Lewis Tem Bueh

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AI for Health, Education and Sustainable Development

Education

University of Buea **Buea, Cameroon**
Masters of Science. Data Science *Expected July 2026*
Coursework: Machine Learning, Big Data Processing, Data Mining, Information Visualization, Advanced Object-Oriented Programming, Database Management, Research Methodology and Scientific Writing

University of Buea **Buea, Cameroon**
Bachelors of Engineering. Software Engineering *July 2024*
Coursework: Data Structures and Algorithms, Machine Learning and AI, Database Management, Operating Systems

Publications

2025: Sibomana, O., Saka, S.A., Uwizeyimana, M.G.,Kihunyu, A.W., Obianke, A., Damilare, S.O, **Tem Bueh, L.**, et al. Artificial Intelligence–Assisted Endoscopy in Diagnosis of Gastrointestinal Tumors: A Review of Systematic Reviews and Meta-Analyses. *Gastro Hep Advances*, doi:10.1016/j.gastha.2025.100754

2025: Sibomana, O., Bukuru, J., Saka, S.A., Uwizeyimana, M.G.,Kihunyu, A.W., Obianke, A., Damilare, S.O., **Tem Bueh, L.**, et al. Routine malaria vaccination in Africa: A step towards eradication? *Malaria Journal*. doi:10.1186/s12936-024-05235-z

2024: Hanson, G., Adams, J., Kepgang, D.I.B., Zondagh, L.S., **Tem Bueh, L.**, et al. Machine learning and molecular docking prediction of potential inhibitors against dengue virus. *Frontiers in Chemistry*, 12:1510029. doi:10.3389/fchem.2024.1510029

Research Experience

African Society for Bioinformatics and Computational Biology (ASBCB) **Remote**
Codeathon Research Fellow, Capetown South Africa *July 2025 – Present*
Project: BrainRoute - Blood-Brain Barrier Permeability Prediction
- Developing machine learning models to predict BBB permeability of small molecules from molecular structures, achieving **93% accuracy** with **F1 of 0.93** and **AUC-ROC of 0.98** on best model.
- Implemented and optimized K-Nearest Neighbors and XGBoost classifiers for deployment in a web application enabling real-time molecular property prediction
- Building a curated database of predicted molecules with permeability scores to facilitate public access for drug discovery researchers
- Collaborating with multidisciplinary team to develop user-friendly interface for molecular structure input and prediction visualization

African Society for Bioinformatics and Computational Biology (ASBCB) **Remote**
Codeathon Research Fellow, Capetown South Africa *July 2024 – Oct 2024*
Project: Novel Dengue Virus Inhibitor Discovery
- Developed machine learning classification model achieving **94% accuracy** (**F1: 0.85, Recall: 0.79**) for predicting bioactive compounds against dengue virus, reducing computational docking time by screening 21,250 compounds
- Collaborated with team to conduct molecular docking studies using AutoDock Vina and molecular dynamics simulations (100ns) with GROMACS to validate four lead compounds with binding affinities ranging from -8.0 to -8.6 kcal/mol
- Performed comprehensive ADMET profiling and MMPBSA calculations to assess drug-likeness and binding energetics of predicted inhibitors targeting NS2B/NS3 protease.
- **Co-authored publication** in *Frontiers in Chemistry* (**Impact Factor: 5.5**) presenting integrative computational drug discovery approach combining ML, molecular docking, and MD simulations.
- Collaborated with international team through ASBCB Omics Codeathon program

Terminativ Ltd **Remote**

Machine Learning Engineer Intern, UK. *July 2023 – Feb 2024*

- Engineered automated web crawling pipeline using Python (Selenium, Beautiful Soup) that collected and preprocessed data from over 3,000,000 webpages for NLP applications
- Fine-tuned large language model on curated dataset to provide career guidance and scholarship information, improving response relevance and accuracy by 20% for education-focused queries
- Implemented data validation and quality control measures to ensure training data integrity across diverse web sources

Technical Projects

Python, Ollama

RAG-Based Chatbot System *Aug 2025*

- Built retrieval-augmented generation (RAG) system for question-answering over custom knowledge bases using local AI models, demonstrating advanced prompt engineering and vector database integration
- Implemented document embedding pipeline and semantic search functionality to enable context-aware responses from domain-specific corpora

