Benjamin Lartey, PhD

Senior Data Scientist | Applied AI & ML Researcher

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Research Focus: Machine Learning, Deep Learning, LLMs, AI for Software Engineering, Reinforcement Learning, Data-Driven Optimization

Education

Stanford University – Graduate Certificate, Artificial Intelligence (Mar 2025 – Present)
Courses: AI: Principles & Techniques, Deep Generative Models, Deep Reinforcement Learning, NLP with Deep Learning | GPA: 4.3/4.0

North Carolina A&T State University – PhD, Electrical & Computer Engineering (Aug 2019 – Dec 2024)
Courses: Big Data Analytics, Machine Learning & Data Mining, Optimization, Embedded Systems | GPA: 3.92/4.0

Professional Experience

Senior Engineer / Data Scientist – Dominion Energy (Feb 2025 – Present)
• Develops ML and statistical models for analyzing and forecasting multivariate power-load patterns.
• Leads cross-team collaboration to deploy and monitor models within production environments.
• Mentors junior engineers and interns in data-driven modeling and model performance evaluation.
Impact: Delivered predictive insights improving data-driven operational efficiency across the energy grid.

Packaging R&D Data Science Intern – Intel Corporation (May 2022 – Aug 2022)
• Built ML models for semiconductor parameter prediction and process optimization.
• Applied deep learning and feature engineering to automate chip inspection, achieving >90% accuracy.
• Integrated ML modules into Intel's manufacturing analytics systems, demonstrating measurable productivity gains.
Tools: Python, TensorFlow, Scikit-learn, SQL

Graduate Research Scientist – North Carolina A&T State University (Aug 2019 – Dec 2024)
• Conducted applied research in machine learning, reinforcement learning, and AI-driven mobility systems.

• Published several peer-reviewed papers in top IEEE venues (T-ITS, T-ICPS, SMC).
• Collaborated with interdisciplinary teams to integrate research-grade models into production-ready systems.

Selected Projects

Retrieval-Augmented Generation (RAG) Application

• Developed an interactive RAG-based question-answering system capable of generating contextual responses to user prompts. Implemented vector-store retrieval, document chunking, and embeddings (FAISS / LangChain) for dynamic context injection. Deployed via FastAPI and Streamlit for real-time user interaction.

Agentic AI Model for Plant Disease Detection

• Built an intelligent system that identifies plant diseases from leaf images using agentic AI model. Deployed as a Streamlit web app with FastAPI backend, Docker containerization, and RESTful APIs for scalable deployment.

GPT-Style Language Model Implementation

•Implemented a transformer model inspired by GPT-2 for coherent text generation. Achieved 10% improvement in text quality via hyperparameter optimization.

Deep Reinforcement Learning for Path Finding

• Implemented a DQN-based RL agent in PyTorch to navigate frozen-lake environments while avoiding obstacles.

Technical Skills

Languages: Python, C++, Java, JavaScript, SQL
Frameworks & Libraries: PyTorch, TensorFlow, Hugging Face, LangChain, FastAPI, Streamlit, Scikit-learn, Spark, Azure ML
ML Domains: LLM Fine-Tuning, RAG Pipelines, Model Optimization, Deep Reinforcement Learning, Transfer Learning
DevOps & Tools: Docker, Power BI, Git, Linux, Azure, Hadoop

Publications (Selected)

1. Lartey, B. et al. “An Efficient Profit-Aware Scalable Vehicle Dispatch Framework for On-Demand Ridesharing,” IEEE Transactions on Industrial Cyber-Physical Systems, 2024.

2. Lartey, B. et al. “XGBoost: A Tree-Based Approach for Traffic Volume Prediction,” IEEE SMC, 2021.

3. Lartey, B. et al. “An Online Learning Framework for Sensor Fault Diagnosis Analysis in Autonomous Cars,” IEEE T-ITS, 2023.

4. Lartey, B. et al., “Adaptive Temporal Scale Graph Neural Network,” NeurIPS, under preparation.