
IBM HACKATHON PROJECT

SYLLABUS AND CURRICULUM PLANNER AGENT

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PROBLEM STATEMENT

- ☐ Design and develop an AI-powered Syllabus & Curriculum Planner Agent that:
- ☐ Assists educators and students in creating structured syllabi.
- ☐ Suggests topic breakdowns, sub-topics, and timelines.
- ☐ Adapts curriculum plans based on course duration and focus.
- ☐ Provides interactive conversational planning.
- ☐ Reduces manual effort in curriculum design.

Proposed Solution:

We propose building an AI-driven Curriculum Planner using IBM watsonx Assistant and IBM Cloud Lite services. This agent will guide users in planning detailed course syllabi through natural language interactions, dynamically generating topic hierarchies and week-wise schedules.

TECHNOLOGY USED

- ☐ **IBM cloud lite services**
- ☐ **Natural Language Processing (NLP)**
- ☐ **Large Language models (LLM)**
- ☐ **IBM Granite model**
- ☐ **JSON based curriculum structuring**

IBM CLOUD SERVICES USED

- ☐ **IBM Cloud Watsonx AI Studio**
- ☐ **IBM Cloud Watsonx AI runtime IBM**
- ☐ **CloudFunctions**
- ☐ **IBMCloud service**
- ☐ **IBM Granite (via watsonx.aistudio)**
- ☐ **IBM Cloud Object Storage**
- ☐ **IBM AI Tools**

WOW FACTORS

Unique features:

- ▣ **Conversational syllabus and curriculum planning.**
- ▣ **Dynamic course structure generation based on duration.**
- ▣ **Editable AI recommendations for educators.**
- ▣ **Scalable for any subject or academic level.**
- ▣ **Minimal technical setup via IBM watsonx platform.**
- ▣ **AI-suggested course outlines that adapt to user inputs.**

END USERS

- ☐ **College Professors and Educators**
- ☐ **Curriculum Designers**
- ☐ **Academic Institutions**
- ☐ **Online Course Creators**
- ☐ **Students Planning Self-Learning Paths**

SETTING UP

The screenshot displays the IBM watsonx interface for setting up an AI agent. The top navigation bar includes the IBM watsonx logo, an 'Upgrade' button, a help icon, a notification bell, and user information for 'Douglas Fernandes's Acco...' in 'Dallas'. The breadcrumb trail shows 'Projects / syllabus_agent / syllabus_agent'. The main interface is divided into three panels:

- Saved agents:** Lists the 'syllabus_agent' with the description 'AI tool for smart syllabus planning and curriculum desi...'.
- Build:** The 'Setup' section for the 'syllabus_agent' with the following details:
 - Name:** syllabus_agent
 - Description:** AI tool for smart syllabus planning and curriculum design—fast, aligned, and outcome-focused. (93/100 characters)
 - Icon:** A robot head icon.
 - Placeholder image:** A diagram showing a network of nodes and a magnifying glass over a green circle.
- Agent preview:** Shows a preview of the agent's interface with the following content:
 - Header:** 'Welcome to syllabus_agent' followed by the description 'AI tool for smart syllabus planning and curriculum design—fast, aligned, and outcome-focused.'
 - Sample questions:** Two buttons with text: 'Can you create a weekly study plan based on my' and 'What topics should I focus on before the'.
 - Input field:** A text input field with the placeholder 'Type something...'.

AGENT INSTRUCTIONS

The screenshot displays the IBM watsonx interface for configuring and previewing an AI agent. The top navigation bar includes the IBM watsonx logo, a list of open tabs (granite-3-3-8b-in..., watsonx - IBM Clo..., IBM SkillsBuild Sof..., my_agentic_projec...), and user information (Douglas Fernandes's Acco..., Dallas, DF). The main interface is divided into three sections: Saved agents, Build, and Agent preview.

Saved agents: Lists the agent 'syllabus_agent' with the description 'AI tool for smart syllabus planning and curriculum desi...'. It is marked as 'From syllabus_agent'.

Build: The configuration section for the agent. It includes:

- Configuration:** Framework set to 'LangGraph' and Architecture set to 'ReAct'.
- Instructions:** A text area containing the instruction: 'You are an AI-powered assistant that helps educators design effective, standards-aligned, and engaging syllabi and curricula. Condition: When user greets the agent (e.g., "Hi", "Hello", "Hey", "Good morning", etc.)'. A link for 'Advanced configuration' is also present.
- Knowledge:** A section for the vector index, with a dropdown menu labeled 'Select or create vector index'. Below it, a note states: 'A vector index searches documents for relevant information to ground the model. Upload the files to index or select an existing index.'
- Tools:** A section for defining tools, currently empty.

