

# CAPSTONE PROJECT

## TRAVEL AGENT

**Presented By:**

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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

## Multi-language Course Content Translator Agent

A Multi-language Course Content Translator Agent, powered by RAG (Retrieval Augmented Generation), enables automatic translation of academic course materials into multiple regional languages while preserving technical accuracy and educational context. It retrieves academic glossaries, curriculum frameworks, and subject-specific terminologies to ensure translations are context-aware and pedagogically sound. Users can upload notes, presentations, or PDFs and receive translations that maintain the integrity of the original content across languages like Hindi, Marathi, Tamil, Bengali, and more. The agent promotes inclusive education, removes language barriers, and supports students from diverse linguistic backgrounds. This AI-driven assistant enhances accessibility and equity in learning environments.

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# TECHNOLOGY USED

IBM cloud lite services

Natural Language Processing (NLP)

Retrieval Augmented Generation (RAG)

IBM Granite model

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## 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

"An intelligent, context-aware academic translator that breaks language barriers in education using the power of IBM Watsonx and Retrieval-Augmented Generation."

### **Unique features:**

Reduces mistranslation of field-specific jargon

Automatically extracts and preprocesses educational content

Makes it easier for teachers or students to use without reformatting

Breaks language barriers for non-English speaking students

Most translators just translate. Your agent retrieves domain-specific glossaries or terminologies and injects them into the translation prompt.

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## END USERS

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

# RESULTS

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< Agent preview

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You: 06:27 PM

You are an academic translator. Translate the following course content into Hindi, ensuring that the technical accuracy and educational context are preserved.

Use the academic glossary provided below to guide translations of key terms.

Glossary:

- Database → डेटाबेस
- Relational Model → रिलेशनल मॉडल
- Primary Key → प्राथमिक कुंजी
- Normalization → सामान्यीकरण

Content: A database is an organized collection of data. The relational model uses tables with rows and columns. Each table has a primary key.

Translated Output:

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Agent preview

- Database → डेटाबेस
- Relational Model → रिलेशनल मॉडल
- Primary Key → प्राथमिक कुंजी
- Normalization → सामान्यीकरण

Content: A database is an organized collection of data. The relational model uses tables with rows and columns. Each table has a primary key.

Translated Output:

🤖

watsonx Agent 06:27 PM

डेटाबेस डेटा का एक व्यवस्थित संग्रह है। रिलेशनल मॉडल पंक्तियों और स्तंभों के साथ तालिकाओं का उपयोग करता है। प्रत्येक तालिका में एक प्राथमिक कुंजी होती है।

► How did I get this answer?

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Type something...



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Agent preview

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You: 06:30 PM

You are an expert academic translator. Translate the following course content into Simplified Chinese, ensuring that technical accuracy and educational context are preserved.

Use the academic glossary provided below to translate key technical terms correctly.

Glossary:

- Database → 数据库
- Relational Model → 关系模型
- Primary Key → 主键
- Normalization → 规范化
- Transaction → 事务
- Atomicity → 原子性
- Consistency → 一致性
- Isolation → 隔离性

Type something...  

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Agent preview

Transaction → 事务

- Atomicity → 原子性
- Consistency → 一致性
- Isolation → 隔离性
- Durability → 持久性



Content: A database is an organized collection of data. The relational model uses tables with rows and columns. Each table has a primary key. Normalization is used to reduce data redundancy. A transaction must satisfy the ACID properties: Atomicity, Consistency, Isolation, and Durability.

Translated Output:

🤖

watsonx Agent 06:30 PM

数据库是数据的有组织集合。关系模型使用带有行和列的表格。每个表格都有一个主键。规范化用于减少数据冗余。事务必须满足ACID属性：原子性、一致性、隔离性和持久性。

Type something...  

# RESULTS

## Deployed AI Agent

The screenshot displays the IBM watsonx Agent interface. At the top, a dark navigation bar includes the 'IBM watsonx' logo, an 'Upgrade' button, and various utility icons. Below this, a breadcrumb trail shows the path: 'Deployment spaces / Multi-Language-Translator / watsonx Agent /'. The main header area identifies the agent as 'watsonx Agent' with a green 'Deployed' status and an 'Online' badge. Three tabs are visible: 'API reference', 'Test', and 'Preview', with the 'Preview' tab currently selected. In the top right corner of the chat area, there is a 'New chat +' button. The chat history shows a message from 'You' at 07:00 PM, which contains a system prompt for an academic translator. The prompt asks to translate course content into Hindi while maintaining technical accuracy and educational context, and to use a provided glossary for key terms. The glossary lists: Database → डेटाबेस, Relational Model → रिलेशनल मॉडल, Primary Key → प्राथमिक कुंजी, and Normalization → सामान्यीकरण. The content to be translated is: 'A database is an organized collection of data. The relational model uses tables with rows and columns. Each table has a primary key.' At the bottom of the chat window is a text input field with the placeholder 'Type something...' and a send button.

IBM watsonx Upgrade ? ? ? ? ? ? ? ?

Deployment spaces / Multi-Language-Translator / watsonx Agent /

watsonx Agent ✓ Deployed Online

API reference Test **Preview**

New chat +

**K** You 07:00 PM

You are an academic translator. Translate the following course content into Hindi, ensuring that the technical accuracy and educational context are preserved.

Use the academic glossary provided below to guide translations of key terms.

