CAPSTONE PROJECT

LIBRARY AI AGENT

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OUTLINE

- Problem Statement
- Technology used
- Wow factor
- End users
- Result
- Conclusion
- Git-hub Link
- Future scope
- IBM Certifications



PROBLEM STATEMENT

Students often face challenges in quickly locating the most relevant learning materials within large and complex library systems. Manually searching through catalogs, understanding availability, and identifying resources aligned with their academic needs such as course topics, syllabus, or ongoing assignments can be time consuming and inefficient. There is a need for an intelligent solution that can understand student queries in natural language, analyze academic context, and deliver personalized book and resource recommendations. Additionally, the system should support real-time book availability checks, prioritize high-demand materials, and streamline reservation or waitlisting processes. Addressing this challenge would significantly improve access to educational resources, enhance student engagement, and optimize library usage in academic institutions.



TECHNOLOGY USED

IBM cloud lite services

Natural Language Processing (NLP)

Retrieval Augmented Generation (RAG)

IBM Granite model



IBM CLOUD SERVICES USED

- IBM Cloud Watsonx Al Studio
- IBM Cloud Watsonx AI runtime
- IBM Cloud Agent Lab
- IBM Granite foundation model



WOW FACTORS

- Personalized recommendations based on student profiles, study topics, and course syllabus.
- Understands natural language queries for a smooth and intuitive user experience.
- Real-time checking of book availability, with suggestions for alternate titles if needed.
- Prioritizes high-demand books and assists with reservations or waitlisting.
- Automatically analyzes academic context to provide relevant learning resources.
- Streamlines the search process, saving students valuable time.
- Enhances engagement with academic content through tailored suggestions.
- Continuously improves recommendations by learning from user interactions.

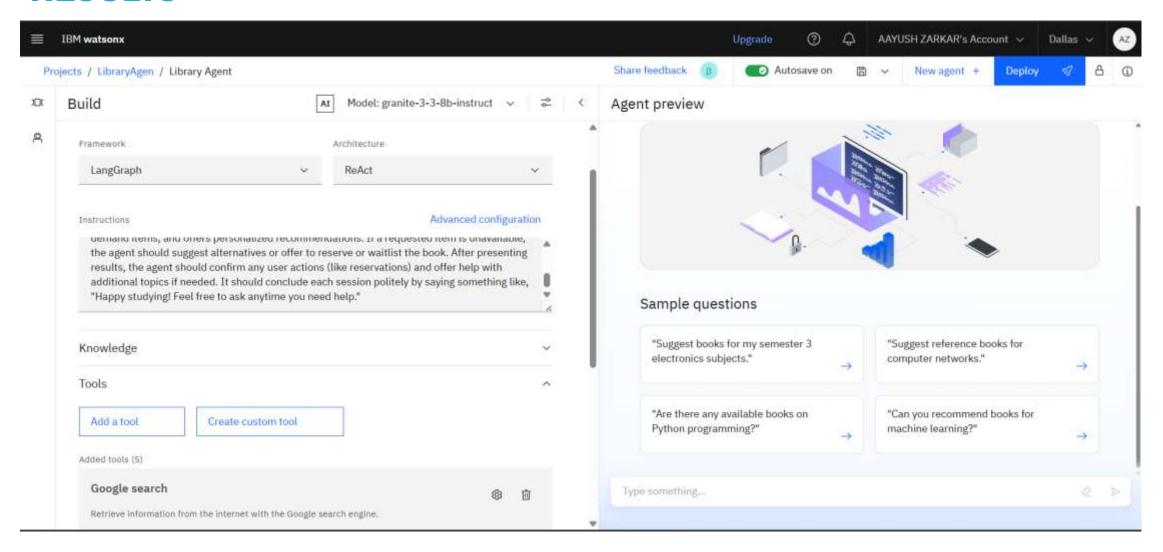


END USERS

- Academic Researchers
- Research Institutions and Universities
- Industry R&D Teams
- Educators

