Andrew Langdon

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ML Engineer with 10 years of software experience spanning pre-seed fast prototyping to Series B scale engineering through acquisition. Builds LLM agents, RAG systems, production APIs, and ML workflows end-to-end.

SKILLS

ML and AI Concepts: Retrieval-Augmented Generation (RAG), Fine-tuning, Agent-based Systems, LoRA
ML Engineering and Workflow Tools: Docker, Airflow, MLflow, FastAPI, JupyterLab, Jenkins
Machine Learning and Data Science Libraries: Large Language Models (LLMs), PyTorch, scikit-learn, Transformers, pandas, NumPy, Matplotlib, OpenAI API
Data Infrastructure and Cloud Platforms: Google Cloud Platform (GCP), Pub/Sub, PostgreSQL, Kubernetes, Amazon Web Services (AWS)
Programming Languages: Python, SQL

EXPERIENCE

Machine Learning Engineer at **Kindred K12** **Apr 2024 - Present**

RAG, Search, and Retrieval

- Designed and ran chunking, embedding-model selection, and cost-optimization experiments, storing versioned evaluation artifacts, and tested them using RAGAS and custom LLM evals.
- Built hybrid semantic search using pgvector, PostgreSQL's tsvector full-text search (FTS), and BM25 with embeddings generated via OpenAI embedding models, enabling educators to search for primary source materials aligned with their state's teaching standards.

Autonomous Agents and Browsing Framework

- Designed and developed an LLM-based autonomous web-browsing agent framework that allows developers to configure agents that intelligently crawl, analyze, and index web content.
- Deployed containerized agent jobs on AWS ECS, using Docker, GitHub Actions, and IAM to orchestrate and manage long-running crawlers.
- Built agent memory modules that are shared between agents and between runs, allowing agents to reference previously successful strategies while determining actions.
- Implemented stochastic link-scoring and exploration strategies using OpenAI function calling and structured JSON outputs for consistent extraction of copyright, reading-level, and curricular-alignment metadata.

Education Chat Platform

- Built an LLM chat platform for personalized active learning using FastAPI, React, Python, Pydantic, SQLAlchemy, and PostgreSQL.
- Created document management feature so educators and students could add ground-truth source documents that are available via RAG in the LLM context window.
- Implemented short-term and long-term memory context engineering to keep time-to-first-token latency low while providing the LLM assistant with users' learning and proficiency history.
- Used OpenAI's tool-calling API to give assistants the ability to generate learning plans and update the user's learning progress across topics while the user learns during natural-language conversations with the LLM.

Infrastructure and Deployment

- Owned full feature lifecycle (POC, prototype, demo, development, production) in an early-stage engineering environment using Docker Compose, GitHub Actions, AWS ECS, and lightweight monitoring.
- Increased system reliability by containerizing agent workloads and introducing consistent deployment workflows.

Co-Author of **Zebra-Llama (Rare Disease LLM)** **Jun 2024 - Dec 2024**

- Created a fine-tuning dataset and RAG pipeline using 4,000+ academic papers, improving citation accuracy by 18.3 percentage points.
- Co-authored *Zebra-Llama: A Context-Aware Large Language Model for Democratizing Rare Disease Knowledge*, focusing on Ehlers-Danlos Syndrome (EDS). The work was released as an arXiv preprint: arxiv.org/abs/2411.02657.
- Released the model as an open-source resource: huggingface.co/zebraLLAMA/zebra-Llama-v0.2

Senior Software Engineer at **SupportLogic** **Aug 2018 - Oct 2023**

ML Integration and Alerting

- Productionized "best agent" prediction ensemble, moving it from research code to customer-facing service that Coveo used to reduce their MTTR by 50%.
- Designed and built an alerting system delivering millions of real-time ML signals to customers via Slack, email, and custom endpoints, leading to a 20% CSAT increase at Databricks.
- Deployed and maintained a random forest model predicting customer escalations, reducing Salesforce's escalation rate from 4% to 2%.
- Led refactor of the alerting framework to horizontally scalable microservice architecture.

Migrations & Architecture Evolution

- Led major data-layer migration from RethinkDB to PostgreSQL, designing schemas, validating object compatibility, implementing dual-write mechanisms, and running batch backfills, improving data reliability and simplifying future feature development.
- Guided the UI team's transition from reading a read-only DB replica to consuming stable API endpoints backed by PostgreSQL.

Backend Engineering

- Joined as second backend engineer and helped scale the system from a small seed-stage architecture to a multi-team Series B platform.
- Interviewed engineering candidates, created onboarding materials, and ran a structured two-month mentorship/pair-programming program for every new backend hire.

Software Engineer at **Alpine Data Labs** **Oct 2014 - Dec 2018**

- Developed a Jupyter notebook integration that executed notebooks in Linux containers and surfaced them in the ETL GUI, allowing data scientists to turn ad-hoc analysis notebooks into reusable ETL pipeline steps without writing code.
- Designed and implemented role-based access control, giving administrators fine-grained data access functionality for their data and ETL workflows.

PROJECTS

Project Lead, PatientFlowML (Capstone, Advanced ML Course) **Jan 2025 - May 2025**

- Trained patient readmission models using logistic regression and XGBoost, supported by extensive EDA in pandas.
- Developed a fully automated retraining and deployment pipeline orchestrated with Airflow, Jenkins, and MLflow with model versioning and experiment tracking.
- Deployed real-time inference services to Kubernetes using Docker, FastAPI, Uvicorn, and horizontal autoscaling.

EDUCATION

Advanced Machine Learning Course **Dec 2023 - May 2025**

Columbia University - New York, NY **2012 - 2014**

- Computer Engineering, B.S., ***magna cum laude***

Claremont McKenna College - Claremont, CA **2009 - 2012**

- Economics and Engineering, B.A.