

IBM SKILLBUILD PROJECT

Library AI Agent

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Problem Statement

The Challenge – A Library AI Agent is an intelligent system designed to assist students in finding the right

learning materials based on their academic needs. It can autonomously analyze user profiles, study topics, and course syllabi to suggest relevant books and resources.

Using natural language processing, it understands student queries and matches them with the most suitable books in the library database.

The agent can check real-time book availability, prioritize high-demand titles, and assist with reservation or waitlist actions.

It saves time by streamlining the search process and offering personalized recommendations aligned with current academic work.

Library AI Agents enhance access, engagement, and resource utilization in educational environments

Technology used

IBM cloud lite services

Natural Language Processing (NLP)

IBM Granite model

IBM cloud services used

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

Wow factors

The distinctive aspect of this project lies in its integration of AI-driven conversational capabilities with cloud-based scalability. Unlike conventional library systems that rely on manual searches or static interfaces, the Library Assistant Agent enables real-time, natural language interaction with users. Its deployment on IBM Cloud ensures high availability, seamless scalability, and reduced infrastructure dependency, making it adaptable to a wide range of libraries. This combination of intelligent automation and cloud accessibility highlights its practical application and relevance in modern digital library management.

Unique features:

The Library Assistant Agent is unique because it combines AI-driven conversational capabilities with cloud-based scalability, enabling users to interact in natural language for instant responses. Its ability to automate repetitive tasks, support multiple users simultaneously, and integrate seamlessly with existing library systems sets it apart from traditional library management tools. This makes it a modern, efficient, and highly accessible solution for both students and librarians.

End users

- Students and Library Members: To check book availability, borrowing history, and due dates conveniently through a conversational interface.
- Librarians: To reduce workload by automating routine queries and record-keeping tasks.
- Educational Institutions: Colleges, universities, and schools can deploy it to streamline library services and improve accessibility.
- Public Libraries: To provide self-service assistance and improve user engagement in community libraries.

Results

The screenshot displays the Agentic AI Library Agent interface, divided into two main sections: Build and Agent preview.

Build Section:

- Setup:** Includes a dropdown for the AI model, currently set to "Model: llama-3-3-70b-instruct".
- Configuration:** Features two dropdown menus: "Framework" set to "LangGraph" and "Architecture" set to "ReAct".
- Instructions:** A text area containing the following instructions:
 - The AI Library Assistant is an intelligent virtual agent that simplifies library interactions by:
 - Helping users search books by title, author, or keywords
 - Providing real-time availability and location of books
 - Offering AI-powered book recommendations based on user interests
- Knowledge:** A section for adding knowledge, currently empty.
- Tools:** A section for adding tools, with buttons for "Add a tool" and "Create custom tool".

Agent preview Section:

- User Input:** "hi suggest me top rating book"
- Agent Response:** "Based on the search results, here are some top-rated books:"
 1. "Words of Radiance" (The Stormlight Archive, #2) by Brandon Sanderson
 2. "Harry Potter and the Philosopher's Stone" by J.K. Rowling
 3. "The Martian" by Andy Weir
 4. "World War Z" by Max Brooks
 5. "Ender's Game" by Orson Scott Card
 6. "Kindred" by Octavia E. Butler
 7. "A Court of Thorns and Roses" by Sarah J. Maas
 8. "Everything I Know About Love: A Memoir" by Dolly Alderton
 9. "Funny Story" by Jonathan Safran Foer
 10. "The Heaven & Earth Grocery Store: A Novel" by James McBride
- Disclaimer:** "These books have high ratings on Goodreads and have been popular among readers. However, it's worth noting that ratings can change over time, and individual tastes may vary."
- Footer:** "How did I get this answer?"

The interface also includes a top navigation bar with "Projects / Agentic_AI / Library Agent", "Share feedback", "Autosaved 10:07 PM", "New agent +", and a "Deploy" button. A bottom status bar shows "Type something..." and "Activate Windows Go to Settings to activate Windows."

