

Archit Rathod

Chicago, IL, USA architathod77@gmail.com (331) 270-7909 [Portfolio](#) [LinkedIn](#) [GitHub](#) [Scholar](#)

Education

University of Illinois Chicago

Master of Science in Computer Science — GPA: 3.7/4.0

Aug 2024 – May 2026 Coursework: NLP, Data Science & Algorithmic Fairness, Responsible AI, Big Data Mining

University of Mumbai

Bachelor of Engineering in Information Technology — CGPA: 9.32/10

Feb 2021 – May 2024 Coursework: Data Structures & Algorithms, Machine Learning, Data Mining

Skills

Languages: Python, TypeScript, JavaScript, SQL, C++, Rust

Frameworks: React.js, Next.js, Node.js, FastAPI, Flask, PyTorch, LangChain, LangGraph

Data & Cloud: PostgreSQL/PostGIS, MongoDB, BigQuery, PySpark, Redis, Neo4j, AWS, GCP, Docker, Kubernetes, Terraform

AI & DevOps: LLM Agents, RAG, Prompt Engineering, CI/CD (GitHub Actions), Monitoring, System Design

Experience

Graduate Research Assistant

Urban Transportation Center, UIC

Aug 2025 – Present

Chicago, IL

- Shipped a freight analytics platform serving **285+ municipalities** by building **Next.js/FastAPI** services with Dockerized PostgreSQL.
- Processed **8.5M+ origin-destination pairs** across **300GB+ datasets** by architecting chunked, atomic **Python** data pipelines.
- Computed optimal multi-modal routes across **2,926 zones** by containerizing the OpenTripPlanner routing engine with **Docker**.
- Classified **10,000+ US railyard polygons** into intermodal, classification, and spur categories via an **Overpass API** pipeline.

Open-Source Software Engineer

Google Summer of Code 2025 - OpenStreetMap

May 2025 – Aug 2025

Chicago, IL

- Launched a road-closure REST API serving **12k+ locations** at **94ms p99** using **FastAPI**, **PostgreSQL/PostGIS**, and **OpenLR**.
- Deployed a **React/Leaflet.js** closure-reporting platform handling **3.2k routes/day** via Docker, nginx, and **GitHub Actions CI/CD**.
- Enabled closure-aware routing across **3 travel modes** by integrating **OpenLR** location encoding with the **Valhalla** routing engine.

Research Assistant

University of Illinois Chicago

Feb 2025 – May 2025

Chicago, IL

- Pinpointed optimal traffic-camera placements on a **38k-node** road network by building **graph-based cycle-detection** algorithms.
- Evaluated **472 candidate** congestion-zone boundaries by combining OSM road networks, census geometries, and **OD trip flows**.

Research Engineer

SimPPL

Mar 2023 – Jul 2024

Remote (New York, NY)

- Cut **BigQuery** costs **30%** across **80M+ records** by optimizing partitioning and query workloads for ML research pipelines on **GCP**.
- Led a **5-person team** building a coordination-network graph visualizer used across YouTube, Truth Social, and BlueSky analyses.
- Mapped YouTube video-comment-channel ecosystems by building **network graphs** over data from the **YouTube Data API**.

AI Engineer

DIRL, Boston University

Dec 2023 – May 2024

Remote (Boston, MA)

- Engaged **2,000+ participants** in behavioral experiments by leading **14 engineers** building a marketplace in **React/Empirica.ly**.
- Simulated market dynamics at scale by developing autonomous **LLM-powered agents** with multi-stage orchestration on **AWS**.

Projects

relfair | Relationship-Aware Counterfactual Fairness Testing Library

[PyPI](#) [GitHub](#)

- Lifted proxy-discrimination detection by **17–27pp** on 3 datasets by building a **causal-DAG counterfactual** engine.
- Published to **PyPI** with a NYC Local Law 144 audit engine, bootstrap confidence intervals, and PDF reporting; **62 tests**.

GreenPipe | Carbon-Aware CI/CD Scheduling Agent

[GitHub](#)

- Built the first **GitLab Duo agent** for carbon-aware CI/CD, scoring pipelines via the **ISO 21031 SCI** standard; **299 tests**.
- Cut NLP energy use **58%** by fine-tuning an **INT8-quantized DistilBERT** that classifies commit urgency to reschedule pipelines.

Keya AI | Agentic AI Assistant for Real Estate

[Live](#) [GitHub](#)

- Built an agentic real-estate assistant with **8 LangChain tools** over **Azure OpenAI** for recommendations, transit, and dual chats.
- Achieved **320ms TTFB** across **4 languages** by integrating vector search, SerpAPI, and Zillow APIs into a **Next.js/Flask** stack.

Research Publications

- Ascend.ai: Facial Expression, Tone, and Pitch Analysis with Chatbot Guidance** — ICDSA 2024
- Leveraging CNNs and Ensemble Learning for Automated Disaster Image Classification** — ICSISCT 2023
- Multi-Agent Simulators for Social Networks** — NeurIPS 2023, MASEC AI Workshop

[Springer](#)

[Springer](#)

[NeurIPS](#)

Achievements

Hackathons: Won 6 of 10+ hackathons, including major university and industry competitions.

[Link](#)

Social Good: Contributed to 'Sakhi' WhatsApp chatbot for menstrual health literacy in rural Bangladesh.

[Link](#)

Open Source: Created a live road closure reporting platform for the OpenStreetMap community.

[Link](#)