

# 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 (Flask, Next.js) with AWS SES email workflows and geolocation mapping; load-tested APIs with **1,500+** simulated concurrent users, maintaining **sub-400ms** latency.
- Enhanced Tableau dashboards for **800+** daily users by integrating Python (TabPy) scripts, automating refresh pipelines and reducing manual interventions by **30%**.
- Refactored Alteryx workflows and Snowflake migration scripts, cutting data transfer times by **10%** and improving pipeline throughput.

### 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 (Zapier) to cut manual work by **80%**.
- Built a geocoding + commute-distance microservice (PyXLL, Nominatim) for internal datasets, achieving **95%** location-matching accuracy and powering retention rate analytics.
- 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](https://codebaser.app)

- Built a developer assistant that streamlines onboarding into unfamiliar codebases via AST-based chunking, GPT-4.1 summarization, and semantic code search.
- Optimized a parallelized Tree-sitter parsing pipeline to extract and chunk function-level code, achieving a **5x** speed increase across Python, Java, JavaScript, TypeScript, and Go.
- Designed a sleek syntax-highlighted frontend and scalable S3 upload system with caching and metadata/session tracking in PostgreSQL.

### GeoSynth | TypeScript, LangChain, Celery, PostgreSQL, FastAPI, Redis, Mapbox | [geosynth.app](https://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 Mapbox + Next.js globe dashboard featuring heatmaps, time filters, dynamic event overlays, and natural language search (FastAPI, LangChain).

### OSMatch | Spring Boot, FastAPI, Redis, MySQL, GraphQL, Scikit-learn, Next.js, Tailwind CSS | [osmatch.app](https://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, JWT OAuth, and a cron-based GraphQL ingestion pipeline; optimized for sub-**100ms** response times and API rate limits.

## TECHNICAL SKILLS

**Languages:** Python, Java, TypeScript, JavaScript, C, HTML5/CSS3, SQL, Bash, R

**Web/App Development:** Docker, Redis, React.js, Next.js, Spring Boot, FastAPI, Flask, Node.js, D3.js

**Machine Learning & AI:** Scikit-Learn, PyTorch, LangChain, Pandas, NumPy, Celery, OpenAI, Chroma, Tree-sitter, Matplotlib, Selenium

**Tools & Platforms:** AWS (S3, Lambda, SES), Git, PostgreSQL, MySQL, MongoDB, SQLite, GraphQL, Linux, GCP, Supabase, CI/CD, Firebase, Postman, Cron Jobs, FFmpeg, Locust