

MANUEL BOBIE AMANKWATIA

Senior AI & Data Engineer · AI Researcher · PMP® · Founder

Kumasi, Ghana | +233 548 066 655 | manuelamankwatia@gmail.com | Portfolio | GitHub | Google Scholar | LinkedIn

RESEARCH INTERESTS

My research challenges a central assumption in contemporary AI: that higher benchmark accuracy reflects genuine progress toward reliable, deployable systems. I work across three interconnected strands. At the model level, I study reliability and representation theory in neural NLP, formalising the Golden Draw Effect to show that peak performance under hyperparameter optimisation is frequently a statistical artifact rather than evidence of stable model behaviour, and using functional decomposition to explain how hybrid representations govern robustness under perturbation. At the system level, I design and benchmark data-centric architectures under constrained conditions, low-resource training, severe class imbalance, and distributional shift, demonstrating through the Hilbot-FI benchmark that well-designed hybrid models outperform transformer-based SOTA when data scale is limited. At the sociotechnical level, I apply configurational causal inference (fsQCA, NCA) and explainable ML (SHAP) to model AI adoption in emerging-market institutional environments, producing both predictive theory and deployable decision-support artefacts grounded in empirical data from Ghana. The through-line is a conviction that robustness, reproducibility, and contextual deployability are not secondary concerns, they are the primary design criteria for AI systems that matter beyond the benchmark.

PROFESSIONAL PROFILE

Senior AI & Data Engineer with 7+ years designing and deploying enterprise-grade ML systems across Africa, North America, and global remote markets. Founder of **DataMastaros Limited**. Certified **Project Management Professional (PMP®, PMI, valid to 2029)**. Author of **8 research manuscripts (1 published, 7 under peer review)** spanning NLP, hybrid neural architectures, explainable AI, and AI adoption in emerging markets. Presented original research at Deep Learning Indaba (Dakar 2024; 2026 upcoming), IndabaX Ghana (2024, 2025), EMNLP 2024, and SPIE. Active mentor, peer reviewer (EMNLP MRL 2025, SACAIR 2024), and community leader in the African AI ecosystem. Member of **Masakhane, Black in AI, PMI Ghana, Ghana NLP, GHIE, and ROYA**.

CORE COMPETENCIES

NLP & Conversational AI	Hybrid Deep Learning (CNN/LSTM/Transformer)	Explainable AI (XAI & SHAP)
AI/ML System Design & Deployment	Data Pipeline Engineering & ETL	Forecasting & Predictive Modelling
Business Intelligence & Dashboarding	IoT & Sensor Data Analytics	Project Management (PMP®)

PROFESSIONAL EXPERIENCE

Founder & Chief AI Officer · DataMastaros Limited
Kumasi, Ghana

Jun 2024 – Present

- Founded and scaled an AI & data consulting firm delivering ML solutions, NLP products, and advisory services across real estate, finance, and energy sectors in Ghana.
- Architected proprietary AI products integrating predictive analytics, NLP pipelines, and process automation; led cross-functional engineering teams from ideation through production.

- ▶ Secured **\$25,000 USD AWS Activate grant** and **\$2,000 USD Cohere AI research credits**, demonstrating ability to attract institutional funding for AI R&D.
- ▶ Established strategic industry partnerships to co-develop data-driven transformation initiatives aligned with client growth objectives.

Artificial Intelligence Engineer · Turing (Remote)

Feb 2023 – Present

United States

- ▶ Engineered scalable AI systems through cross-functional collaboration, reducing project delivery timelines by 25% and improving workflow efficiency across client engagements.
- ▶ Maintained 99% data integrity across production ML pipelines; significantly reduced downstream analysis errors through rigorous validation workflows.
- ▶ Integrated cutting-edge AI research into client production systems, contributing to a 20% efficiency gain and 15% revenue uplift for client organisations.
- ▶ 3+ years of reliable, high-output remote delivery across distributed international teams, directly relevant to global remote roles.

Data Scientist / Senior Programmer · Softmasters Company Ltd.

Jun 2018 – Present

Accra, Ghana (Part-Time)

- ▶ Designed responsive data visualisation systems surfacing critical business insights, driving a 30% increase in stakeholder engagement.
- ▶ Built scalable database architectures improving data retrieval speeds by 40% and supporting a 25% increase in concurrent user load.
- ▶ Engineered ML algorithms improving predictive accuracy by 35%; mentored 15+ junior data scientists, accelerating team delivery by 50%.