Agent preview: Shows a chat interface with the agent 'syllabus_agent' at 11:56 PM. The welcome message reads: 'Welcome to syllabus_agent. AI tool for smart syllabus planning and curriculum design—fast, aligned, and outcome-focused.' Below the message is a visual representation of a neural network or graph structure. Under 'Sample questions', two example prompts are shown: 'Can you create a weekly study plan based on my' and 'What topics should I focus on before the'. A text input field at the bottom is labeled 'Type something...'.

QUICK START QUESTIONS PREVIEW

The screenshot displays the IBM watsonx interface for building and previewing an AI agent. The top navigation bar includes the 'IBM watsonx' logo, an 'Upgrade' button, a help icon, a notification bell, and a user profile dropdown for 'Douglas Fernandes's Acco...'. The breadcrumb trail shows 'projects / syllabus_agent / syllabus_agent'. The main interface is divided into three sections: 'Saved agents', 'Build', and 'Agent preview'.

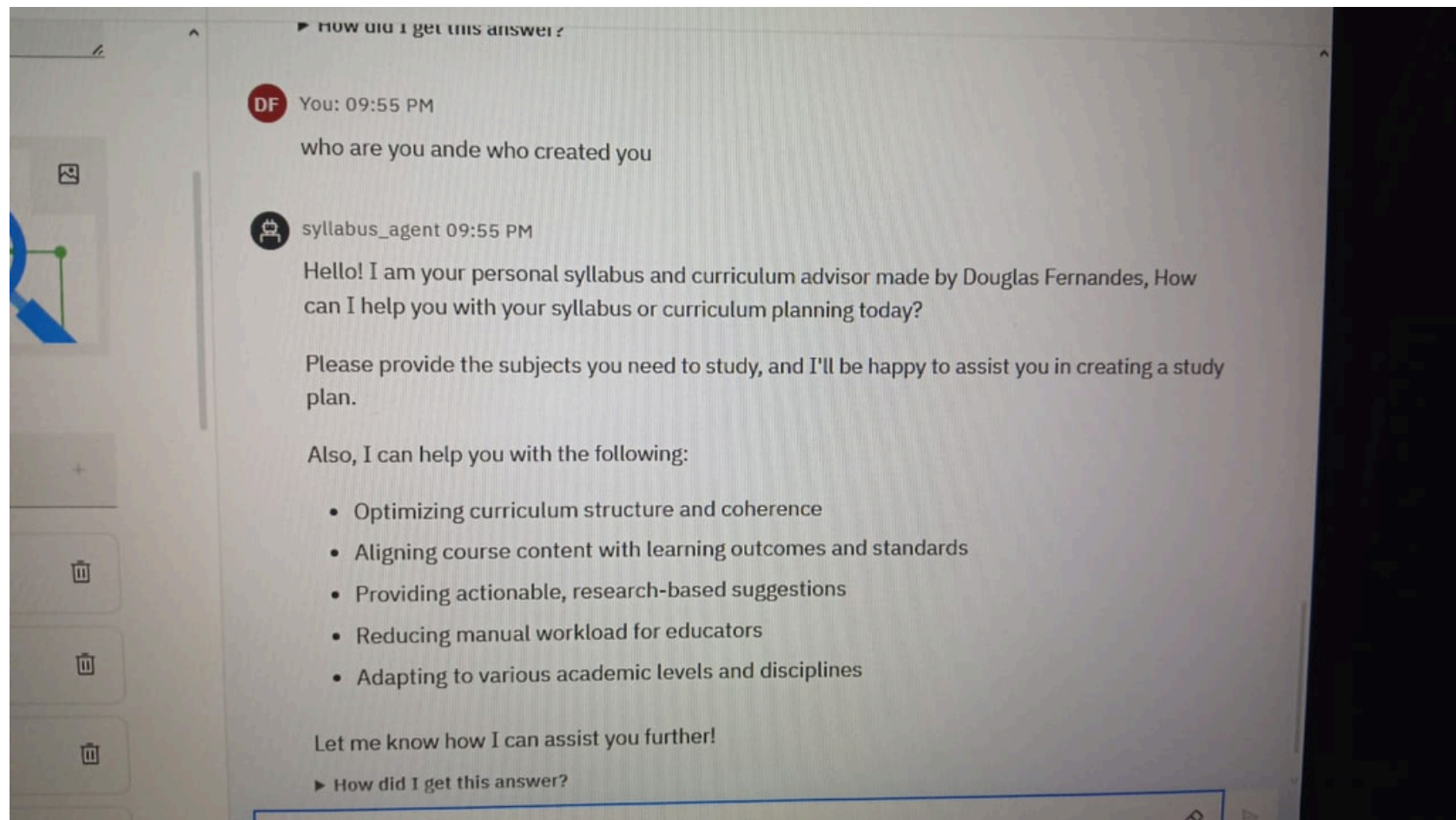
Saved agents: Lists the 'syllabus_agent' with the description 'AI tool for smart syllabus planning and curriculum desi...'. It is marked as 'From syllabus_agent'.

