CAPSTONE PROJECT

TRAVEL PLANNER AGENT

Presented By:

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OUTLINE

- **Problem Statement** (Should not include solution)
- **Proposed System/Solution**
- **System Development Approach** (Technology Used)
- **Deployment**
- **Result (Output Image)**
- **Conclusion**
- **Future Scope**
- **References**

Problem Statement

Example: Planning a trip involves gathering a lot of fragmented information — locations, weather, travel costs, best timings, and preferences. This can be time-consuming and frustrating, especially for users unfamiliar with AI tools or destinations. The lack of a centralized and intelligent system often leads to inefficiencies, missed opportunities, and suboptimal travel experiences.

Proposed Solution

The Travel Planner Agent is an AI-powered solution designed to simplify trip planning by interacting with users in natural language.

It is built using:

- IBM WatsonX.ai for generating smart, conversational responses
- IBM Granite models for processing large-scale travel-related queries
- Deployed on IBM Cloud for scalability, availability, and ease of access

It generates location-specific suggestions, day-wise itinerary plans, and travel guidance tailored to user preferences.

The system provides an all-in-one interface that eliminates the need to browse multiple travel websites.

Model Used:

- Llama-3-2-90b-vision-instruct is an auto-regressive language model that uses an optimized transformer architecture.

Phases of Development:

1. Requirement gathering and travel scenario identification
2. Integration of IBM Granite with WatsonX.ai via IBM Cloud
3. Interface development for user interaction
4. Deployment and final testing using real-world travel queries

System Approach

Technology Stack Used:

- **IBM WatsonX.ai** – Used to build and host the large language model (LLM) interface for understanding user inputs and generating travel recommendations.
- **IBM Granite LLM** – Provides a robust, scalable model backbone that powers the intelligent understanding and generation of travel plans based on context.
- **IBM Cloud Platform** – Hosts the entire application, offering a reliable and scalable deployment environment. Services such as Object Storage and Code Engine were considered for backend logic and storage.
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Functionality Overview:

- The system starts with user input, such as “Plan a 5-day beach trip to Kerala under ₹30,000,” provided through a natural language chat interface.
- IBM WatsonX processes the query and passes it to the Granite LLM, which interprets the intent, destination, duration, and budget.
- Using contextual understanding, the system fetches predefined travel data (like location highlights, budget itineraries, seasonal tips) or integrates with external travel APIs (optional in future).
- It then generates a structured, day-wise travel plan, which can include places to visit, estimated costs, weather insights, and suggestions.
- The final output is presented in a friendly format within the chat interface, with options to download as PDF or share via link.

Deployment

Deployment Platform:

- The project is deployed on IBM Cloud, which provides high availability, security, and scalability needed to support an AI-based travel planner agent. IBM Cloud's infrastructure allows easy integration of services like WatsonX.ai and Object Storage with minimal setup.

Tools Used:

- **IBM WatsonX.ai Studio:**
- Used to interactively build, test, and deploy AI agents using large language models (LLMs). The model (Llama-3-2-90b-vision-instruct) was integrated here to provide conversational and contextual trip planning responses.
- **IBM Cloud Object Storage:**
- Used to store static content such as travel templates, destination data, response formats, and logs if needed. It acts as the backend storage layer for data retrieval and formatting.

