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*

- Engineered a full-stack rental app prototype using Flask and Next.js; tested AWS SES with **50,000+** simulated users at **99%+** deliverability and scaled geolocation services via load-tested APIs for sub **500ms** update latency.
- Enhanced Tableau dashboards for **800+** daily users by integrating TabPy scripts, streamlining UX and reducing manual updates by **30%**.
- Cut dashboard refresh time by **10%** by optimizing Alteryx workflows, accelerating data pipeline performance.

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 | *Tree-sitter, Chroma, AWS S3, OpenAI, TypeScript, PostgreSQL, Docker* | codebaser.app

- Built a developer assistant that streamlines onboarding into unfamiliar codebases via AST-based chunking, GPT-4.1 summarization, and semantic code search.
- Engineered a parallelized Tree-sitter parsing pipeline to extract and chunk function-level code, supporting Python, Java, JavaScript, TypeScript, and Go.
- Designed a sleek frontend with live syntax-highlighted displays and implemented scalable upload infrastructure with S3 caching and persistent metadata and session tracking in PostgreSQL.

GeoSynth | *TypeScript, LangChain, Celery, PostgreSQL, FastAPI, Redis, Mapbox* | geosynth.app

- Launched a global crisis analysis platform to explore real-time events through LLM summarization, semantic clustering, and spatial search across **12,000+** reports from **150+** countries.
- Designed an asynchronous ETL pipeline (Celery, Redis) to process new reports **every 3 hours**, extract structured metadata, and spatially index events in PostGIS.
- Developed an interactive globe-based dashboard with Mapbox and Next.js, featuring heatmaps, time filters, dynamic event overlays, and natural language search via FastAPI and LangChain.

OSMatch | *Spring Boot, FastAPI, Redis, MySQL, GraphQL, Scikit-learn, Next.js, Tailwind CSS* | osmatch.app

- Built a personalized open-source issue recommender that adapts to user preferences using TF-IDF vectors and real-time swipe-based feedback across **18 programming languages**.
- Leveraged Redis to track user swipes, de-duplicate from a database of **100,000+** GitHub issues, and retrain the model every 25 right swipes with **sub-1s latency.**
- Deployed a scalable monorepo with FastAPI ML services, Spring Boot JWT auth, and a cron-based 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 & AI: Scikit-Learn, PyTorch, LangChain, Celery, OpenAI, NLTK, Chroma, Tree-sitter, Pandas, NumPy, Matplotlib, Selenium, Tableau, Alteryx
Tools & Platforms: Git, AWS (S3, Lambda, SES), PostgreSQL, MySQL, MongoDB, SQLite, GraphQL, Linux, GCP, cURL, Docker, Redis, Supabase, Cron Jobs, FFmpeg, JUnit, Locust, Firebase, CI/CD, Railway, Postman
Certifications: AWS Cloud Practitioner CLF C-02 (2024)