Build: Shows the 'Model: llama-3-3-70b-instruct'. Under the 'Quick start questions' section, there is a prompt to 'Add up to 4 quick start questions that your users can select.' followed by three example questions, each with a delete icon:

- Can you create a weekly study plan based on my syllabus?
- What topics should I focus on before the midterm according to my subjects?
- What should my study plan look like for my study course?

Agent preview: Displays the agent's output, starting with a timestamp 'syllabus_agent 11:56 PM' and a welcome message: 'Welcome to syllabus_agent'. Below this is a description: 'AI tool for smart syllabus planning and curriculum design—fast, aligned, and outcome-focused.' The preview also shows a visual element with a green and blue magnifying glass icon over a network diagram.

TOOLS USED & TESTING



DEPLOYMENT & PREVIEW

IBM watsonx

Upgrade ⓘ 🔔 Douglas Fernandes's Acco... Dallas DF

Deployment spaces / Syllabus_advisor_agent / syllabus_agent


Deployments

Code

Schema

🔍 Search

↻ New deployment ➦

Name	Type	Status	Tags	Last modified
 syllabus_agent	Online	🟢 Deployed	wx-agent	1 hour ago Douglas Fernandes (You)

Items per page: 20

1–1 of 1 items

1 of 1 pages

About this asset

Name
syllabus_agent

Description
AI tool for smart syllabus planning and curriculum design—fast, aligned, and outcome-focused.

Asset Details
Type: python
AI service ID: 21af248a-f246-40...
Software specification: runtime-24.1-py3.11

Tags
wx-agent

Last modified
1 hour ago by Douglas Fernandes

Created on
Aug 2, 2025 by Douglas Fernandes

API REFERENCE AFTER DEPLOYMENT

Deployment spaces / Syllabus_advisor_agent / syllabus_agent /

syllabus_agent Deployed Online

API reference Test Evaluations Preview

Endpoints for inferencing ⓘ

Private endpoint

Bearer <token> ⓘ

IAM

Public endpoint

Learn more about the 2021-05-01 version query parameter

Code snippets

[cURL](#) [Java](#) [JavaScript](#) [Python](#) [Scala](#)

About this deployment

Name
syllabus_agent

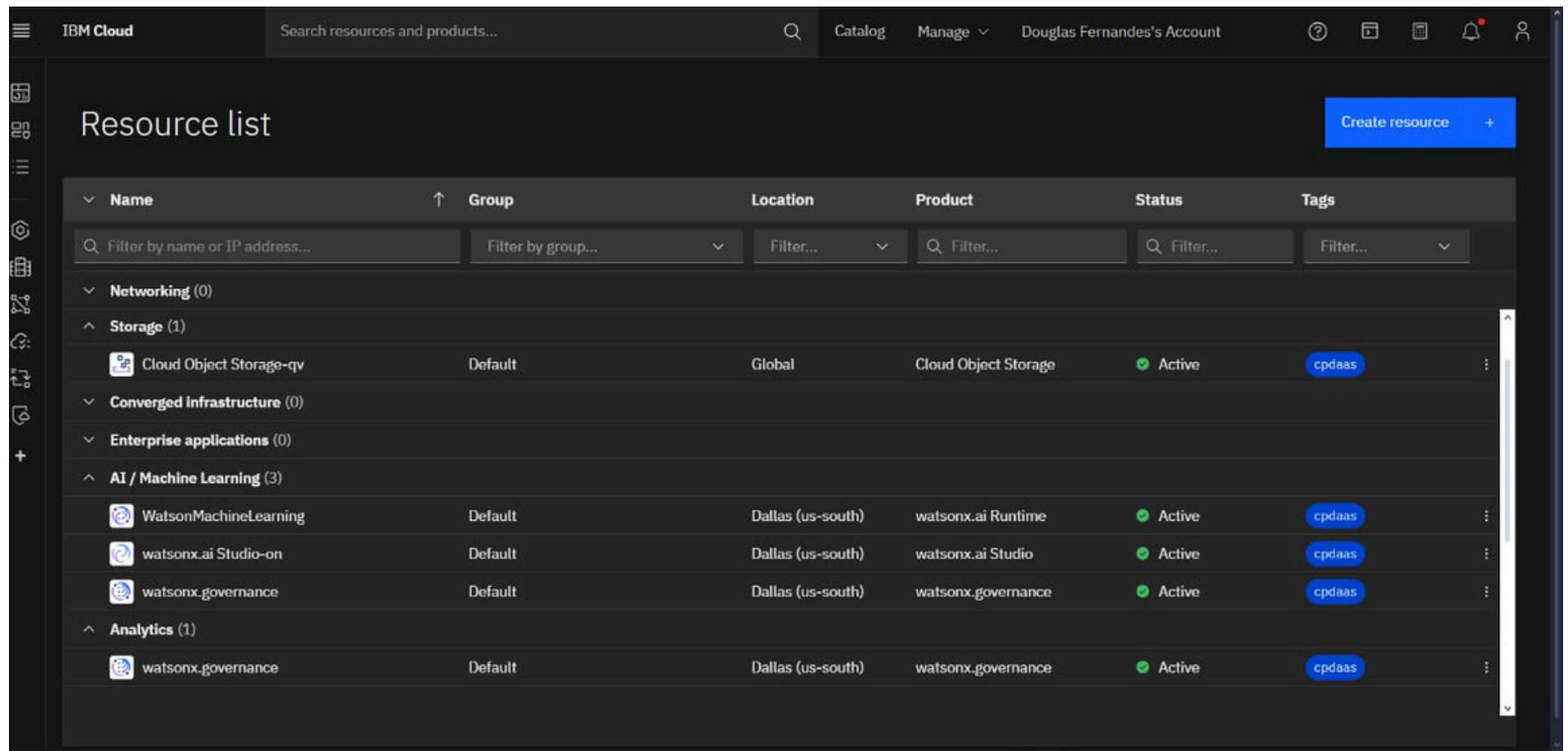
Description
AI tool for smart syllabus planning and curriculum design—fast, aligned, and outcome-focused.