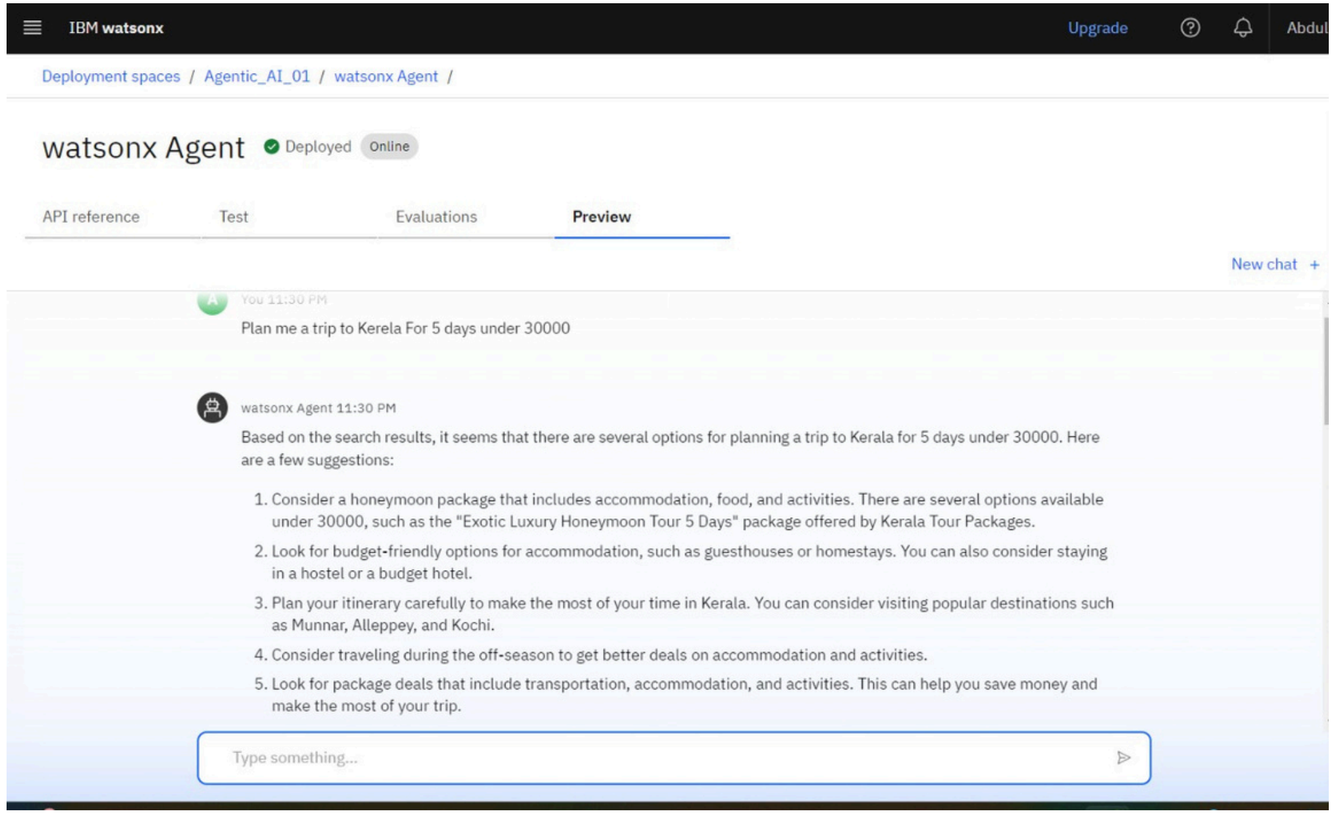
Deployment Steps:

