CAPSTONE PROJECT

INTERVIEW TRAINER AGENT

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OUTLINE

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- Proposed System/Solution
- System Development Approach
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PROBLEM STATEMENT

Example: An Interview Trainer Agent, powered by RAG (Retrieval-Augmented Generation), prepares users for job interviews by generating tailored question sets and preparation strategies based on their profile name, experience level, and job role. It retrieves role-specific interview questions, industry expectations, behavioural scenarios, and HR guidelines from recruitment portals, professional networks, and company interview databases. Users can input their resume or job title, and the agent provides targeted questions, model answers, and improvement tips. It supports both technical and soft skill assessment, ensuring a comprehensive interview prep experience. This AI-driven assistant builds user confidence, sharpens responses, and increases success rates in competitive hiring environments.

PROPOSED SOLUTION

The proposed system is an AI-powered Interview Trainer Agent using RAG and IBM Granite to simulate personalized interview preparation. It generates role specific technical, behavioral, and HR questions based on the user's resume or job input. The system provides model answers, improvement tips, and feedback on soft skills and communication. Deployed on IBM Cloud Lite, it offers an interactive platform to boost confidence and interview success rates.

- **Data Collection:** Gather interview questions, industry expectations, behavioral questions, and HR guidelines from recruitment portals, professional networks, and interview databases.
- **Data Preprocessing:** Clean and structure the text data, remove duplicates, classify questions by domain and difficulty, and embed job profiles using NLP techniques.
- **Machine Learning Algorithm:** RAG (Retrieval-Augmented Generation) for generating contextual questions and answers,clustering for grouping similar job roles and questions,sentiment or tone analysis to assess user responses.
- **Deployment:**Deploy the solution on IBM Cloud Lite using IBM Granite foundation models with a web interface or chatbot front-end for user interaction.
- **Evaluation:** Evaluate the system based on accuracy of question relevance, user feedback, and response improvement over iterations.Measure success rates through user satisfaction, engagement metrics, and simulated interview scoring.

SYSTEM APPROACH

Hardware (User Machine):

- RAM: 8 GB or more
- Processor: Intel i5/i7 or equivalent
- Internet: Stable connection for cloud access

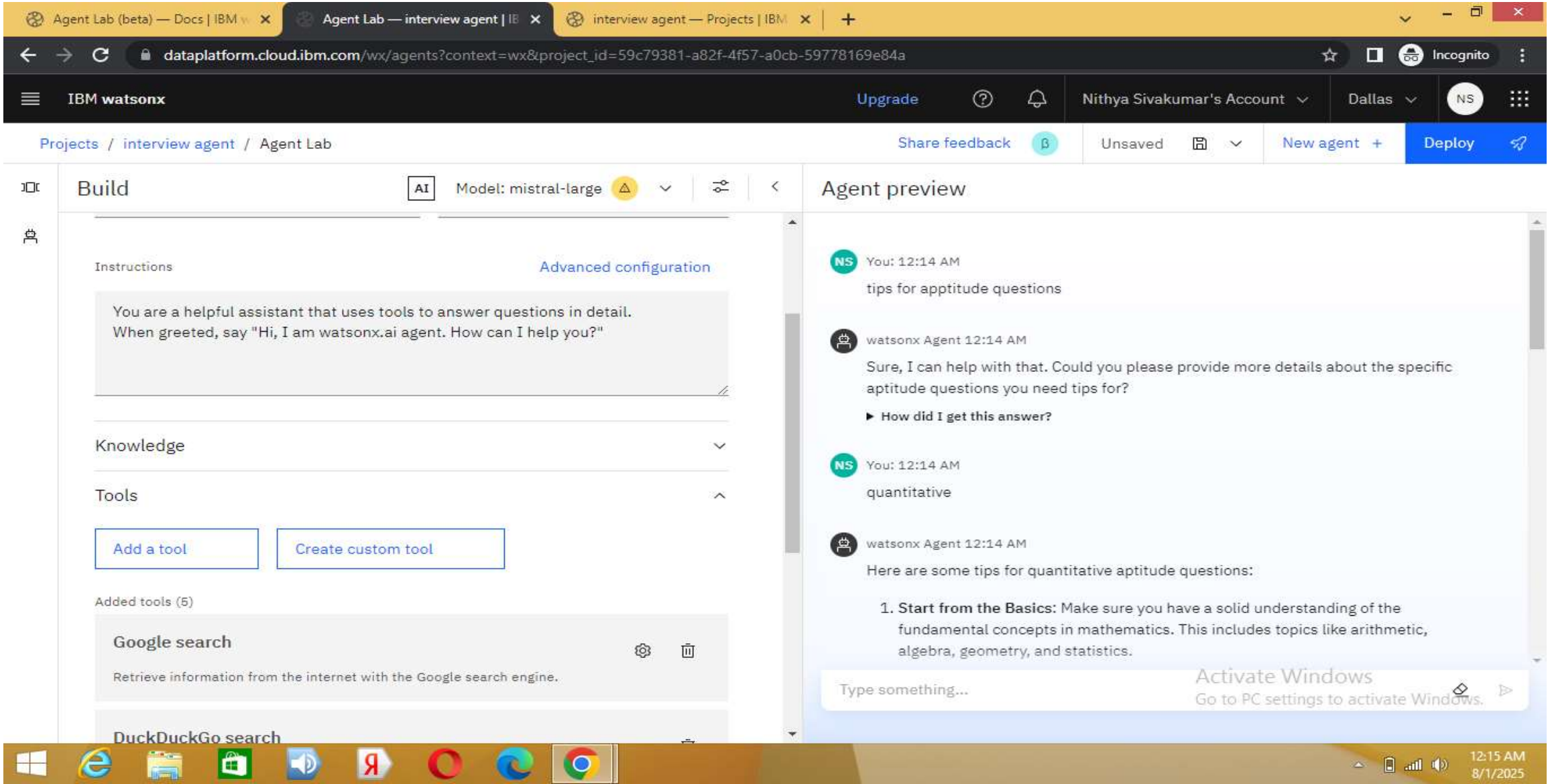
Software & Platform Tools:

