

# Atharva Rai

(248)-982-2308 | [avirai@umich.edu](mailto:avirai@umich.edu) | [Portfolio](#) | [LinkedIn](#) | [GitHub](#) | US Citizen

## Education

---

### University of Michigan, College of Engineering

Ann Arbor, MI

*B.S.E. in Computer Science, Minor in Mathematics*

*Apr 2027*

**Relevant Coursework:** Data Structures & Algorithms, Advanced Operating Systems, Computer Architecture, Networks, Distributed Systems, Software Engineering, Object Oriented Programming, Theory of Computer Science, Introduction to Machine Learning, Computer Science Pragmatics, Discrete Mathematics, Applied Linear Algebra

## Skills

---

**Languages:** C++, C, Python, Java, JavaScript, SQL, HTML, CSS

**Frameworks/Tools:** AWS, Docker, LangChain, Flask, Express, React, Node, TensorFlow, Pandas, PostgreSQL, Git

## Work Experience

---

### Blue Cross Blue Shield of Michigan

Detroit, MI

*Software Engineer Intern - GenAI*

*May 2025 - Aug 2025*

- Designed a scalable Python-based RAG AI system using Streamlit, Flask, Milvus, and Databricks-hosted LLMs, which enabled employees to query 10,000+ policy documents and reduced their lookup time by 70%.
- Engineered a multi-stage retrieval pipeline that split 10,000+ policy documents into chunks, generated semantic embeddings for retrieval, ran vector search through Milvus, and applied a hybrid reranking model to refine results; this system transformed raw data into structured, queryable knowledge and improved answer accuracy by 80%.
- Built and deployed a hybrid backend architecture where Flask exposed REST APIs, Jupyter executed retrieval logic, and Databricks GPU clusters generated final LLM responses, overcoming vector DB constraints and enabling a production-ready proof of concept with clear pathways for future scaling and enterprise adoption.

*Salesforce Developer Intern*

*May 2024 - Aug 2024*

- Owned and implemented 50+ Salesforce user stories, collaborating with product owners and cross-functional IT teams to improve internal workflows, request routing, and case lifecycle automation across departments.
- Developed Salesforce dashboards and reports to track ticket volume, SLA compliance, and cross-team dependencies, providing managers with visibility into operational bottlenecks to support faster, data-driven decision-making.
- Automated recurring analytics workflows by integrating Salesforce exports with Excel-based pipelines, reducing manual reporting effort by 55% and improving data consistency and reliability for team leads and stakeholders.

### Exercise Is Medicine

Ann Arbor, MI

*Software Engineer - Full Stack*

*Aug 2025 - Present*

- Devised and deployed a scalable, modern full-stack website for the Exercise Is Medicine club using React, Node.js/Express, and PostgreSQL, easing member onboarding, event scheduling, and internal communications.
- Developed secure authentication flows, real-time event updates, and role-based admin dashboards, allowing club officers to manage membership, attendance, and announcements through a streamlined, centralized platform.
- Implemented CI/CD workflows with GitHub Actions and modularized the codebase using reusable components, improving maintainability and enabling future student developers to contribute new features without overhead.

### Handshake

Ann Arbor, MI

*AI Research Fellowship*

*Oct 2025 - Present*

- Collaborating to train multimodal AI systems by performing text, image, and audio evaluation tasks. Refining model accuracy, reasoning, and fairness through iterative prompt design, entity tagging, and output ranking.
- Designing detailed annotation schemas for entity tagging, visual understanding, and retrieval relevance, providing high-quality datasets that strengthen model robustness in image search, captioning, and retrieval tasks.

## Project Experience

---

### Thread Management System

- Built a C++ thread library with OS-level scheduling, context switching, and synchronization (threads, mutexes, CVs), supporting 16 CPUs with interrupts, RAII management, and a 30+ program test suite with 100% coverage.

### Multithreaded Ray Tracer

- Produced a multithreaded ray tracer in C++ using low-level libraries such as BVH, SIMD, and PBR for realistic lighting/reflections, accelerating computation and rendering up to 5M rays/frame with 2.5× faster performance.

---

**Interests:** Basketball, Beagles, Food, One Piece, Traveling, Video Games