

# CAPSTONE PROJECT

## LIBRARY AGENT

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# OUTLINE

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

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# PROBLEM STATEMENT

Students and researchers often struggle to find relevant materials in vast library collections because keyword-based search systems fail to capture user intent and academic context. Without real-time availability or personalized recommendations, they waste time navigating complex catalogs and frequently overlook essential resources.

## Proposed Solution:

An AI Research Agent that uses Natural Language Processing (NLP), Retrieval-Augmented Generation (RAG), and machine learning to understand user intent, retrieve relevant academic content, provide personalized recommendations, and deliver accurate, real-time responses—improving research and enhancing learning outcomes.

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# TECHNOLOGY USED

IBM cloud lite services

Natural Language Processing (NLP)

Retrieval Augmented Generation (RAG)

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

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## WOW FACTORS

The Library AI Agent makes finding and accessing academic resources faster and easier. It understands natural language, gives smart recommendations, checks real-time availability, and helps with reservations—saving time and improving learning outcomes.

Unique features:

Personalizes Every Search

Recommends What Matters Most

Connects You Across Departments

Finds the Right Resource Instantly

Works 24/7 Like a Digital Librarian

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## END USERS

- Academic Advisers
- Students
- Faculty Members & Professors
- Librarians
- Research Scholars

# RESULTS

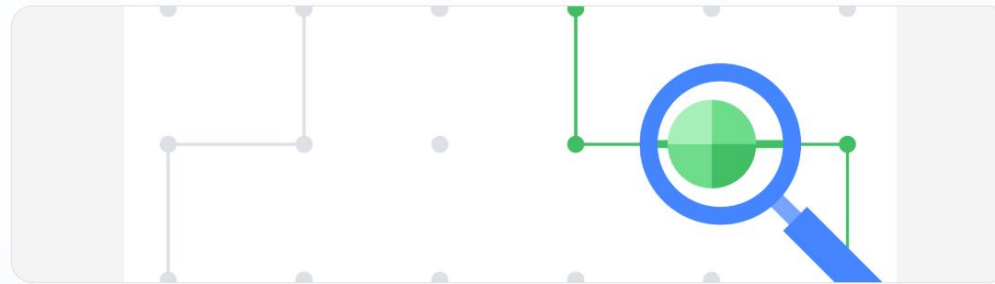
## Agent preview



Library Agent 02:07 AM

Welcome to Library Agent

I'm your AI library buddy find books, check availability, reserve, and get suggestions tailored to u



Type something...





# RESULTS

## Agent preview



You: 02:09 AM  
suggest me a book



Library Agent 02:09 AM

Sure, I'd be happy to help! To provide the best recommendation, could you please tell me your course or area of interest? For example, are you studying Computer Science, Mathematics, Engineering, or another field?

► How did I get this answer?



You: 02:09 AM  
machine learning



Library Agent 02:09 AM

Great! For Machine Learning, I recommend "Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow" by Aurélien Géron.

- **Subject:** Machine Learning
- **Level:** Intermediate/Advanced
- **Status:** Available (Computing)
- **Description:** This book provides a comprehensive introduction to the field of machine learning, covering both theoretical concepts and practical applications. It's well-suited for those with some programming experience, using Python and popular libraries like Scikit-learn, Keras, and TensorFlow.

Would you like more recommendations or help finding related resources?

▼ How did I get this answer?



1: Generating final answer



Steps created by Agent



Type something...



# RESULTS

## Agent preview



You: 02:13 AM

I need resources for my Mechanical Engineering thermodynamics course



Library Agent 02:13 AM

Absolutely, I can help with that! Here are some recommended books for your Mechanical Engineering thermodynamics course:

1. "Fundamentals of Thermodynamics" by Claus Borgnakke and Richard E. Sonntag - Available (Thermodynamics)
  - This textbook provides a comprehensive introduction to the laws of thermodynamics, covering both classical and statistical mechanics.
2. "Thermodynamics: An Engineering Approach" by Cengel and Boles - Available (Engineering Thermodynamics)
  - This book is widely used in engineering programs for its clear, practical approach to thermodynamics concepts.
3. "Introduction to Thermodynamics and Heat Transfer" by Yunus A. Cengel and Afshin J. Ghajar - Available (Thermodynamics & Heat Transfer)
  - This textbook offers a balanced treatment of thermodynamics and heat transfer, making it suitable for a course that covers both topics.
4. "Thermodynamics: Senior Level" by R.K. Sinha and A.K. Jain - Available (Thermodynamics)
  - This book is particularly useful for senior-level students, providing in-depth coverage of advanced topics.
5. "Engineering Thermodynamics" by J.M. Celano, C.J. Mistree, and R.A. McDonough - Available (Engineering Thermodynamics)

Type something...