- IBM Cloud Lite Account
- Watson Studio (for model development)
- Watsonx.ai (for advanced AI model building, including large language models like Granite)
- IBM Cloud Object Storage (for storing datasets and models)
- IBM Watsonx Runtime (to deploy and serve AI models)
- Google Search & Wikipedia API (as external data sources for Retrieval-Augmented Generation)

ALGORITHM & DEPLOYMENT

- **Algorithm Selection :** Provide a brief overview of the chosen approach — using Large Language Models (LLMs) for dynamic interview Q&A generation
- **Example models:** Granite-3-3-8b-instruct or Mistral-7b-instruct, chosen for their fine-tuned instruction-following capabilitity.
- **Data Input :** User provides job role details or uploads resume information. The prompt is structured based on user inputs to guide the LLM for relevant question generation.
- **Training Process** : The model (Granite/Mistral) is pre-trained on vast instruction datasets. For this agent, prompt engineering and optional Retrieval-Augmented Generation (RAG) techniques are used to enhance responses with real-time data (e.g., Wikipedia/Google search).
- **Prediction Process :** When a user inputs their job role, the model generates customized interview questions, sample answers, and improvement tips. The system may retrieve fresh data (optional) and deliver a conversational experience through a web interface.
- **Deployment Process :** The solution is deployed on IBM Watsonx.ai (Lite Plan). Prompts and model parameters are configured in Watsonx.prompt lab, and deployment is done via Watsonx.runtime into a Deployment Space. The agent runs in a browser, allowing live interaction.