Glossary:

- Database → डेटाबेस
- Relational Model → रिलेशनल मॉडल
- Primary Key → प्राथमिक कुंजी
- Normalization → सामान्यीकरण

Content: A database is an organized collection of data. The relational model uses tables with rows and columns. Each table has a primary key.

Type something... ➤

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## CONCLUSION

- The agent ensures that academic content is accessible to students in their native languages, promoting inclusive and equitable learning.
- By leveraging Retrieval-Augmented Generation (RAG) and academic glossaries, it maintains technical accuracy and preserves the educational context of course materials.
- Supports uploads of various formats (PDF, PPT, DOCX) and allows users to easily select target languages and download translated content.
- Built on IBM Cloud Lite using Watsonx.ai and Object Storage, making it an efficient and scalable solution suitable for academic institutions of all sizes.

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# FUTURE SCOPE

- Voice & OCR Integration
- Interactive Chatbot Assistant
- Curriculum-Aware Summarization
- LMS & Adaptive Learning Integration
- Expanded Domain & Language Support
- Real-Time Collaboration Tools
- Feedback Loop for Accuracy Improvement
- Offline Translation Support

# IBM CERTIFICATIONS

In recognition of the commitment to achieve  
professional excellence



## Kavyamrutha Puvvuthota

Has successfully satisfied the requirements for:

### Getting Started with Artificial Intelligence

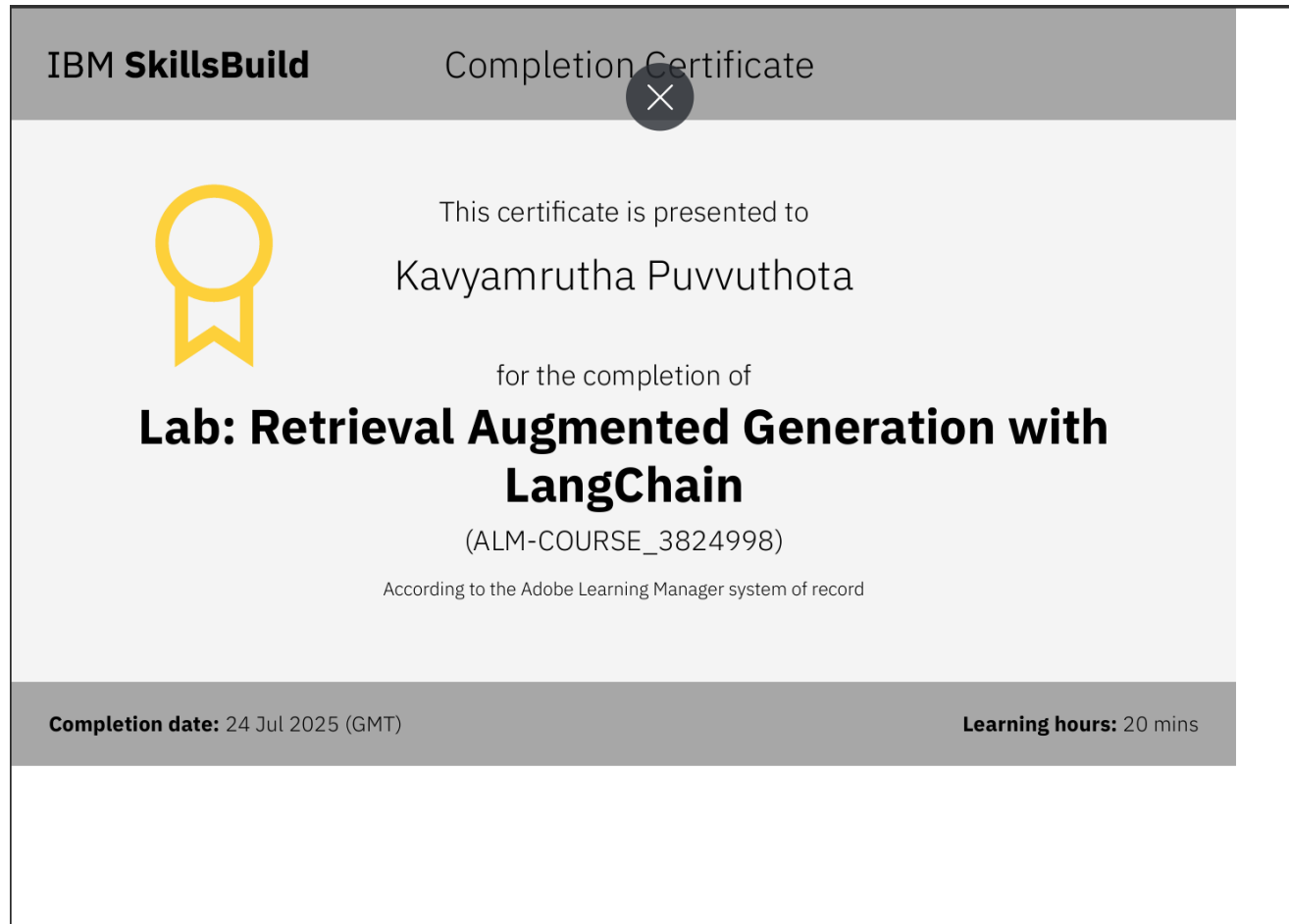


Issued on: Jul 15, 2025  
Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/2723fafb-4e5a-4055-acb6-08156ce533ef>



# IBM CERTIFICATIONS : RAG LAB



## GITHUB LINK

- Git hub link : <https://github.com/puvvuthota-kavyamrutha/Multi-Language-Translator/tree/main>



**THANK YOU**