Results

[Share feedback](#) β Autosaved 10:07 PM New agent + Deploy

<

Agent preview

DS

You: 10:06 PM

hi suggest me top rating book

Library Agent 10:06 PM

Based on the search results, here are some top-rated books:

1. "Words of Radiance" (The Stormlight Archive, #2) by Brandon Sanderson
2. "Harry Potter and the Philosopher's Stone" by J.K. Rowling
3. "The Martian" by Andy Weir
4. "World War Z" by Max Brooks
5. "Ender's Game" by Orson Scott Card
6. "Kindred" by Octavia E. Butler
7. "A Court of Thorns and Roses" by Sarah J. Maas
8. "Everything I Know About Love: A Memoir" by Dolly Alderton
9. "Funny Story" by Jonathan Safran Foer
10. "The Heaven & Earth Grocery Store: A Novel" by James McBride

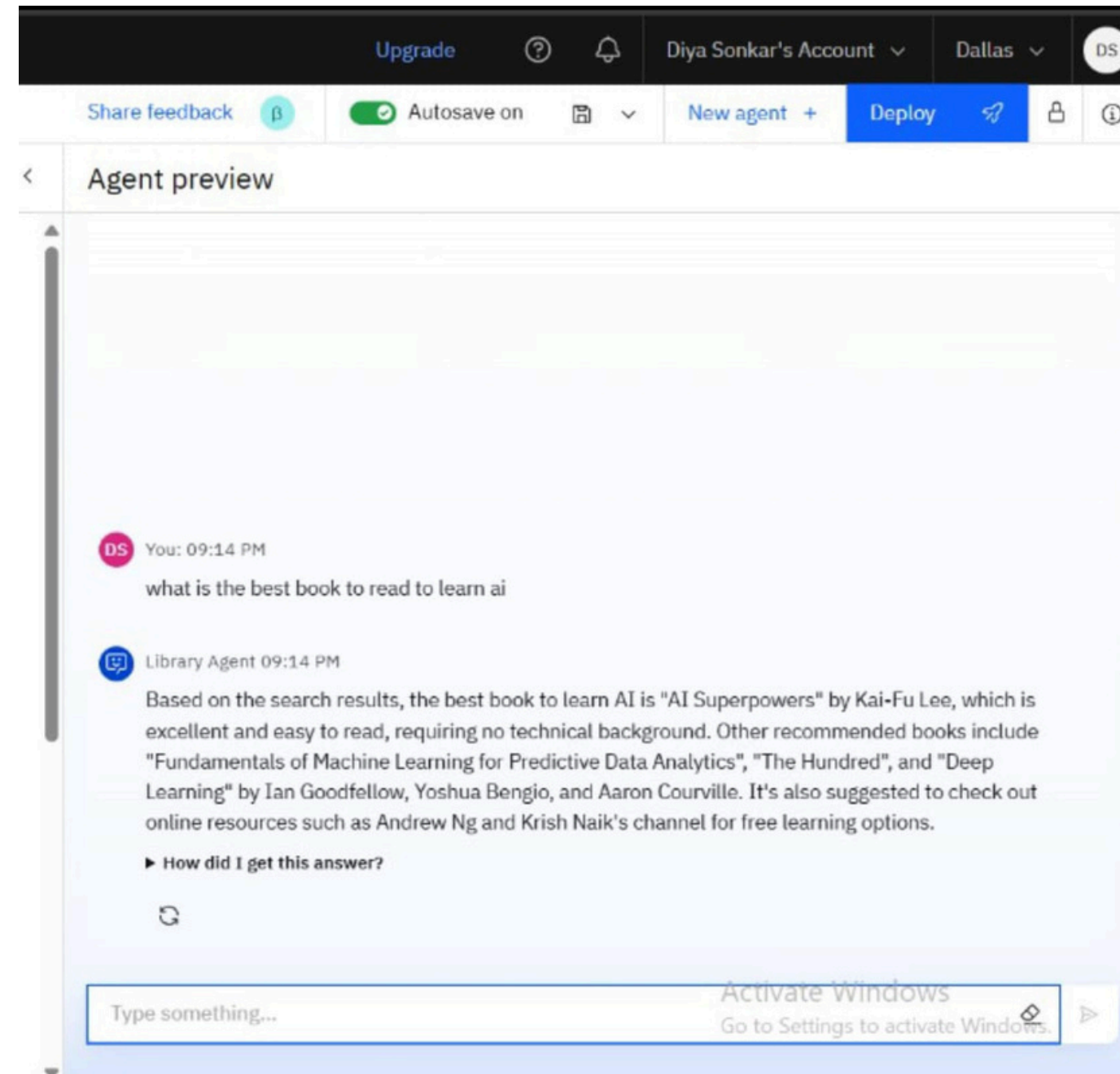
These books have high ratings on Goodreads and have been popular among readers. However, it's worth noting that ratings can change over time, and individual tastes may vary.