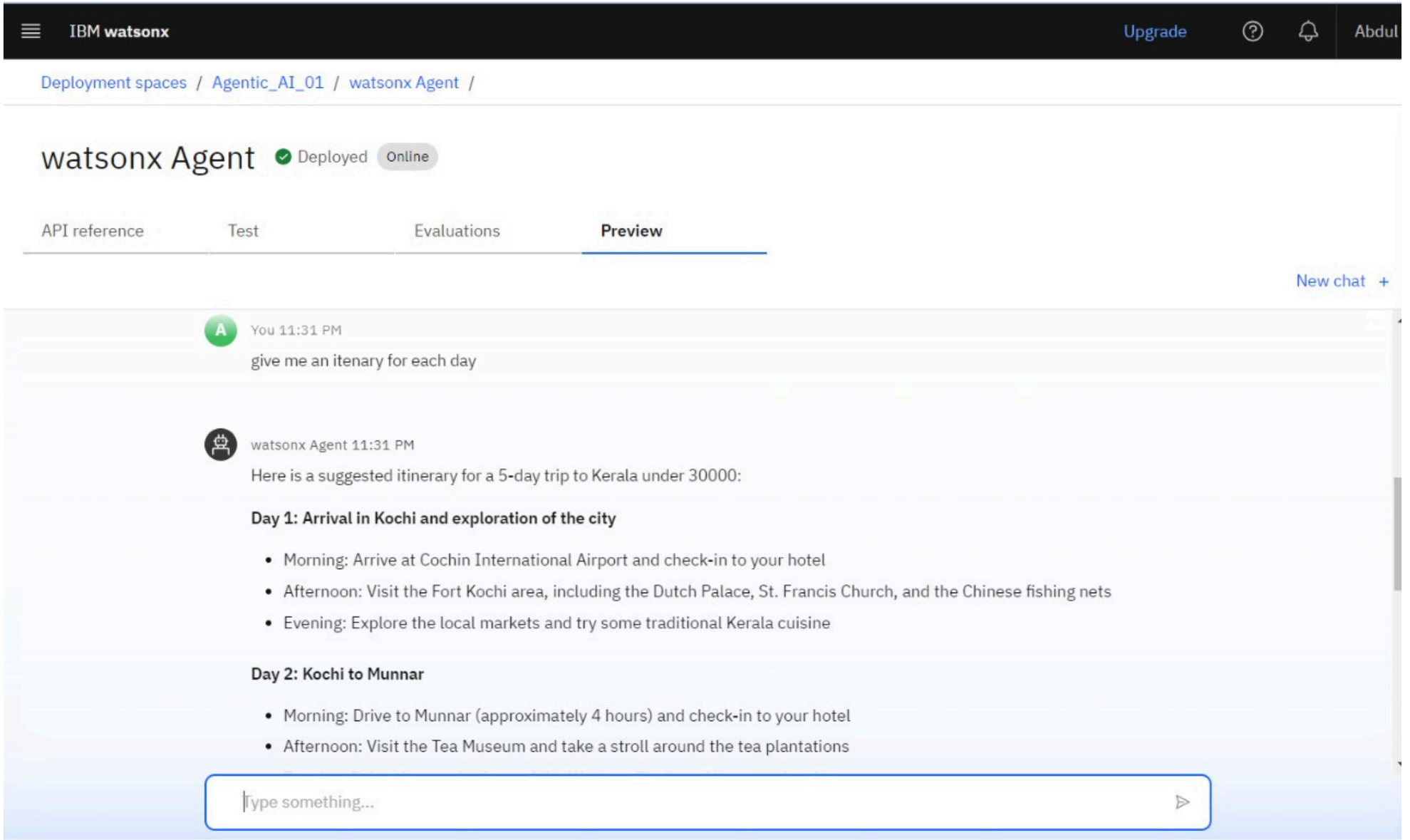
1. Develop the Agent using WatsonX.ai + Granite LLM:
2. The LLM-based travel agent was created inside WatsonX Studio. Prompts were fine-tuned and tested to ensure personalized itinerary generation based on user input like destination, duration, and budget.
3. Host & Deploy on IBM Cloud:
4. The model was deployed in WatsonX.ai and connected via APIs or endpoints. IBM Cloud was used to serve the application backend and host the model for real-time interactions.
5. Frontend/Terminal Interface Connection:
6. A simple terminal or web-based interface (frontend) was linked to WatsonX APIs so users could chat with the agent. This interface was lightweight and focused on user-friendly communication.
7. Test with Real Travel Queries:
8. The system was tested using common user prompts like "Plan a trip to Goa for 5 days under ₹35,000." It responded with accurate, structured itineraries that included budget allocation, places to visit, and travel advice.

