dynamics and robustness.
- **Gardienne** (2nd place, Girls in STEAM hackathon, 2026). Hybrid Camfranglais/Pidgin lexicon + on-device toxic-bert for cyberharassment detection; SHA-256/HMAC sealed evidence; legal complaint dossier; Telegram anti-deepfake bot. Stack: Next.js, TypeScript, transformers.js, Groq, Hugging Face. [GitHub](#) · [blog](#)
- **ZinEdge**. Offline / on-device AI for rural health and agriculture (Gemma 3n + LiteRT). Edge inference under connectivity constraints. github.com/zoom-BT/ZinEdge
- **Low-resource ASR + sentiment API**. Adapter-based fine-tuning for speech recognition; Django + PyTorch + XLM-RoBERTa sentiment classifier. [ASR](#) · [sentiment-api](#)
- **Sign-language glove (accessibility prototype)**. Sensor-equipped gloves (gyroscope, accelerometer, flex sensors) with an AI pipeline mapping gestures to letters / words / phrases and speech synthesis.

COMPETITIONS & HONOURS

- **Nominee**, Africa's 100 Rising AI Developers (Society for AI, 2026).
- **DataTour 2025** (Data Afrique Hub): **2nd place nationally** (Cameroon), solo team **CAMP**; credit-default prediction on large-scale data (~17M rows); Top 3 national pre-finalist.
- **Zindi** competitor ([Zoom387](#)): **19+** challenges. Highlights: **81/894** Financial Health (data.org); **51/564** Ghana Indigenous Intel; **59/153** Amini GeoFM; **98/203** UNIDO × AfricaRice; **27/68** Yaoundé Mobility; **36/84** Brazzaville Precipitation.
- **Girls in STEAM** hackathon (2026): **2nd place** with Gardienne.
- **La Nuit de l'Info** (Grenoble): winning team on 2 challenges (Bad UI, Horizon Connecté) among 200+ participants.
- DCA × DataCamp scholarship (2026); Deep Learning Indaba 2025 (virtual participation).

LEADERSHIP, TEACHING & SPEAKING

Leader, AI Cell ENSPY 2025 – Present
Student AI community founded by James Assiene (Research Scientist, Google DeepMind)

- Lead programmes for a WhatsApp community of **1,200+** members (ML News, debates, practicals, applied AI talks).
- Organised **Computer Vision for Smart Agriculture** (21 Mar 2026): UNIDO × AfricaRice deep-learning workshop; ~**82** attendees ([Luma](#)).

Zindi Ambassador & Speaker 2025 – Present
Zindi – Africa's largest data science competition community

- Drive competitive ML participation at ENSPY (challenges, hackathons, Club GI partnerships).
- Speaker in **Benin** and **Chad** on Zindi and competition best practices.

Speaker, Cursor community 2025 – Present
AI engineering best practices (incl. Skills / agent workflows)

President, APOREN 2024/2025
Association of Polytechnic students from the Ndé department; 200+ members
Onboarding, cultural cohesion, remedial tutoring in maths/physics, support for graduating seniors.
Tutor (Mathematics, Physics, Computer Science) 2022 – 2024
Lcorp / Lambda Academy

TECHNICAL SKILLS

Languages: Python, C, Java, SQL, JavaScript/TypeScript

ML / DL: PyTorch, TensorFlow, scikit-learn, XGBoost, computer vision, NLP (XLM-RoBERTa, adapters), RAG, edge LLMs (Gemma / LiteRT), survival / risk models (Cox)

Data & tools: Pandas, Jupyter, Power BI, DAX, Git, Django, Next.js, Hugging Face, Vercel

Research practice: external validation, calibration, leakage control, interpretability (SHAP), competition ML workflows

CERTIFICATIONS

Machine Learning Specialization (Coursera / Stanford & DeepLearning.AI, Andrew Ng) – Aug 2026
· Deep Learning Specialization (DeepLearning.AI) – Aug 2024 · IBM SkillsBuild × Zindi AI Fundamentals – Jul 2025 · Kaggle ML series – Sep 2024 · Power BI & DAX (DataCoach.ca) · GenAI & AI Ethics (Microsoft / LinkedIn) – 2024

LANGUAGES

French (native) · English (professional working) · Medumba (native)

Updated August 2026. Full portfolio and writing: zoxtb.is-a.dev