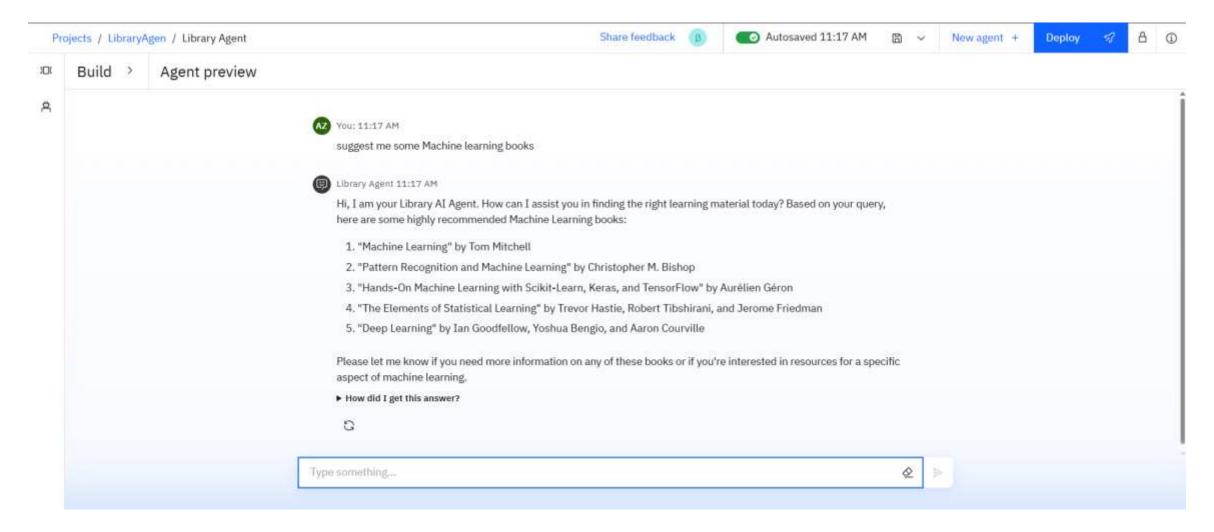


RESULTS



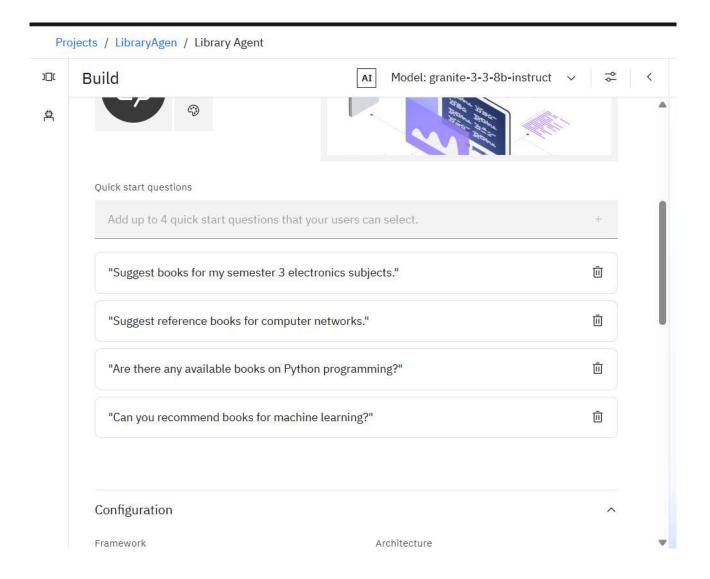


RESULTS



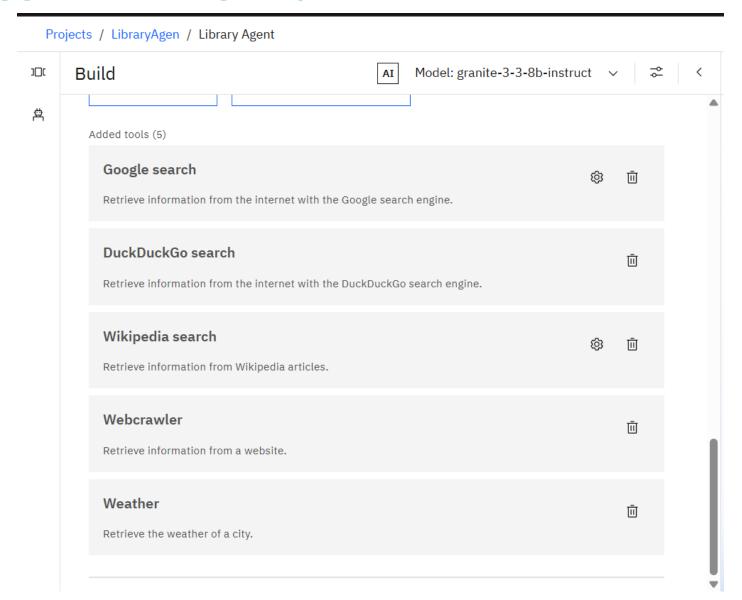


QUICK START QUESTION PREVIEW



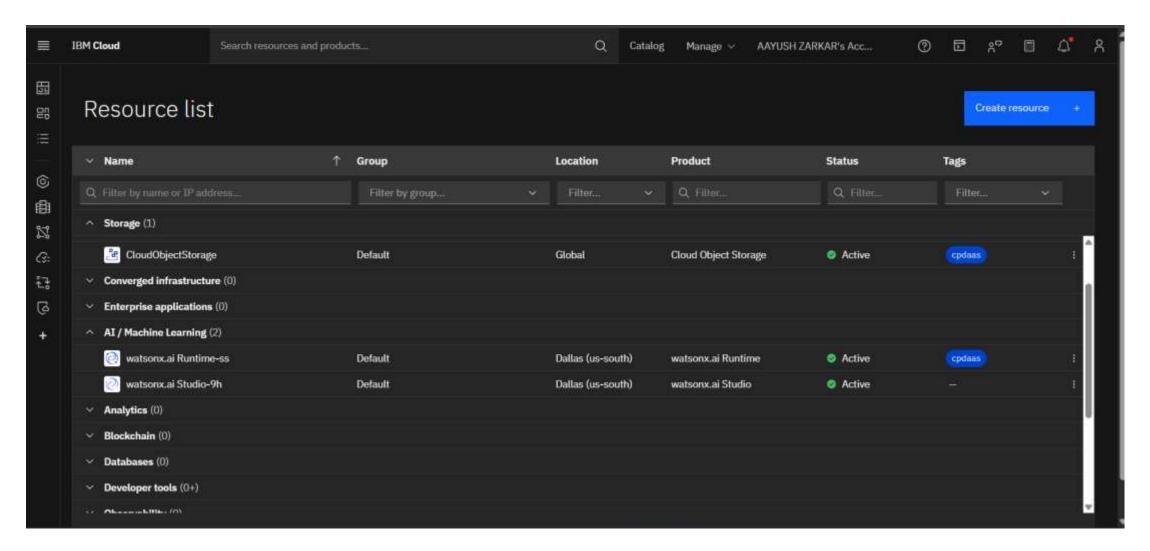


TOOLS USED AND TESTING



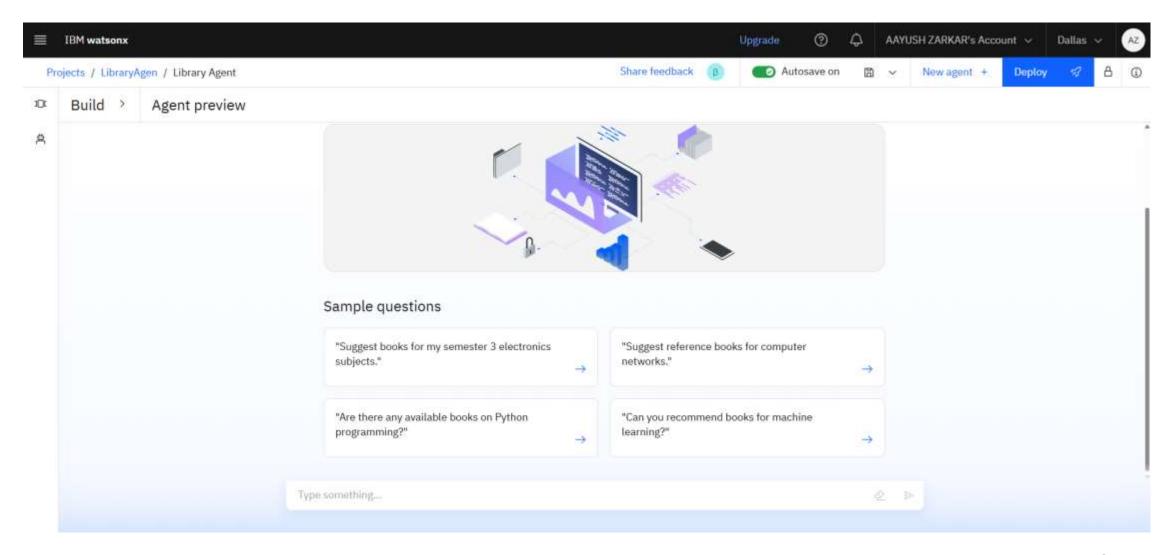


RESOURCES LIST





RESULTS





CONCLUSION

- Enhances the traditional library experience using AI-powered assistance
- Understands academic needs through natural language processing
- Delivers personalized and relevant learning material recommendations
- Checks real-time book availability and assists with reservations
- Streamlines the search process, saving time for students and faculty
- Increases engagement and efficient utilization of library resources
- Supports academic success through smarter access to study materials



FUTURE SCOPE

- Integration with voice assistants for hands-free book searches
- Multilingual support using language translation models for diverse users
- Integration with external digital libraries and academic databases
- Personalized learning paths based on student behavior and progress
- Mobile app version for easy access on the go
- Al-based notifications for new arrivals or books related to ongoing courses
- Offline access to saved reading lists and summaries
- Feedback-driven improvement of recommendations using machine learning



IBM CERTIFICATIONS

In recognition of the commitment to achieve professional excellence



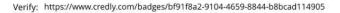
AAYUSH ZARKAR

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



Issued on: Jul 19, 2025 Issued by: IBM SkillsBuild







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IBM SkillsBuild

Completion Certificate



This certificate is presented to

AAYUSH ZARKAR

for the completion of

Lab: Retrieval Augmented Generation with LangChain

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 24 Jul 2025 (GMT)

Learning hours: 20 mins



GITHUB LINK

☐ Github Link :- https://github.com/AAYUSH1612/Project-Ai



THANK YOU