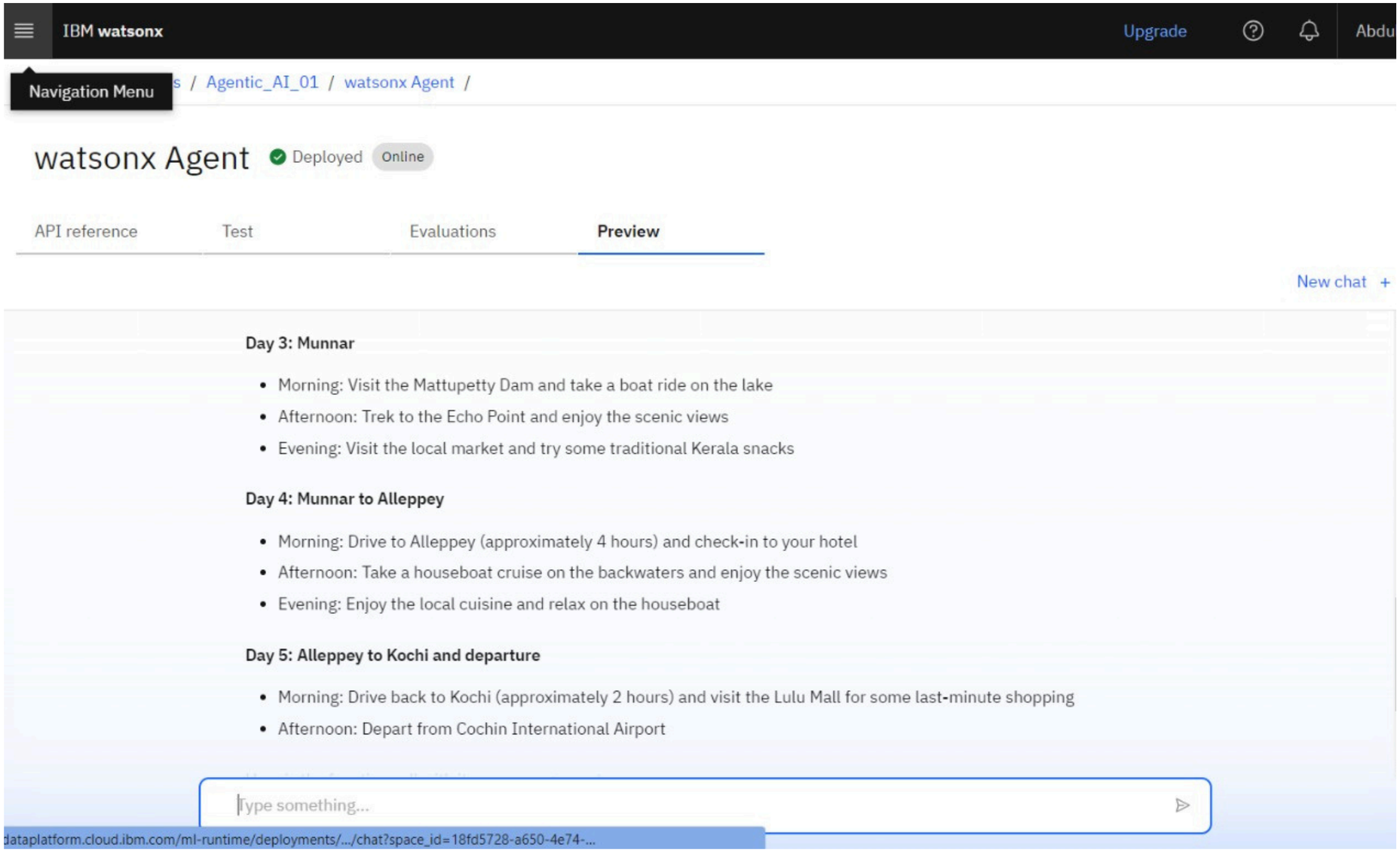
Result

Include screenshots from your agent interface showing:

- User giving input like "Plan a 5-day Kerela trip under 30,000"
- Agent outputting structured day-wise itinerary







Conclusion

- The Travel Planner Agent simplifies travel planning using IBM’s advanced AI capabilities. By combining Granite and WatsonX on IBM Cloud, the system delivers a smart, interactive experience, reducing manual search time and personalizing trips

Future scope

- **Voice-Based Planning using IBM Speech-to-Text**

The system can be enhanced by allowing users to speak their travel preferences instead of typing them. IBM’s Speech-to-Text service can convert user speech into text, making the travel planner more accessible and hands-free—especially useful on mobile devices or smart assistants.

