

Dear Hiring Manager,

My name is Shuyu Zhou, an alumnus of the Master of Computer Science program at the University of Chicago, graduating in December 2022. I learned about the part-time developer position at The Gallo Memory Lab through an email from Sneha in the MPCS department, and I am very excited to apply.

In my recent role as a contract software engineer at Rocky Mountain Institute, I developed a scalable bilingual Retrieval-Augmented Generation (RAG) system for efficient information retrieval and LLM-based query responses. This project involved extending a PHP/Python/MySQL web application hosted on AWS to interface with external applications using API calls while maintaining unique HTTP sessions for multi-user administration. I utilized Python and SQLAlchemy with MySQL for metadata storage, implemented a dual database system with Chroma Vector DB for embeddings, and optimized content workflows using LangChain and OpenAI/HuggingFace models. Deployed using Docker on AWS EC2, the application ensures robust, cloud-based performance with persistent storage. This experience aligns directly with your need for extending and integrating web applications. You can access live versions of the web application here: <http://54.174.213.130:8501> and <http://54.174.213.130:8502>. The source code is available on GitHub: <https://github.com/szhou12/rag-clean-energy>.

Additionally, I have developed projects in Java, such as an Android mobile application using Java and Kotlin during my time at UChicago. This app allows users to search, save, and view artworks, integrating Retrofit for API communication and persisting preferences using a MongoDB database running in Docker, deployed via AWS Lightsail. I also built a Quarkus microservice for CRUD operations and implemented user authentication with AWS Cognito and serverless functionalities using AWS Lambda, SES, and API Gateway. The source code is available here: <https://bitbucket.org/szhou12/quarkusfinal/src/main/>

My expertise in Python, Java, MySQL, AWS services, and Docker, along with experience in API development and maintaining multi-user environments with unique HTTP sessions, makes me well-suited for this position. I am also knowledgeable in distributed systems, AI/machine learning, and data analytics. If you are planning to add more advanced features involved in these domains and beyond the immediate project requirements, I'd also be happy to take on the challenge.

I am passionate about full-stack engineering projects, and this part-time role offers a perfect opportunity to contribute to The Gallo Memory Lab's impactful work while deepening my expertise. As a former student who greatly benefited from my time at UChicago, I am eager to give back to the university community.

Thank you for considering my application! I look forward to the opportunity to discuss how my skills and experiences align with your needs.

Sincerely,
Shuyu Zhou