RESULT


Agent Lab (beta) — Docs | IBM
Agent Lab — interview agent | IB
interview agent — Projects | IBM
dataplatform.cloud.ibm.com/wx/agents?context=wx&project_id=59c79381-a82f-4f57-a0cb-59778169e84a
Incognito
IBM watsonx
Upgrade
Nithya Sivakumar's Account
Dallas
NS
Projects / interview agent / Agent Lab
Share feedback
Unsaved
New agent +
Deploy
Build
AI
Model: mistral-large
Instructions
Advanced configuration
You are a helpful assistant that uses tools to answer questions in detail.
When greeted, say "Hi, I am watsonx.ai agent. How can I help you?"
Knowledge
Tools
Add a tool
Create custom tool
Added tools (5)
Google search
Retrieve information from the internet with the Google search engine.
DuckDuckGo search
Agent preview
You: 12:14 AM
tips for apptitude questions
watsonx Agent 12:14 AM
Sure, I can help with that. Could you please provide more details about the specific aptitude questions you need tips for?
How did I get this answer?
You: 12:14 AM
quantitative
watsonx Agent 12:14 AM
Here are some tips for quantitative aptitude questions:
1. Start from the Basics: Make sure you have a solid understanding of the fundamental concepts in mathematics. This includes topics like arithmetic, algebra, geometry, and statistics.
Type something...
Activate Windows
Go to PC settings to activate Windows.
12:15 AM
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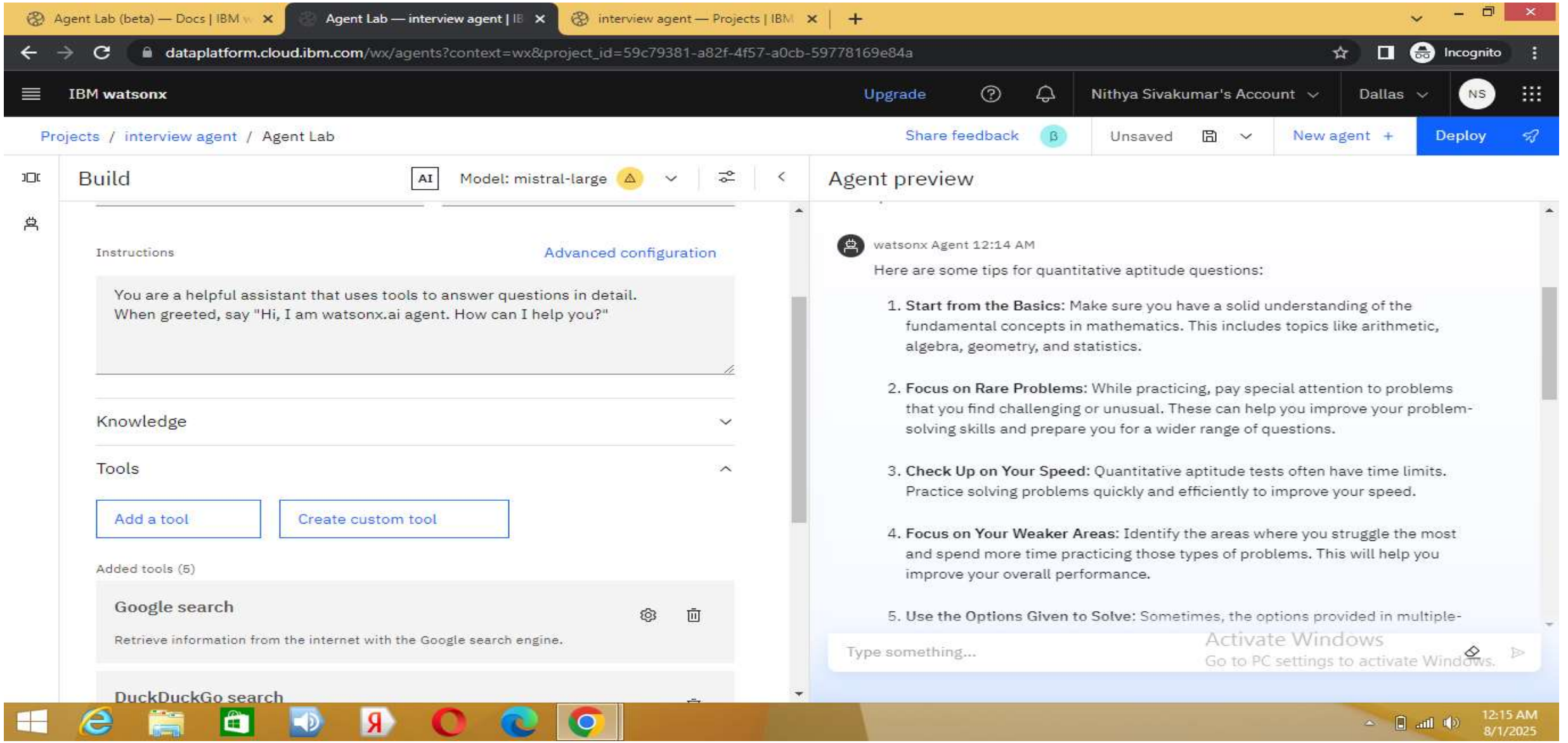