Python, OpenRouter API, YouTube Transcript API

AI-Powered YouTube Video Summarizer *Aug 2025*

- Developed automated tool that extracts video transcripts and generates concise summaries using LLMs, reducing content review time by enabling rapid information extraction from educational videos
- Integrated multi-model API support for flexible summarization approaches and output formatting

Python, Scikit-learn, Pandas

Customer Purchase Prediction Models *Feb 2025*

- Trained binary classification models achieving 91% accuracy in predicting customer purchase behavior based on demographic and behavioral features
- Performed feature engineering and model comparison across multiple algorithms (Logistic Regression, Random Forest, SVM) to identify optimal predictive approach
- Led model development as part of AI Maniac community collaborative project, mentoring junior members in ML workflows

React Native, JavaScript, Firebase

Ticketz: Smart Ticketing System *June – July 2024*

- Designed and developed mobile application utilizing QR code technology for contactless bus ticket purchase and validation, improving transaction efficiency and security
- Implemented Firebase backend for real-time ticket validation and transaction management, eliminating queue wait times for passengers

Python, TensorFlow, CNN

Facial Recognition System *May – June 2023*

- Collaborated with team to develop convolutional neural network achieving 98% accuracy in facial recognition for classroom attendance tracking
- Implemented data augmentation techniques and transfer learning to optimize model performance with limited training data

Python, TensorFlow, RNN

English-French Translation Model *May – June 2023*

- Built sequence-to-sequence recurrent neural network for bidirectional language translation between English and French
- Implemented attention mechanisms to improve translation quality on longer sequences

React, Django, PostgreSQL

CheckIT: Market Management Platform *April – June 2022*

- Developed full-stack web application with RESTful APIs connecting buyers and sellers, addressing market inefficiencies in product availability and demand matching
- Designed database schema and implemented CRUD operations for user management, product listings, and transaction processing

Technical Skills

Programming Languages: Python (+ Django, Flask), C/C++, Java, JavaScript, ReactJS, React-Native
Machine Learning/AI: NumPy, Pandas, Matplotlib, Seaborn,Scikit-learn, PyTorch, TensorFlow, Keras, OpenCV, XGBoost, LightGBM, Optuna, SHAP
Bioinformatics & Cheminformatics: AutoDock Vina, GROMACS, PaDEL, RDKit, PyMOL, LigPlot+, SwissADME
Data Science: Feature Engineering, Dimensionality Reduction, Cross-Validation, Hyperparameter Tuning, Model Interpretability
Databases: MySQL, PostgreSQL, Firebase
Development Tools: Git, GitHub, VS Code, Jupyter Notebook, Jira, Docker
Operating Systems: Linux, Windows
Languages: Native in English, Fluent in French

Leadership & Community Engagement

Data Science Hub **University of Buea**
Founder & Lead *Nov 2025 – Present*

- Founded university AI/Data-Science community engaging 100+ students in collaborative learning and project development
- Organized and facilitated 3+ workshops and information sessions on machine learning fundamentals, model development, and career pathways in AI
- Mentored students transitioning into ML/AI through collaborative projects including purchase prediction and car price prediction models
- Created supportive environment for students to work on ML projects outside formal curriculum requirements

Pan-African Center for AI-ETHICS (PACFAIE)
AI-ETHICS Summer School Volunteer *Aug 2025*

- Created Content for PACFAIE socials used in community engagement
- Designed Spotlight materials for both speakers and paprticipants

Model Initiative of Africa (MIA)
Mathematics & Physics Instructor *Jan 2021 – July 2023*

- Taught high school students preparing for competitive entrance examinations into Engineering and Medical programs
- Developed teaching materials and practice problems to strengthen students' problem-solving skills in STEM subjects

Honors & Awards

2024 & 2025: **Two-time Presidential Grant Award for Academic Excellence** – Awarded to top 20% of students

2020: **MIA National Engineering Olympiad - 1st Place** – Nationally ranked first among 300+ participants

Machine Learning Certificates – Completed Google beginner and intermediate ML tracks

Professional Memberships

Black in AI • ***Cohere Labs*** • ***RISE-MICCAI*** • ***STEM for Development***