Teaching Assistant & Lab Instructor · Dept. of Computer

2022 – 2023

Engineering, KNUST

Kumasi, Ghana

- ▶ Delivered lab instruction and tutorials for undergraduate Computer Engineering courses, supporting AI and programming modules.
- ▶ Assisted in course preparation, grading, and student mentorship alongside faculty.

Electronics / Robotics / AI Engineer · Innovation Lab, KNUST

Aug 2021 – Jan 2023

Kumasi, Ghana (Part-Time)

- ▶ Spearheaded robotics and applied AI projects bridging academic research with engineering outcomes.
- ▶ Mentored 500+ junior engineers and tech students, materially improving delivery capability and technical depth across cohorts.

IT & AI Programming Consultant · XStart Biz

2023 – 2024

Ghana

- ▶ Delivered strategic AI and programming consultancy on system architecture, data infrastructure, and technology adoption for early-stage businesses.

Engineering Intern · Ghana Grid Company (GRIDCO)

Summers 2014 – 2016

- ▶ Three rotations across Telecommunications, Electrical & Maintenance Engineering, direct exposure to Ghana's national power grid infrastructure.

RESEARCH & PUBLICATIONS

PUBLISHED & ACCEPTED

- 1 Amankwatia, M.B. et al. (2025). In-situ remote diagnostics on Theobroma cacao plants with a 3D-printed fluorescence lidar.
SPIE Digital Library, Proc. Vol. 14105 · DOI: 10.1117/12.3100145 · Presented at SPIE Conference, Strasbourg
- 2 Amankwatia, M.B. et al. (2024). Hilbot: A Deep Learning and NLP-based Framework for Financial Analysis and Intent Classification to Improve Decision-Making.
Accepted — NLP4Science Workshop, EMNLP 2024 · Also presented at Deep Learning Indaba, Dakar 2024

UNDER PEER REVIEW

- 3 Amankwatia, M.B. et al. Understanding Representation Interaction in Intent Classification: Functional Decomposition in Dual-Input CNNs.
Target: *Journal of Engineering Reports*
- 4 Amankwatia, M.B. et al. The Golden Draw Effect: Instability of Peak Performance under Hyperparameter Optimization.
Target: *SN Computer Science*
- 5 Amankwatia, M.B. et al. When Hybrid Models Outperform SOTA: A Data-Centric Benchmark of Financial Intent Classification under Low-Resource and Imbalanced Conditions.
Target: *International Journal of Intelligent Systems* · Accepted for presentation: Deep Learning Indaba 2026
- 6 Amankwatia, M.B. et al. Strategic Enabler Configurations, Necessary Conditions, and Policy-Responsive AI Adoption in Ghanaian PropTech Startups: Evidence from fsQCA, NCA, and Counterfactual Simulation.
Target: *Engineering, Construction and Architectural Management (ECAM)*
- 7 Amankwatia, M.B. et al. AI Functional Constraints and Construction Project Performance in Emerging Markets: Mediated Pathways, Explainable Analytics, and Startup Typologies from Ghana.
Target: *Engineering, Construction and Architectural Management (ECAM)*
- 8 Amankwatia, M.B. et al. AI-PM-DES: An Explainable Decision-Support Framework for AI Adoption in Emerging-Market Real Estate Startups.
Target: *World Journal of Advanced Research and Reviews*
- 9 Amankwatia, M.B. et al. Stable Features, Gradual Failure: An Explainability Study of Robustness in Intent Classification.
Under Review

CONFERENCE PRESENTATIONS

Deep Learning Indaba 2026 (upcoming) — When Hybrid Models Outperform SOTA (accepted)	2026
IndabaX Ghana 2025 — Research presentation	2025
Deep Learning Indaba, Dakar — Two papers: Dual-Input CNNs for Intent Classification & Hilbot Financial Framework	2024
IndabaX Ghana 2024 — Research presentation	2024
NLP4Science Workshop, EMNLP 2024 — Hilbot: Financial Analysis & Intent Classification	2024
SPIE Conference, Strasbourg — In-situ fluorescence lidar diagnostics on Theobroma cacao (team presentation)	2024

ACADEMIC & PEER REVIEW SERVICE

Reviewer — MRL Workshop, EMNLP 2025 (Multilingual Representation Learning)	2025
Reviewer — SACAIR 2024 (South African Conference on AI Research)	2024
Programme Committee Member — SACAIR 2024	2024