Deployment Details
Deployment ID: dca6f73a-47ee-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

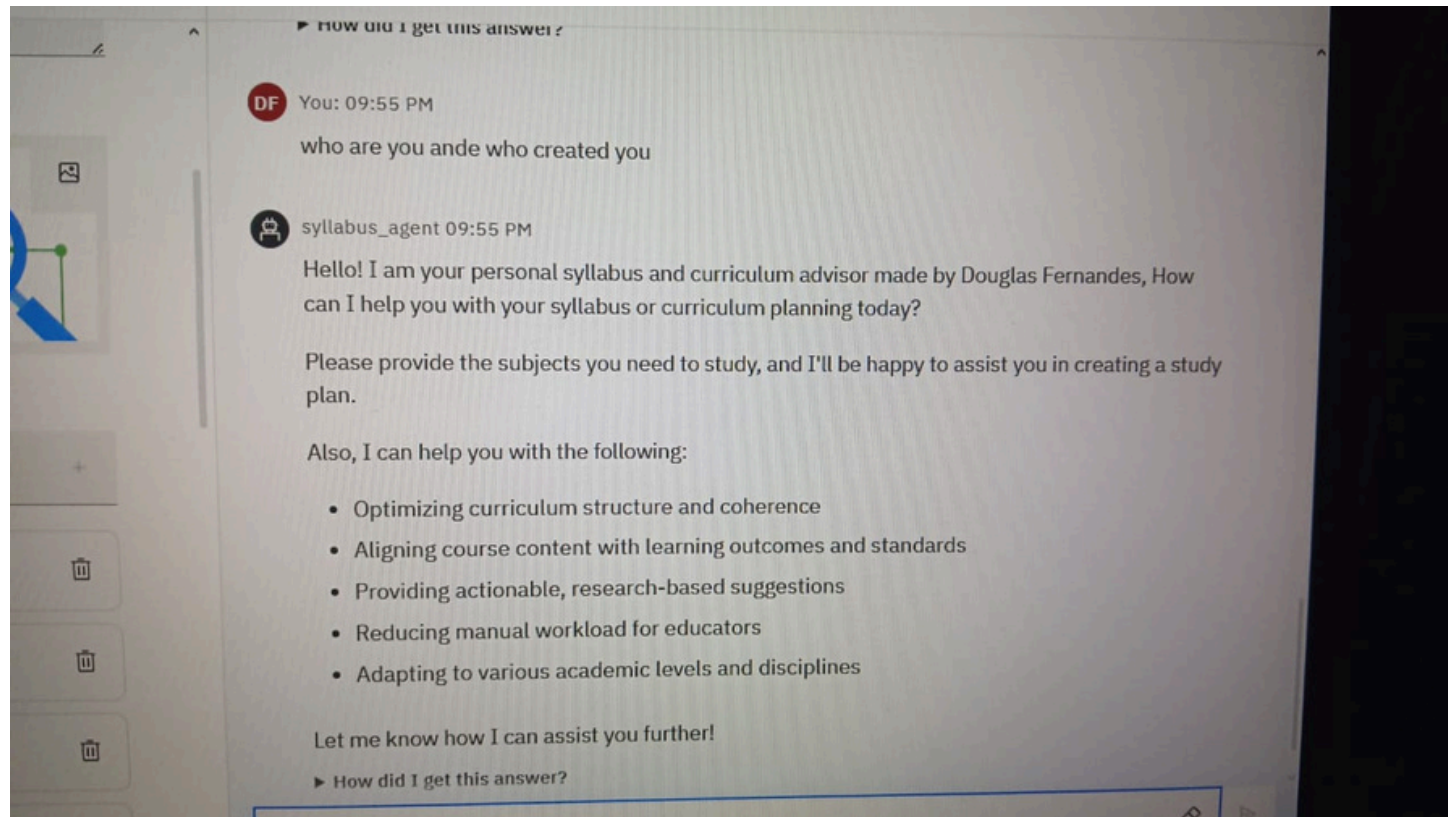
Associated asset
syllabus_agent

RESOURCES LIST

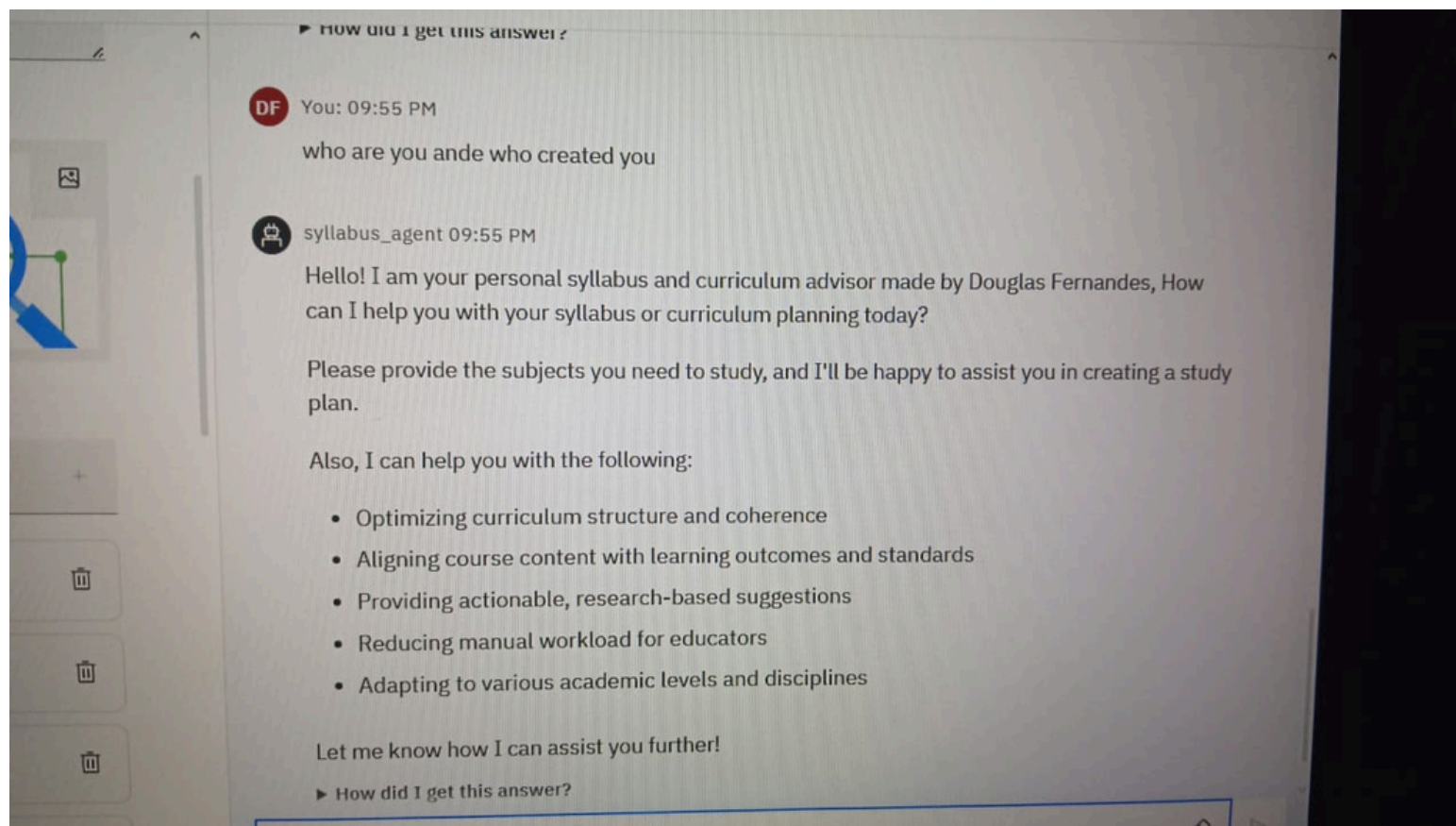


Name	Group	Location	Product	Status	Tags
Filter by name or IP address... Filter by group... Filter... Filter... Filter...					
Networking (0)					
Storage (1)					
Cloud Object Storage-qv	Default	Global	Cloud Object Storage	Active	cpdaas
Converged infrastructure (0)					
Enterprise applications (0)					
AI / Machine Learning (3)					
WatsonMachineLearning	Default	Dallas (us-south)	watsonx.ai Runtime	Active	cpdaas
watsonx.ai Studio-on	Default	Dallas (us-south)	watsonx.ai Studio	Active	cpdaas
watsonx.governance	Default	Dallas (us-south)	watsonx.governance	Active	cpdaas
Analytics (1)					
watsonx.governance	Default	Dallas (us-south)	watsonx.governance	Active	cpdaas

