

# Massa Coulibaly

Full-stack Software Engineer | Forward-Deployed Engineer

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## EDUCATION

**University of California, Berkeley | 2024 – 2026: M.Sc. Information Management and Systems, GPA: 3.7/4**

*Relevant courses:* Front-end web Architecture | Data Engineering | Applied Machine Learning | Health Information Systems | Applied Natural Language Processing (ANLP) | Information Visualization and Presentation | Knowledge Graph Representation

**Carnegie Mellon University | 2020 – 2024: B.Sc. Information Systems, GPA: 3.4/4**

*Relevant courses:* Practical Data Science | Fundamentals of Software Engineering | Application Design and Development (Ruby) | Database Design and Development (SQL, MongoDB) | Natural Language Processing | Regression analysis (R) | Clinical data science

## ENTREPRENEURIAL EXPERIENCE

**Afy Health Information Systems (Startup), Co-founder & CTO**

October 2024 – December 2025

- Leading the design and deployment of a USSD-based EHR platform that enables clinics in low-resource settings to securely capture patient data offline and sync with national health systems when connectivity is available
- Selected as a finalist in Big Ideas Berkeley for demonstrating the potential of Afya to transform record-keeping and improve patient outcomes in Sub-Saharan Africa

## PROFESSIONAL EXPERIENCE

**UC Berkeley Coleman Fung Institute**

Berkeley, USA

**Data Engineer**

September 2024 – June 2026

- Automated annual resume book generation by parsing and categorizing student resume PDFs into reusable structured data.
- Managed and queried UC Berkeley Engineering data infrastructure, integrating Salesforce with Qualtrics and PostgreSQL
- Developed interactive [employment data visualizations](#) using Tableau and salesforce integration for the school's website, transforming complex career outcomes data into accessible insights for stakeholders and prospective students

**Friends Eye Center Clinic**

Kumasi, Ghana

**Forward Deployed and Software Engineer**

May 2023 – August 2023

- Assessed customer needs across 28 competing solutions to architect and propose a tailored open-source Healthcare Management System, defining system architecture aligned to clinic budget and capabilities
- Shipped a full HMS implementation from system design to deployment, using LAN-based distributed systems for offline communication across departments
- Doubled clinic revenue through end-to-end process digitalization; trained 37 staff and delivered a sustainability plan ensuring long-term adoption

**Carnegie Mellon University, Pittsburgh Lutheran United Ministries (PLUM)**

Pittsburgh, USA

**Full-stack Software Engineer**

January 2023 – May 2023

- Conducted IT audits across 8 churches, translating operational pain points into customized digital transformation strategies and implementation roadmaps
- Designed and deployed 5 data collection tools and established a unified data structure consolidating 2,000+ records, enabling coherent data exchange across the organization

## PROJECTS

**The Sound of Power: NLP Analysis of UN Security Council Speeches on Crisis Management, [ANLP](#)**

- Built NLP pipeline using LDA, BERTopic, and transformer-based LLMs (HuggingFace + Anthropic API) to analyze rhetorical strategies across 2,069 UN Security Council transcripts; designed multi-prompt LLM workflow for thematic comparison across blocs
- Tested what drives linguistic variability in diplomatic speeches; found resolution type outweighs country identity and bloc membership

**OfferBloom AI Powered Interview Preparation Platform, [Capstone](#)**

- Architected full-stack AI interview-prep platform with React + Vite, FastAPI, Neo4j, Cloudflare R2; deployed on Railway
- Designed multi-agent LLM pipeline on Anthropic Claude Haiku: planner to question-generation to coaching agents, each with scoped prompts and graph-grounded context
- Built prompt-engineering and tool-use layer that drafts answers, scores verbal practice, and produces structured resume feedback over 320 role/category combinations

**[Clinical Trial Navigator \(CTN\) - Knowledge-Graph Matching Engine](#), Berkeley INFO 290 / DEVENG 204**

- Architected Django + RDF/Turtle platform matching sickle-cell patients to 250+ clinical trials; built SPARQL eligibility engine with SHACL validation (pySHACL) across 12+ criteria
- Integrated Anthropic Claude API to translate free-text patient profiles into graph queries, returning ranked trials with cited justifications

## SKILLS & INTERESTS

- Technical:** System design, full stack development, distributed systems, API design, database modeling, production deployment, LLM integration (Claude, GPT), agentic AI orchestration, RAG, prompt engineering, knowledge graphs, NLP, model evaluation, healthcare management systems
- Coding:** Python, TypeScript, JavaScript, SQL, Java, Ruby, React, Next.js, FastAPI, Django, Rails, PostgreSQL, MongoDB, Neo4j, SPARQL, R
- Tools:** Anthropic SDK, Claude Code, CursorMCP, LangGraph, CrewAI, HuggingFace, Scikit learn, Docker, Railway, Cloudflare