- **Mobile App Deployment**

Deploying the travel planner as a mobile app on Android/iOS will enable users to plan their trips on the go. It can offer push notifications, offline access to saved itineraries, and a more interactive travel planning experience through native features like GPS and calendar sync.

- **User Authentication for Saving Plans**

By adding user login features (e.g., Firebase Auth or IBM App ID), travelers can create accounts to save, modify, and retrieve past or upcoming itineraries. This ensures personalized service and data security, and enables syncing across multiple devices.

References

- **IBM WatsonX.ai Documentation**

  Official IBM documentation that explains how to build, fine-tune, and deploy AI models using WatsonX.ai. This includes tutorials, use cases, and how to integrate WatsonX into cloud-based workflows.

  https://www.ibm.com/docs/en/watsonx

- **IBM Granite Model Overview**

  Detailed technical resources and guides about IBM's Granite family of large language models (LLMs), used for language understanding, summarization, and instruction-based responses. It helped in selecting and deploying the LLaMA3-290B model for this project.

  https://www.ibm.com/blog/ibm-granite-models

- **IBM Cloud Official Documentation**

  Complete guide on deploying apps, managing services, and integrating AI tools on the IBM Cloud platform. This was instrumental in hosting the agent, using services like Object Storage, Code Engine, and WatsonX APIs.