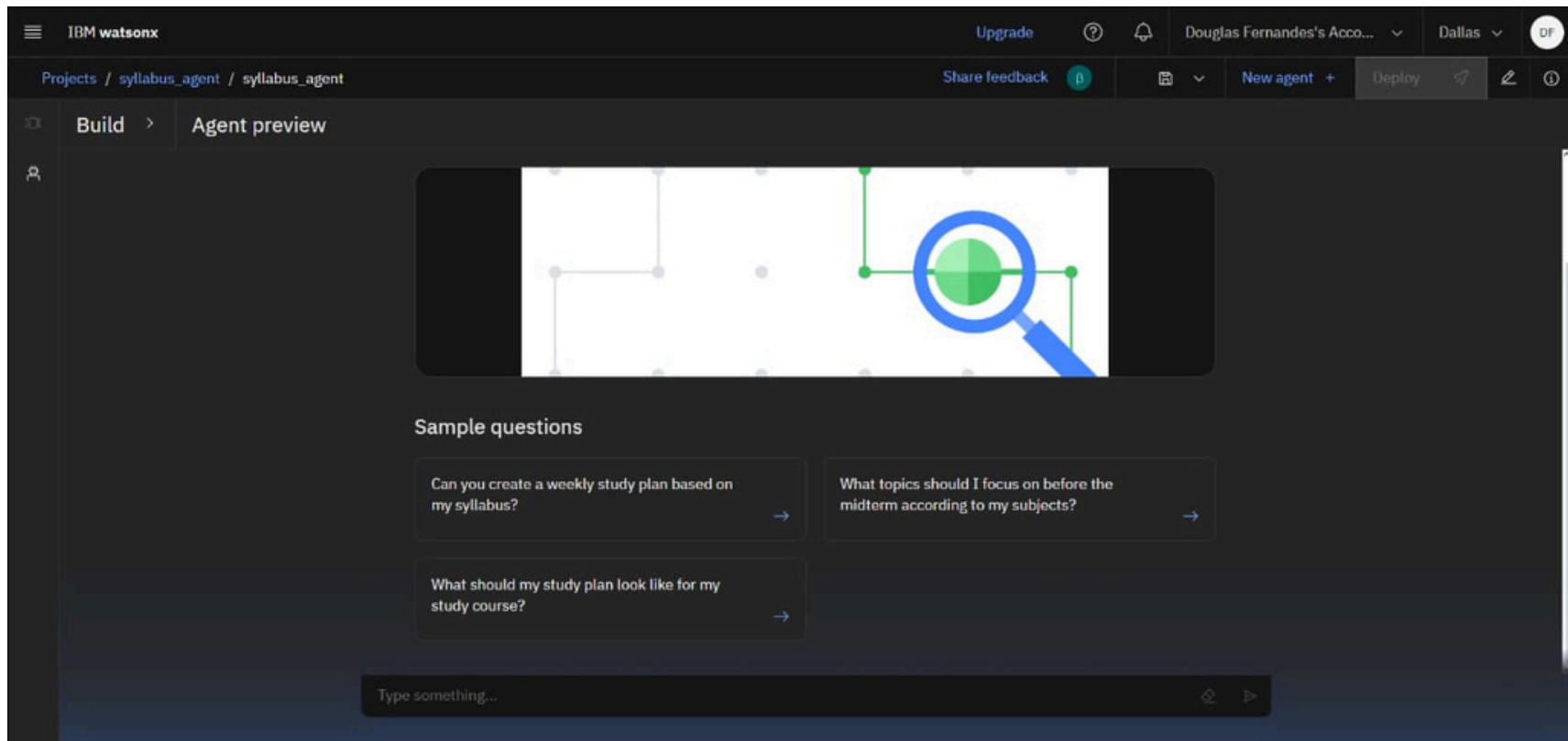
RESULTS



RESULTS

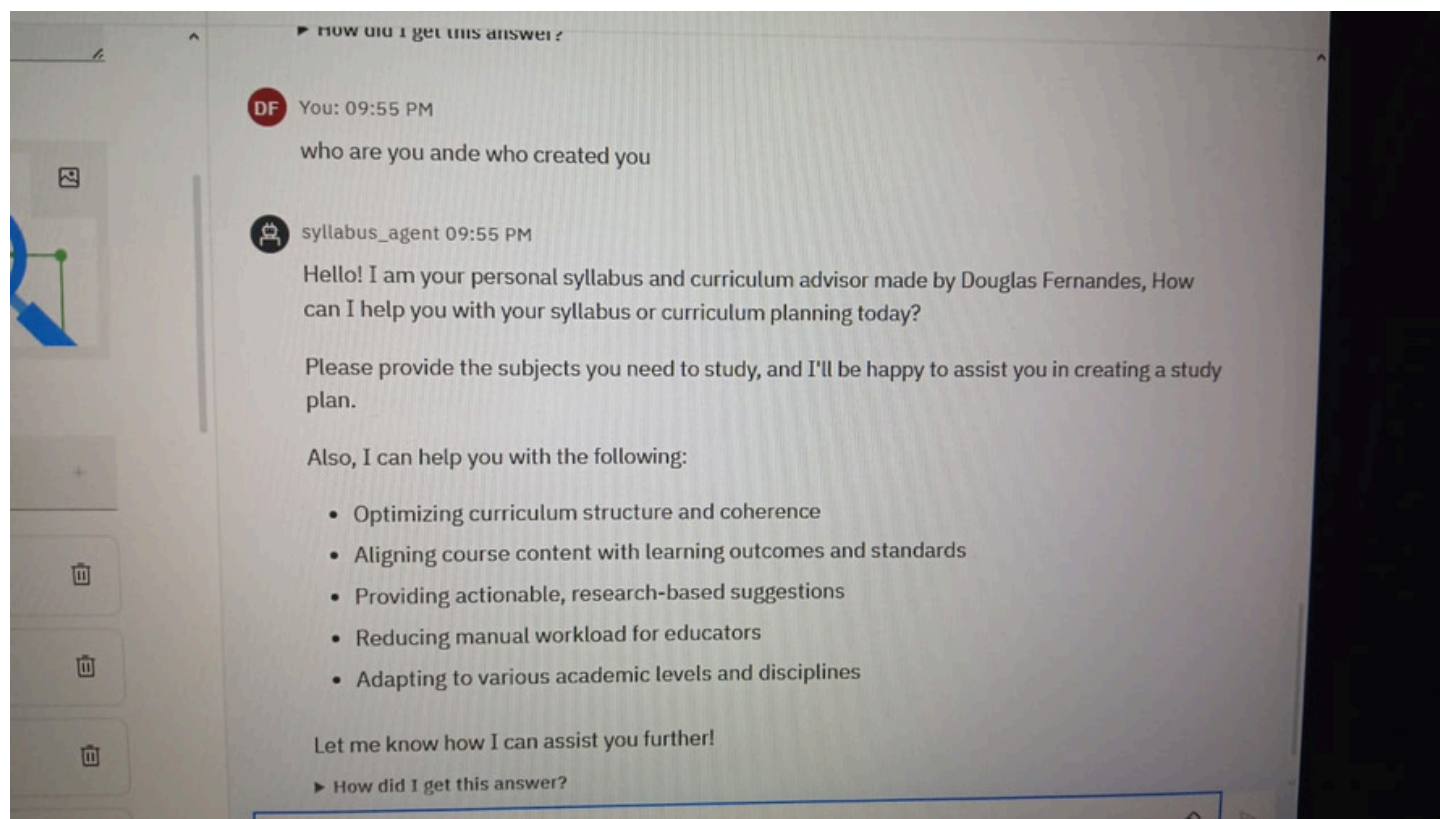


RESULTS



RESULTS

Deployed AI Agent



CONCLUSION

The Syllabus & Curriculum Planner AI Agent streamlines the process of course design, enabling educators to quickly generate structured syllabi interactively. Leveraging IBM watsonx AI, it demonstrates practical applications of conversational AI in education sector solutions.

