

ARCHIT RATHOD

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EDUCATION

University of Illinois Chicago

Master of Science in Computer Science

Aug 2024 – May 2026

TECHNICAL SKILLS

Languages: Python, JavaScript, TypeScript, C++, Shell

Frameworks & Libraries: React.js, Next.js, Node.js, FastAPI, Flask, PyTorch, TensorFlow

Databases: MySQL, MongoDB, BigQuery, Neo4j

Cloud & DevOps: Google Cloud Platform (GCP), AWS (EC2, Amplify, Lambda), Docker, Kubernetes, Vertex AI

Tools & Other: Git, GitHub Actions, WebRTC, Tailwind CSS, jQuery, Looker Studio

PROFESSIONAL EXPERIENCE

University of Illinois Chicago

Research Assistant

Feb 2025 – Present

Chicago, USA

- Developing a **geospatial analysis pipeline** using **OSMnx**, **NetworkX**, and **Python** to construct a **road network graph** of Chicago, optimizing node reduction by filtering **primary and secondary roads** for computational efficiency.
- Engineering a **graph-based cycle detection model** to identify **traffic congestion zones**, implementing **bounded cycle search algorithms** to determine optimal camera placements, improving city planning insights.

SimPPL

Research and Web Engineer

Mar 2023 – Jul 2024

Remote (New York)

- Developed a full-stack **Next.js** web application for ethical AI research, integrating **FastAPI** backend and **GCP Compute** for deploying LLMs, enabling real-time analysis of generated responses for toxicity prevention.
- Built an interactive **network graph visualizer** in **React.js**, **Node.js**, and **Neo4j**, overcoming node size constraints in **Gephi** to analyze large-scale social media data with **20000+ nodes** and **100K+ edges**. [Link](#)
- Engineered an **automated GCP pipeline** to scrape and store **2,300+ Stormfront threads** into **BigQuery**, enabling real-time data collection and analytics for research on extremist content.
- Led data engineering efforts in a **large-scale YouTube project**, collecting and processing **80M+ comments** across **440K videos**. Created **Looker Studio** dashboards and **optimized BigQuery queries**, increasing analysis efficiency and securing a **5x API limit increase** from YouTube. [Link](#)

Digital Information Research Lab, Boston University

Research And Development Engineer

Dec 2023 – Jun 2024

Remote (Boston)

- Led a team of **14 engineers** to develop a **gamified virtual marketplace** in **React.js** and **Empirica.ly**, simulating economic decision-making with **2,000+ human participants**.
- Engineered AI-driven **autonomous consumer-producer agents** with **LLM-driven decision-making**, enabling large-scale behavioral analysis on **AWS** and **Prolific**.
- Designed and implemented **multi-stage game logic** in **JavaScript**, ensuring a seamless **Figma-to-code** conversion using **Tailwind CSS** and **React.js** for enhanced UX. [Link](#)

Teaching Assistant - Python Lab (ITL404)

Department of Information Technology, Guided by Dr. Arun Kulkarni

Aug 2022 – Nov 2022

Mumbai, Maharashtra

- Conducted lab sessions for **25 students**, defined lab objectives, and helped in the practical implementation of **Python** concepts like advanced data types, OOPs, file handling, and web programming.
- Developed and evaluated lab assignments covering Python, providing one-on-one assistance and enhancing student comprehension and performance, resulting in an average score improvement of **20%**.

PROJECTS

Attire.AI | AI-Powered Fashion Assistant

[GitHub](#)

- Tech:** Stable Diffusion, LoRA, LLaMA, FastAPI, MongoDB, Next.js, Terraform, Docker, AWS Lambda
- Built an **AI-driven fashion recommendation system** with real-time **image augmentation** and a **conversational chatbot** powered by **Stable Diffusion** and **LoRA fine-tuning**.
- Deployed a **full-stack application** on **Vercel** with **WebRTC** for seamless user interactions and **MongoDB** for scalable fashion data storage.

Social Vision | Detecting Coordinated Inauthentic Behavior on Twitter

[GitHub](#)

- Tech:** Next.js, FastAPI, MongoDB, TF-IDF, LSTM, Support Vector Machines
- Developed a **graph-based model** for detecting **coordinated disinformation networks**, achieving **94.6% accuracy** in agenda and propaganda detection.
- Built an **interactive React.js dashboard** with a **FastAPI backend** for real-time visualization and analysis of inauthentic Twitter activities.

RESEARCH AND PUBLICATIONS

Ascend.ai - Building Confidence Through Technology: A Technical Exploration of Facial Expression, Tone and Pitch Analysis with Chatbot Guidance. – Springer Scopus Series, ICDSA 2024

Leveraging CNNs and Ensemble Learning for Automated Disaster Image Classification – Springer Book Series 'Algorithms for Intelligent Systems', ICSISCET, 2023 [ArXiv](#)

Multi-Agent Simulators for Social Networks – Multi-Agent Security (MASEC AI) Workshop, NeurIPS 2023 [ArXiv](#)

EXTRACURRICULAR ACTIVITIES

Participated in 10+ hackathons and won 6 of them.

Conducted a React.js Crash Course named 'React Zero-to-Hero' under the HoD of IT department.

Gave an invited talk at a Fellowship backed by Google Research and Mozilla on the YouTube Data Project.

[Certificates](#)

[Details](#)

[Details](#)