Akash Mohan

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EDUCATION

University of Wisconsin-Madison   Madison, WI
B.S. in Computer Science, B.S. in Data Science | GPA: 3.61   *Expected May 2026*
- **Relevant Coursework:** Advanced Data Structures & Object Oriented Programming, Algorithms, Operating Systems, Machine Learning, Data Modeling & Visualization, Database Systems

EXPERIENCE

Software & Data Engineer Intern   May 2024 – December 2024
Caterpillar   *Peoria, IL*
- Developed a full-stack rental app prototype using Next.js and Flask; tested AWS SES notifications with **50,000+** simulated users at **99%+** deliverability and optimized Google Maps API for sub **500ms** tracking update times.
- Optimized Tableau dashboards for **800+** daily users, improving UX and reducing manual updates by **30%** using TabPy scripting.
- Reduced dashboard refresh time by **10%** by optimizing Alteryx workflows, increasing data processing speed.

Data Engineering Intern   May 2023 – August 2023
Skills for Chicago   *Chicago, IL*
- Automated updates for **10,000+** client records via Selenium, Pandas, and PostgreSQL; implemented a no-code scheduling solution via Zapier to reduce manual work by **80%.**
- Streamlined client address geocoding and commute distance calculations using PyXLL and Nominatim, achieving **95%** accuracy and identifying key trends in Chicago unemployment retention rates.
- Conducted research on unemployment and labor market trends across 5 major cities in Illinois; Analyzed **50+** reports and datasets to drive business decisions regarding regional disparities.

PROJECTS

codebaser | *ChromaDB, AWS S3, Tree-sitter, OpenAI, TypeScript, PostgreSQL*
- Building an AI-powered developer tool to parse unfamiliar codebases using Tree-sitter, semantically chunk them, and generate contextual summaries via OpenAI GPT-4.1
- Storing processed chunks and vector embeddings in ChromaDB to enable natural language search and rapid codebase exploration.
- Integrating AWS S3 for scalable cache-based file upload and using PostgreSQL to manage metadata, project sessions, and user interactions.

GeoSynth | *TypeScript, LangChain, Celery, PostgreSQL, FastAPI, Redis, Mapbox* | geosynth.app
- Engineered a real-time geospatial intelligence platform to surface and query global crisis events using LLM-based summarization, semantic search, and spatial embeddings over **12,000+** reports from **150+** countries.
- Designed a distributed ETL pipeline with Celery + Redis to ingest reports **every 3 hours** and structure them into PostgreSQL/PostGIS for spatial querying and clustering.
- Developed an interactive Next.js + Mapbox dashboard with globe-based heatmaps, time sliders, and dynamic event overlays; enabled natural language queries via FastAPI + LangChain.

OSMatch | *Spring Boot, FastAPI, Redis, MySQL, GraphQL, Scikit-learn, Next.js, Tailwind CSS* | osmatch.app
- Built a GitHub issue recommender system that models user preferences through TF-IDF and cosine similarity, supporting personalized task discovery across **18 programming languages**.
- Leveraged Redis to track user swipes and de-duplicate from a database of **100,000+** GitHub issues, triggering retraining every 25 right swipes with **sub-1s latency.**
- Deployed a scalable monorepo with a FastAPI ML backend, Spring Boot JWT auth, and a cron job-driven GraphQL ingestion pipeline; optimized for sub-**100ms** response times and GitHub API rate limits.

TECHNICAL SKILLS

Languages: Python, Java, TypeScript, JavaScript, C, HTML5/CSS3, SQL, Bash, R
Web/App Development: React.js, Next.js, Spring Boot, Flask, FastAPI, Node.js, Tailwind CSS, Framer Motion, D3.js
Machine Learning/Data: Scikit-Learn, PyTorch, LangChain, Celery, OpenAI, NLTK, ChromaDB, Pandas, NumPy, Matplotlib, Selenium, Tableau, Alteryx
Tools/Platforms: Git, AWS (S3, Lambda, SES), Linux, Docker, Redis, Kafka, PostgreSQL, MySQL, MongoDB, SQLite, GraphQL, Supabase, Cron Jobs, FFmpeg, JUnit, Firebase, CI/CD, Railway, Postman
Certifications: AWS Cloud Practitioner CLF C-02 (2024)