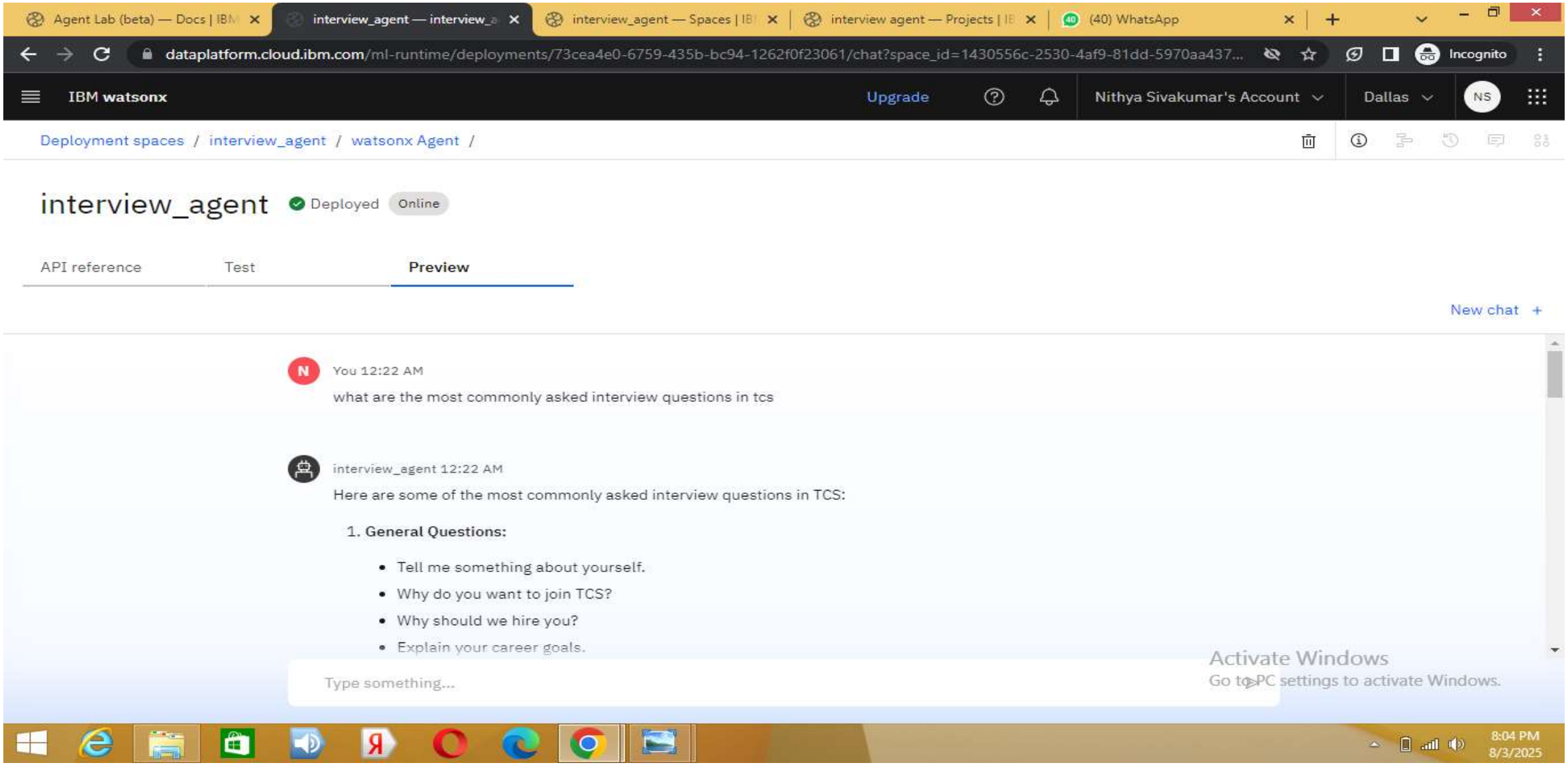