EDUCATION

MSc, Project Management2025 – 2026

KNUST · Kumasi, Ghana
 Final Grade: Distinction · Thesis: AI-Driven Project Management for Real Estate Startups: An Exploratory Study on the Sustainable Adoption of AI in Ghana’s Emerging Market

MPhil, Computer Engineering — AI, Intelligent Systems & Robotics2020 – 2022

KNUST · Kumasi, Ghana
 Final Grade: Distinction · Thesis: Dual-input Convolutional Neural Network for Enhanced Intent Classification in Automated Dialogue Systems

BSc, Engineering Physics (Electrical Engineering)2013 – 2017

University of Cape Coast · Cape Coast, Ghana
 Thesis: Correlation Between Geophysical and Geological Logs to Determine Zones of High Groundwater Potential

GRANTS & FUNDING

Grant / Award	Value	Year
AWS Activate Startup Grant (DataMastaros Limited)	\$25,000 USD	2024
Cohere AI Research Credits	\$2,000 USD	2024

COMMUNITY LEADERSHIP & MENTORSHIP

ROLES

Mentor · Deep Learning Indaba 2024 – Present
 Brand Ambassador · Zindi Africa 2024 – Present

COMMUNITY MEMBERSHIPS

Masakhane Pan-African NLP Research Community
 Black in AI Black in Artificial Intelligence
 PMI Ghana Project Management Institute — Ghana Chapter
 Ghana NLP Ghana Natural Language Processing Community
 GHIE Ghana Institution of Engineers
 ROYA ROYA Network

TECHNICAL SKILLS

Languages	Python, R, SQL, JavaScript
ML / DL	TensorFlow, PyTorch, Keras, Scikit-learn, XGBoost, OpenCV
LLMs & GenAI	LangChain, RAG Pipelines, Prompt Engineering, Fine-tuning, FAISS / Chroma (Vector DBs)
NLP	NLTK, spaCy, GloVe, TF-IDF, BERT / DistilBERT / RoBERTa / FinBERT, Intent Classification
Data Eng.	ETL Pipelines, PostgreSQL, MySQL, AWS (S3, Lambda, EC2), Database Architecture

BI & Viz	Power BI, Tableau, Matplotlib, Seaborn, ggplot2
XAI	SHAP, LIME, Explainability Frameworks, Counterfactual Simulation
Research	fsQCA, NCA, SEM, Bootstrap Mediation, Benchmark Design, Ablation Studies
PM	PMP®, Agile, Scrum, Cognitive PM in AI (CPMAI)™, Cross-functional Team Leadership

KEY CERTIFICATIONS

Certification	Issuing Body	Year
Project Management Professional (PMP®)	PMI	Mar 2026 – Mar 2029
TensorFlow Developer Certificate	Google / Coursera	2023
Deep Learning Specialization	Coursera / deeplearning.ai	2023
Natural Language Processing Specialization	Coursera / deeplearning.ai	2023
Introduction to Cognitive PM in AI (CPMAI)™	PMI	May 2025
Practical Application of GenAI for Project Managers	PMI	Mar 2025
Data Science with Python	Simplilearn	Mar 2024
Google Data Analytics	Google / Coursera	2024
Prompt Design in Vertex AI	Google	Nov 2024
Data Engineering with Python & SQL	IBM / Udemy	2023

70+ additional certifications across Coursera, Udemy, IBM, Cisco, Google, PMI, and AWS — full list available on request.

SELECTED PROJECT HIGHLIGHTS

- ▶ **Hilbot Financial Intent Classifier** Novel benchmark (1,525 samples, 33 classes); hybrid model outperformed DistilBERT, RoBERTa, and FinBERT by up to 11.6 percentage points. Accepted EMNLP 2024.
- ▶ **AI-PM-DES Decision Support System** Explainable diagnostic framework for AI adoption in emerging-market real estate; Gradient Boosting $R^2 = 0.893$.
- ▶ **NLP Conversational AI** TensorFlow chatbot achieving 98% response accuracy, deployed across digital customer engagement platforms.
- ▶ **Energy IoT & Process Automation** ML-based anomaly detection and process optimisation applied to energy-sector operational data.

Full portfolio: github.com/mBobie · bit.ly/mbobie

LANGUAGES

English — Native / Full Professional · French — Intermediate (B1)

REFERENCES

Available upon request.