

Atharva (Avi) Rai

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Education

University of Michigan, College of Engineering

Bachelor's of Science in Engineering in Computer Science

Minor in Mathematics

Ann Arbor, MI

Apr 2027

Relevant Coursework: Data Structures & Algorithms, Operating Systems, Advanced Operating System Projects, Software Engineering, Theory of Computer Science, Introduction to Machine Learning, Computer Science Pragmatics, Introduction to Computer Organization, Discrete Mathematics, Applied Linear Algebra, Digital Media with Python

Skills

Languages: C++, C, Python, Java, Javascript, SQL, HTML, CSS, Swift

Frameworks/Tools: Git, AWS, Firebase, Milvus, Databricks, LangChain, PyTorch, Pandas, Flask, React, REST API

Work Experience

Blue Cross Blue Shield of Michigan

Detroit, MI

Software Engineer Intern

May 2025 - Aug 2025

- Built a full-stack Retrieval-Augmented Generation chatbot using Streamlit, Flask, Milvus, and Databricks-hosted LLMs, which enabled employees to query thousands of policy documents and reduced their lookup time by 65%.
- Engineered a multi-stage retrieval pipeline that split thousands of 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 40%.
- Designed 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.

Information Technology Intern

May 2024 - Aug 2024

- Created and solved 50+ user stories using Salesforce CRM to address customer and employee problems, effectively tackling critical challenges in the IT department and contributing to improvement in overall work efficiency.
- Automated recurring Excel reports using lookup functions (VLOOKUP, INDEX/MATCH) to consolidate user story/support data, improving accuracy and ensuring managers had up-to-date data for decision-making.

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 prompt design, entity tagging, and output ranking.
- Contributing to the next generation of LLM and visual recognition models by analyzing and labeling complex data, such as Instagram entity tagging, to enhance AI capabilities in image search and contextual understanding.

Project Experience

Retrieval-Augmented Generation (RAG) Chatbot

May 2025 - Aug 2025

- Designed a multi-stage retrieval pipeline that converted thousands of unstructured policy files into structured, searchable knowledge; implemented document chunking, semantic embeddings, and a reranking model to surface the most contextually relevant passages, giving employees reliable access to critical compliance information.

Advanced Operating Systems Projects

Jan 2025 - Apr 2025

- Built advanced OS components in C++, including a multi-CPU thread library, a copy-on-write virtual memory pager, and a concurrent file server with scalable locking to enable high-concurrency performance.

Real-Time Chat Application

Jan 2025 - Apr 2025

- Built a full-stack real-time chat application using React for a dynamic UI, Firebase for database and storage, and CSS for a responsive, clean design, with features like user authentication, image sharing, and real-time messaging.

Games Website

July 2025 - Present

- Leveraging AI to build a full-stack web platform for games, designing both the site architecture and the underlying game logic for interactive puzzle and strategy games; using Git for version control, actively expanding the library with new titles, optimizing for replayability, and refining the interface to create an engaging experience for users.

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