# RESULTS

## Deployed AI Agent

The screenshot displays the IBM watsonx Agent web interface. At the top, a dark navigation bar includes the 'IBM watsonx' logo, an 'Upgrade' button, and user information for 'SATHIVADA PRADEEP's Ac...'. Below this, a breadcrumb trail shows 'Deployment spaces / Library Agent / watsonx Agent'. The main header area features the 'watsonx Agent' title with 'Deployed' and 'Online' status indicators. A tabbed interface at the bottom of the header includes 'API reference', 'Test', and 'Preview' (which is currently selected). On the right side of the header, there is a 'New chat +' button. The chat area itself shows a conversation starting with a user message at 02:48 AM: 'I'm in final year, suggest books for my project on IoT'. The agent's response, also at 02:48 AM, provides a list of eight book recommendations for an IoT project. The list includes titles like 'The Internet of Things' by Samuel Greengard and 'The Fourth Industrial Revolution' by Klaus Schwab. Below the list, a paragraph explains that these books cover IoT fundamentals, applications, and future directions. A link 'How did I get this answer?' is provided at the bottom of the response. The interface concludes with a text input field labeled 'Type something...' and a send button.

IBM watsonx Upgrade ? SATHIVADA PRADEEP's Ac... Dallas SP

Deployment spaces / Library Agent / watsonx Agent /

watsonx Agent Deployed Online

API reference Test **Preview**

New chat +

**S** You 02:48 AM  
I'm in final year, suggest books for my project on IoT

**watsonx Agent** 02:48 AM  
Based on the search results, here are some book recommendations for an IoT project:

1. "The Internet of Things" by Samuel Greengard
2. "The Fourth Industrial Revolution" by Klaus Schwab
3. "Getting Started with the Internet of Things"
4. "Precision"
5. "The Internet of Things"
6. "Learning IoT Fundamentals: Networking Technologies, Protocols, and Use Cases"
7. "The Amazon Way on IoT"
8. "IoT Fundamentals: Networking Technologies, Protocols, and Use Cases"

These books cover a range of topics related to IoT, including its fundamentals, applications, and future directions. They can provide a good starting point for your project. Additionally, you can also consider checking out online resources and tutorials, such as those found on Picobricks, to learn more about IoT and get hands-on experience with building projects.

► How did I get this answer?

Type something...

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## CONCLUSION

- Speeds up resource discovery through intelligent search, saving time for students and researchers.
- Recommends books and materials based on academic needs and course content.
- Enhance user experience with real-time book status.

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# FUTURE SCOPE

- Integration with Learning Management Systems (LMS)
- Multilingual Research Support
- Voice-Activated Research Assistant
- Predictive Analytics for Demand Forecasting
- Real-Time Collaboration Features

# IBM CERTIFICATIONS



IBM **SkillsBuild**

Completion Certificate



This certificate is presented to  
**SATHIVADA PRADEEP**

for the completion of

**Lab: Retrieval Augmented Generation with  
LangChain**

(ALM-COURSE\_3824998)

According to the Adobe Learning Manager system of record

**Completion date:** 28 Jul 2025 (GMT)

**Learning hours:** 20 mins

## GITHUB LINK

- Git hub link: <https://github.com/SathivadaPradeep/Library-Agent>



Library-Agent

Public

Pin

Watch0

Fork0

Star0

main

1 Branch

0 Tags

Q Go to file

t

Add file

<> Code

<div><div></div><div>SathivadaPradeep</div></div>	Update README.md	cd153eb · 10 minutes ago	3 Commits
<div>LICENSE</div>	Initial commit		1 hour ago
<div>README.md</div>	Update README.md		10 minutes ago

README

MIT license

# Library Agent

An AI-powered intelligent library assistant that revolutionizes how students discover and access academic resources.

## Problem Statement

Students waste time searching through large library collections using ineffective keyword-based systems that don't understand their academic needs or provide personalized recommendations. This leads to frustration and poor resource utilization in academic institutions.

## Solution

An AI Library Agent that uses Natural Language Processing (NLP) and machine learning to understand student queries, recommend relevant books based on their courses, check availability in real-time, and handle reservations automatically.

## Key Features

About

An AI-powered library assistant that helps students find relevant academic resources using NLP and personalized recommendations.

Readme

MIT license

Activity

0 stars

0 watching

0 forks

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**THANK YOU**