GITHUB LINK

- <https://github.com/Doug05/Syllabus-Curriculum-Planner-AI-Agent/tree/main?tab=readme-ov-file>

FUTURE SCOPE

- ☐ **Integration with Learning Management Systems (LMS)**
- ☐ **AI-based Course Material Recommendations**
- ☐ **Adaptive Curriculum Adjustments based on student progress**
- ☐ **Voice Assistant Integration (Alexa, Siri)**
- ☐ **Multilingual Curriculum Support with IBM Language Translator**
- ☐ **Collaboration Features for multiple educators**
- ☐ **AI-driven syllabus compliance checking for accreditation**

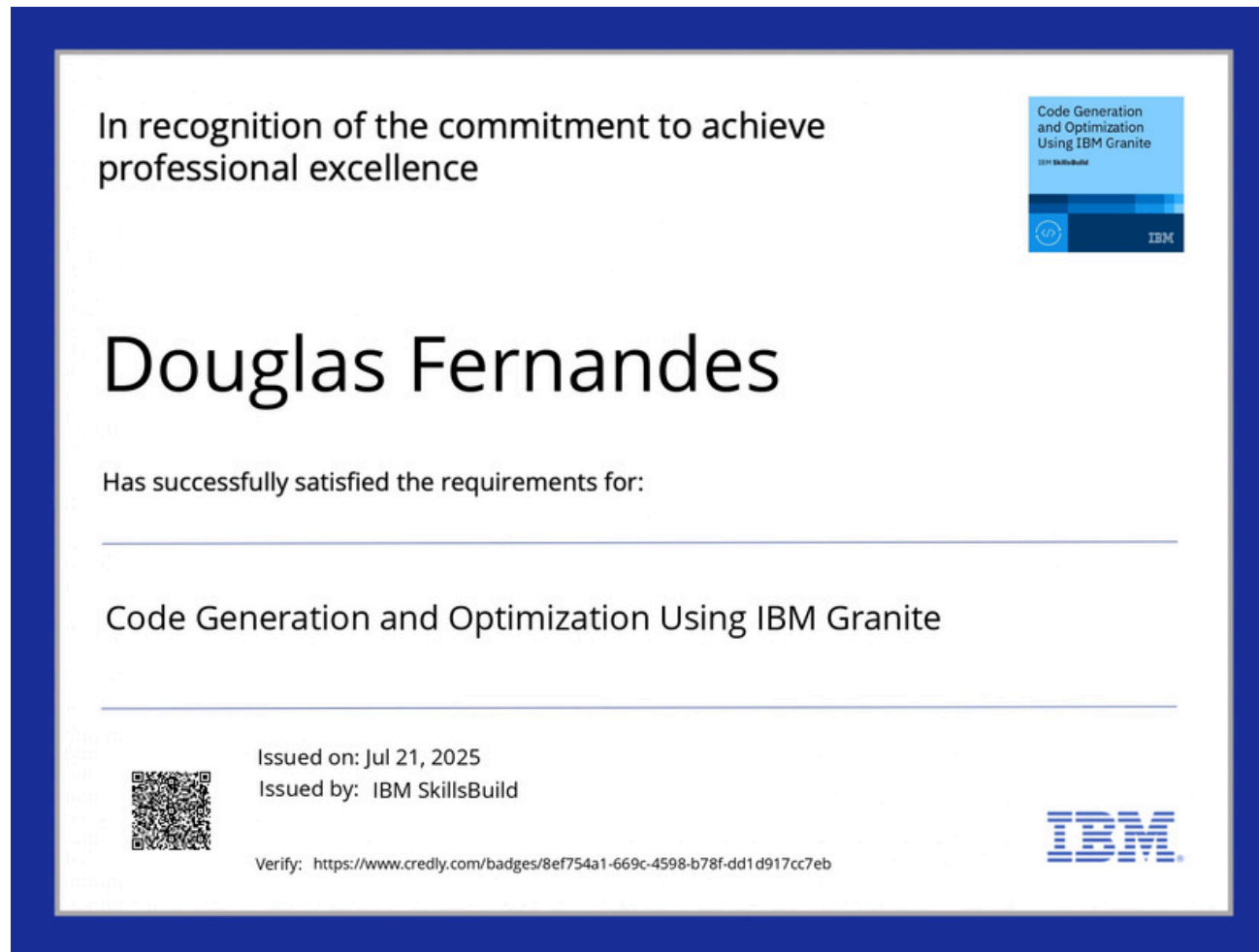
IBM CERTIFICATIONS



IBM CERTIFICATIONS



IBM LAB CERTIFICATE



IBM LAB CERTIFICATE

IBM **SkillsBuild**

Completion Certificate



This certificate is presented to
Douglas Fernandes

for the completion of

Lab: Retrieval Augmented Generation with LangChain

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 25 Jul 2025 (GMT)

Learning hours: 20 mins

THANK YOU