

Annabelle Cunningham

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PROFESSIONAL SUMMARY

AI/ML Engineer with an M.S. in Data Science specializing in data and AI infrastructure, high-performance ML pipelines, secure data architectures, and private AI deployments where data privacy, processing speed, and intellectual property (IP) protection are critical.

EDUCATION

Colorado School of Mines, Golden, CO	5/2025
Master of Science in Data Science	
Graduate Certificate in Data Science: Earth Resources	5/2023
University of Texas at Austin, Austin, TX	5/2022
Bachelor of Science in Geophysics	

CORE TECHNOLOGIES & SKILLS

AI & Retrieval: LLMs, RAG, Multi-Agent Systems, Vector Databases (Pinecone, Weaviate, Chroma), Semantic Reranking, Hybrid Search

Data Engineering: Python, PostgreSQL, AWS RDS, ETL, Real-Time Data Ingestion, SQL, Data Integration, Data Transformation

Infrastructure & MLOps: Docker, LXC/LXD, Kubernetes/K3s, Terraform, FastAPI, Flask, CI/CD, Observability, MLflow

Languages & Core Engineering: Python, C++, Java, PyTorch, Scikit-Learn, Git, PyTest, Linux, NGINX, Postfix, PHP, MySQL/MariaDB, DNS Records

EXPERIENCE

The Cuning Edge, Raleigh, NC | 08/2025 – Present

Independent AI engineering practice and technical portfolio created to address the opacity of modern AI abstractions and explore more transparent, controllable approaches to building and deploying AI systems.

- Configured and maintained self-hosted Linux infrastructure supporting web, email, and AI services, including Postfix mail relays and secure application deployment.
- Conducted applied AI systems research and published a 3-tiered technical blog to make complex AI architectures transparent, reproducible, and accessible to technical and non-technical audiences.
- Prototyped an email routing AI agent that automatically triaged shared-inbox streams into a queryable company binder, validating a workflow designed to automate task distribution.
- Delivered numerous executive presentations on private AI architecture and security, securing a consulting engagement and translating technical strategy into business solutions.

Louisiana Maritime Association, New Orleans, LA

Artificial Intelligence Consultant (The Cuning Edge) | 08/2025 – Present

- Architected a private RAG pipeline indexing 10,000+ sensitive corporate documents to securely preserve institutional knowledge and ensure organizational continuity during leadership transitions.

- Engineered a Python pipeline using AI-assisted document extraction to structure complex documents and integrate external maritime data, delivering daily intelligence to 20 regional shipping agencies.
- Deployed private LLM infrastructure by containerizing models behind custom REST APIs, keeping sensitive data within controlled inference environments and supporting reliable downstream availability.

U.S. Geological Survey, Golden, CO

Software Engineer Intern, Near Real-Time Products Team | 05/2023 – 08/2025

- Engineered a Python ingestion pipeline integrating datasets from 3 international territories into a centralized PostgreSQL database, expanding real-time data capacity and supporting downstream predictive modeling.
- Designed and deployed the ShakeMap Sampler web application, enabling users to generate customized datasets from complex seismic data for disaster management and structural engineering applications.
- Implemented unit testing and Git-based development practices across engineering and research teams, achieving 95%+ code coverage and improving software reproducibility and reliability.

Above The Scroll, Austin, TX

Owner and Operator | 05/2018 – 05/2022

- Launched a specialized maritime information platform, increasing industry data accessibility by 30% and establishing domain logic later used in automated AI pipelines.
- Integrated and cleaned conflicting external data streams, structuring fragmented shipping records to eliminate 15 hours of operational inefficiencies per week.

PUBLICATIONS & RESEARCH

World Conference on Earthquake Engineering (2024) – Co-author, “ShakeMap Sampler Web Application for Engineering Applications.”

Seismological Society of America Annual Meeting (2024) – Presenter, “Quantifying Regional Variability in Earthquake Intensity Using Geostatistical Modeling.”

Analysis of Partial-Volume and Blurring Method in Gold Ore (2022) — Undergraduate Thesis.

Implemented a 3D data-processing workflow to calibrate multi-source computer vision datasets, resolving spatial blurring anomalies to achieve 1:1 volumetric reproducibility across legacy sensor data.