

MICHAEL BAFFOUR AWUAH

+1 (774) 701-8970 | michaelbaffourawuah708@gmail.com | [LinkedIn](#) | [GitHub](#) | [Portfolio](#)

EDUCATION

Cornell University, College of Engineering

Expected May 2028

B.S. Computer Engineering

Ithaca, NY

Related Courses: Machine Learning (NumPy), Algorithms, Computer System Organization & Programming (C), Computer Architecture, Database Design & Management, Human Computer Interaction, Computer Networks, Discrete Mathematics, Linear Algebra for Engineers

TECHNICAL SKILLS

Languages & Frontend: Python, C/C++, CUDA, Go, Java, JavaScript, TypeScript, SQL, HTML/CSS, React

AI/ML: PyTorch, NumPy, Transformers, Autograd, Agentic AI, RAG, BM25, Dense Retrieval, Reranking, FastAPI

Web: Next.js, Node.js **Systems:** Distributed Systems, Linux, Docker, Kubernetes, AWS, Terraform, PostgreSQL, MongoDB, Temporal, GitHub Actions, OIDC, CI/CD

EXPERIENCE

Cornell Ann S. Bowers College of Computing and Information Science

Aug 2026 – Present

Finance & Programming Assistant

Ithaca, NY

- Collaborate with **14 staff** and student researchers on cross-functional technical projects; train students in data structures, algorithms, distributed software, AI/ML, agentic workflows, and retrieval pipelines.
- Work with faculty and engineers from **6+ organizations**, including Meta, Google, Microsoft, NASA, Wayfair, and Capital One, on technical and recruiting programs reaching **500+ students** across **23+ events and initiatives**.
- Develop Python/data-analysis and AI-assisted finance/reporting workflows; maintain secure financial and student data with controlled access.

Google

Jul 2024 – Aug 2024

Computer Science Summer Institute (CSSI) – Program Participant

Remote

- Built an interactive global mpox case tracker covering **80+ countries** using JavaScript, HTML/CSS, Google Charts/Query, and public APIs to visualize geographic and time-series health data.
- Selected for Google's four-week CSSI; completed algorithms, data structures, API, web-development, and debugging training with Google engineer mentorship.

Cornell Engineering – Independent Research

2026

Undergraduate Researcher – [ToolRet Selective Tool Retrieval](#)

Ithaca, NY

- Built a Python pipeline over **37,292 tools** using BM25, MiniLM embeddings, reciprocal rank fusion, and a ridge router predicting reranking benefit from seven inexpensive first-stage features.
- Designed a **2,100-query study** with disjoint relevant-tool components across development, calibration, and confirmation sets; froze weights and thresholds, then benchmarked global/source-matched random controls over **20 seeds**.
- On **1,500 untouched queries**, reduced cross-encoder calls **23.4%** within a predeclared **0.01 nDCG loss tolerance**; measured **14.0% lower mean warm CPU retrieval time** on 90 queries across three repetitions.

SELECTED TECHNICAL PROJECTS

NavoX – AI Assistant | *TypeScript, Next.js, Python, PostgreSQL, Temporal, Docker*

[Live](#) | [GitHub](#)

- Built and deployed an AI assistant integrating **Gmail, Google Calendar, Canvas, and subscription tracking** for daily priorities and conversational retrieval across connected accounts.
- Implemented a unified AI gateway with **OpenAI, Anthropic Claude, and Google Gemini adapters**, model qualification, sensitivity policies, account isolation, and token/cost limits; built a **Manifest V3 Chrome extension** and voice interface with speech-to-text/text-to-speech, persistent conversations, and multi-intent planning.
- Implemented durable **Temporal workflows**, approval-gated actions, audit trails, and provider verification; deployed Docker services through CI/CD, validating releases with **2,820 API tests and 444 web tests**.

Fluxion – Deep Learning Engine | *Python, NumPy, C++/CUDA hooks*

[GitHub](#)

- Built a tensor and reverse-mode autograd engine from scratch with dynamic computational graphs, topological backpropagation, gradient accumulation, broadcasting, and shape-aware gradient reduction.
- Implemented neural-network modules, MSE/CrossEntropy losses, multi-head attention, and a GPT-style Transformer; validated gradients with **68+ tests** and added profiling, C++/CUDA hooks, and PyTorch parity benchmarks.

ModelForge – ML Deployment Platform | *Go, AWS, Terraform, Docker*

[GitHub](#)

- Architected a Go control plane with pluggable runtime adapters, supporting PyTorch, ONNX, and Fluxion integration.
- Added containerized serving, Terraform AWS configuration, GitHub Actions/OIDC, environment-gated CI/CD, health checks, canary verification, rollback, and observability.

MarketLab – Portfolio Research | *TypeScript, React, Node.js, MongoDB, Python, C++, Docker*

[GitHub](#)

- Built validated **Alpha Vantage/CSV stock-data pipelines**, immutable dataset snapshots, exact cash/share accounting, saved strategy backtests, and independent Python replay of frozen reports.
- Implemented a Node.js/MongoDB job service with bounded worker threads, HMAC authentication, fenced crash recovery, and C++ risk checks; benchmarked **3,000 local jobs at 39.96 jobs/s and 320 ms p99**.

FELLOWSHIPS & LEADERSHIP

Break Through Tech @ Cornell Tech – AI/ML Fellow

Sep 2025 – May 2026

- Completed applied training in ML, neural networks, experimentation, evaluation, data analysis, and collaborative software development.

Bloomberg – Tech Fellow, Engineering Discovery Program

Feb 2025

- Selected from approximately **400 applicants**; built a Python portfolio tool with Bloomberg technologists; completed systems-design, financial-engineering, and interview workshops.

Leadership: Cornell Engineering Ambassador; Orientation Leader; AFROTC Cadet (Det. 520); Springboard SWE Bootcamp (800 hours).