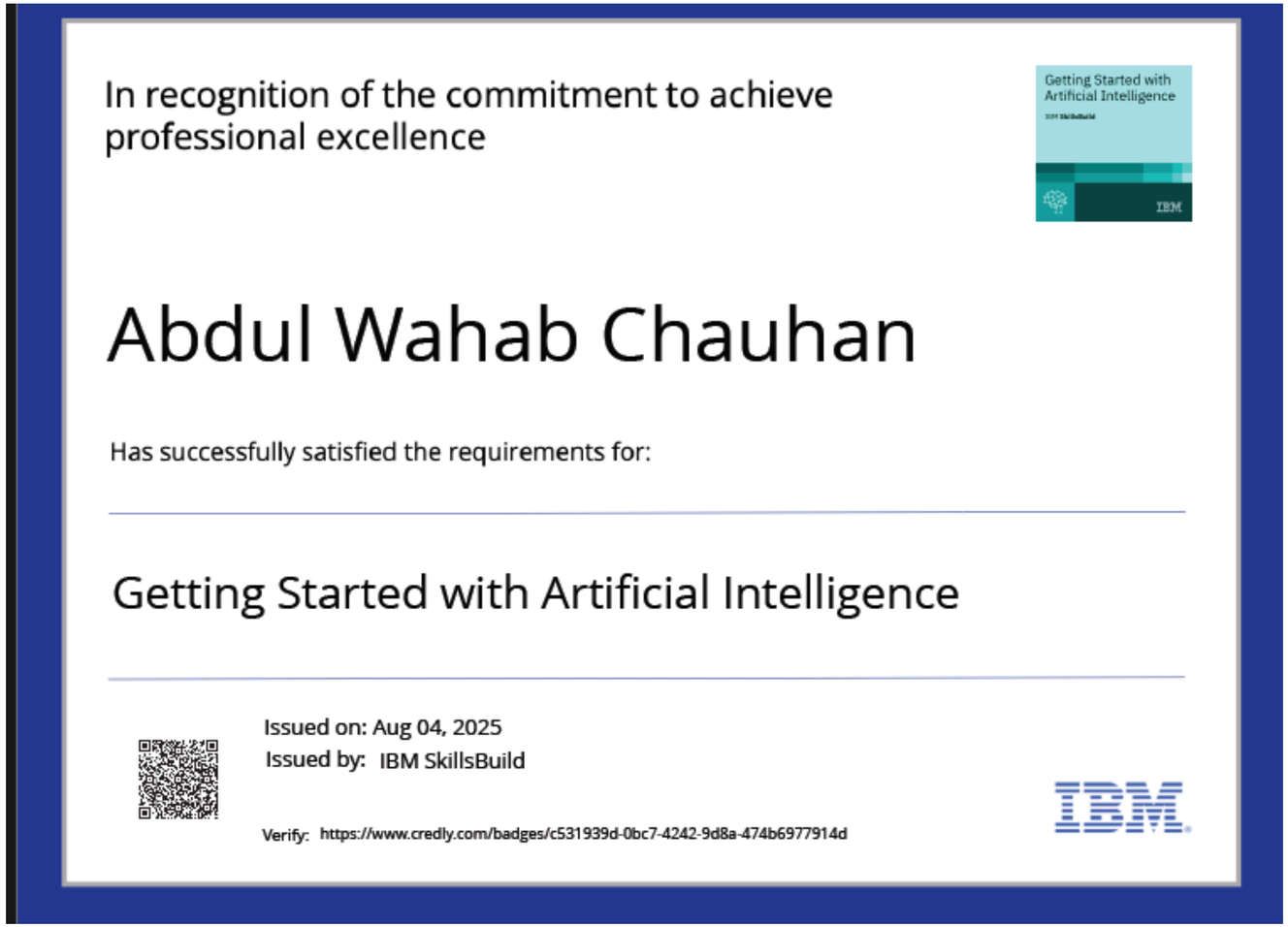
  https://cloud.ibm.com/docs

- **GitHub Repository:**

  https://github.com/abdul-wahab-10/AICTE-IBM-Internship-on-AI-Cloud-Travel-Agent-Project

IBM Certifications

Screenshot/ credly certificate(getting started with AI)

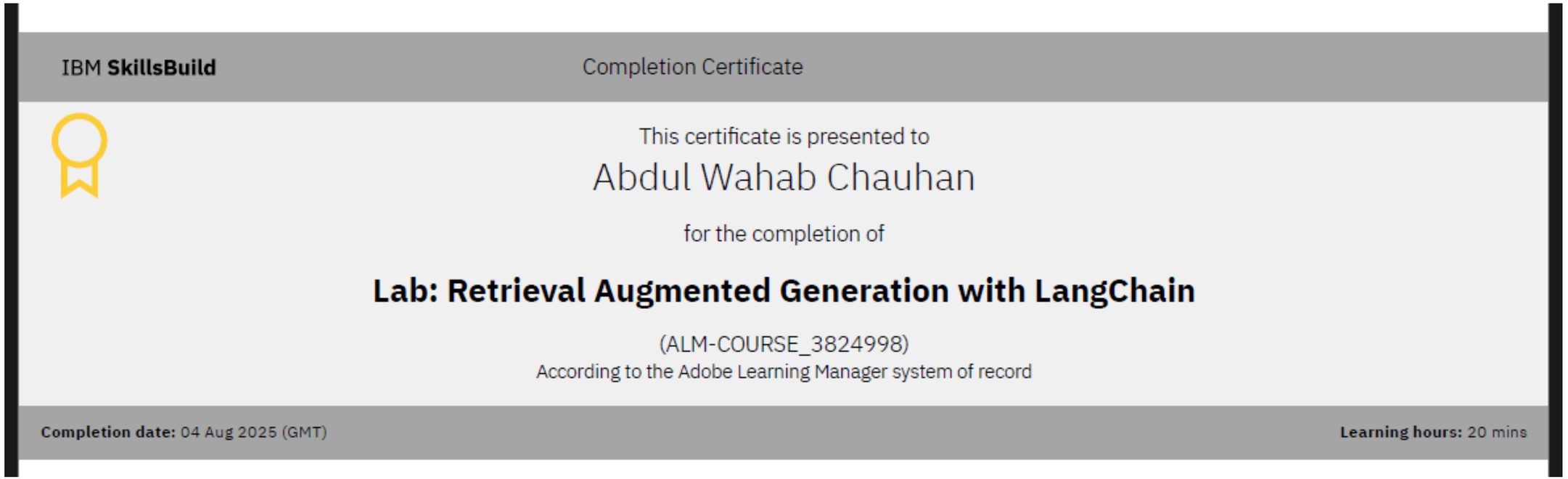


IBM Certifications

- Screenshot/ credly certificate(Journey to Cloud)

IBM Certifications

- Screenshot/ credly certificate(RAG Lab)



THANK YOU

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