► How did I get this answer?

Type something...

Activate Windows
Go to Settings to activate Windows.

Results



Results Deployed AI Agent

IBM watsonx Upgrade ? Bell Diya Sonkar's Account Dallas DS

Deployment spaces / library agent space1 / Library Agent /

Library Agent ✓ Deployed Online

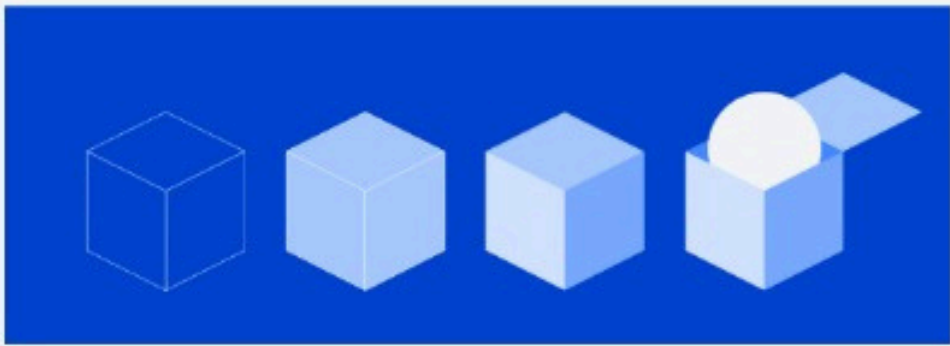
API reference Test **Preview**

New chat +

Library Agent 12:14 AM

Welcome to Library Agent

I am your personal library assistant , I can help you with all your work



Type something...

About this deployment

Name Library Agent

Description I am your personal library assistant , I can help you with all your work

Deployment Details

Deployment ID: 12564c68-af2e-45...

Serving name: No serving name.

Software specification: runtime-24.1-py3.11

Hardware specification: Extra extra small: 1 CPU and 2 GB RAM

Copies: 1

Tags wx-agent

Associated asset Library Agent

93c2eeaf-be9f-402f-8fd7-3fbc0238032e

Conclusion

- The Library Assistant Agent effectively automates library tasks, reducing manual workload and improving efficiency.
- Its AI-driven conversational interface and cloud-based deployment offer scalability, accessibility, and ease of use.
- This project demonstrates the practical application of AI in modernizing library services and enhancing user experience.

GitHub Link

- https://github.com/Diya9250/library_assistant

Future scope

- Integrate voice recognition for hands-free, speech-based interaction.
- Develop AI-powered book recommendation systems based on user preferences and borrowing history
- Create mobile applications to provide users with on-the-go access to the assistant.
- Implement automated fine calculation and online payment gateways.
- Enhance integration with student ID systems for personalized services and secure access
- Incorporate advanced analytics to predict library trends and optimize resource allocation.

IBM Certifications



In recognition of the commitment to achieve
professional excellence



Diya Sonkar

Has successfully satisfied the requirements for:

Journey to Cloud: Envisioning Your Solution



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IBM **SkillsBuild**

Completion Certificate



This certificate is presented to

Diya Sonkar

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

THANKYOU