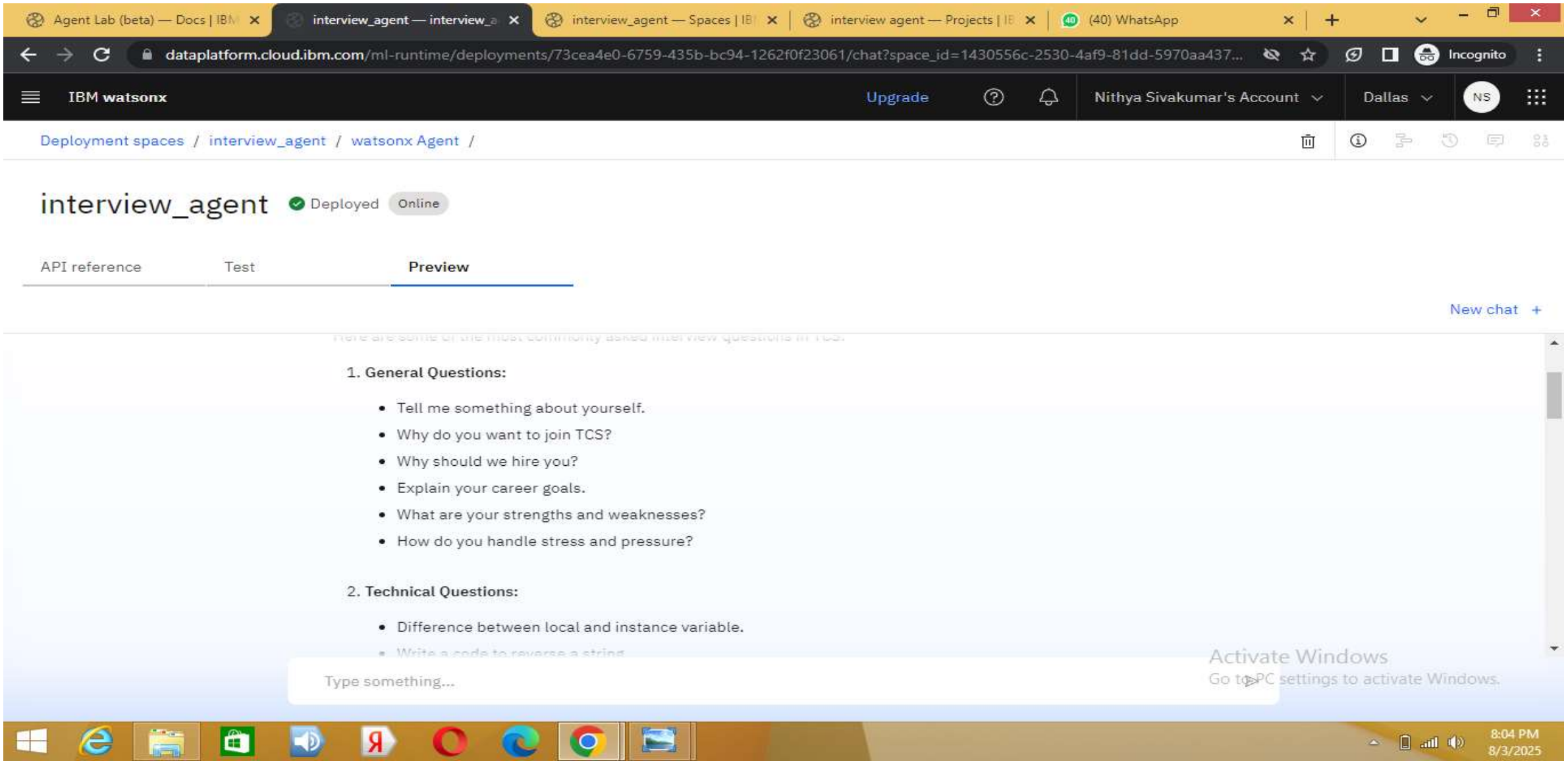

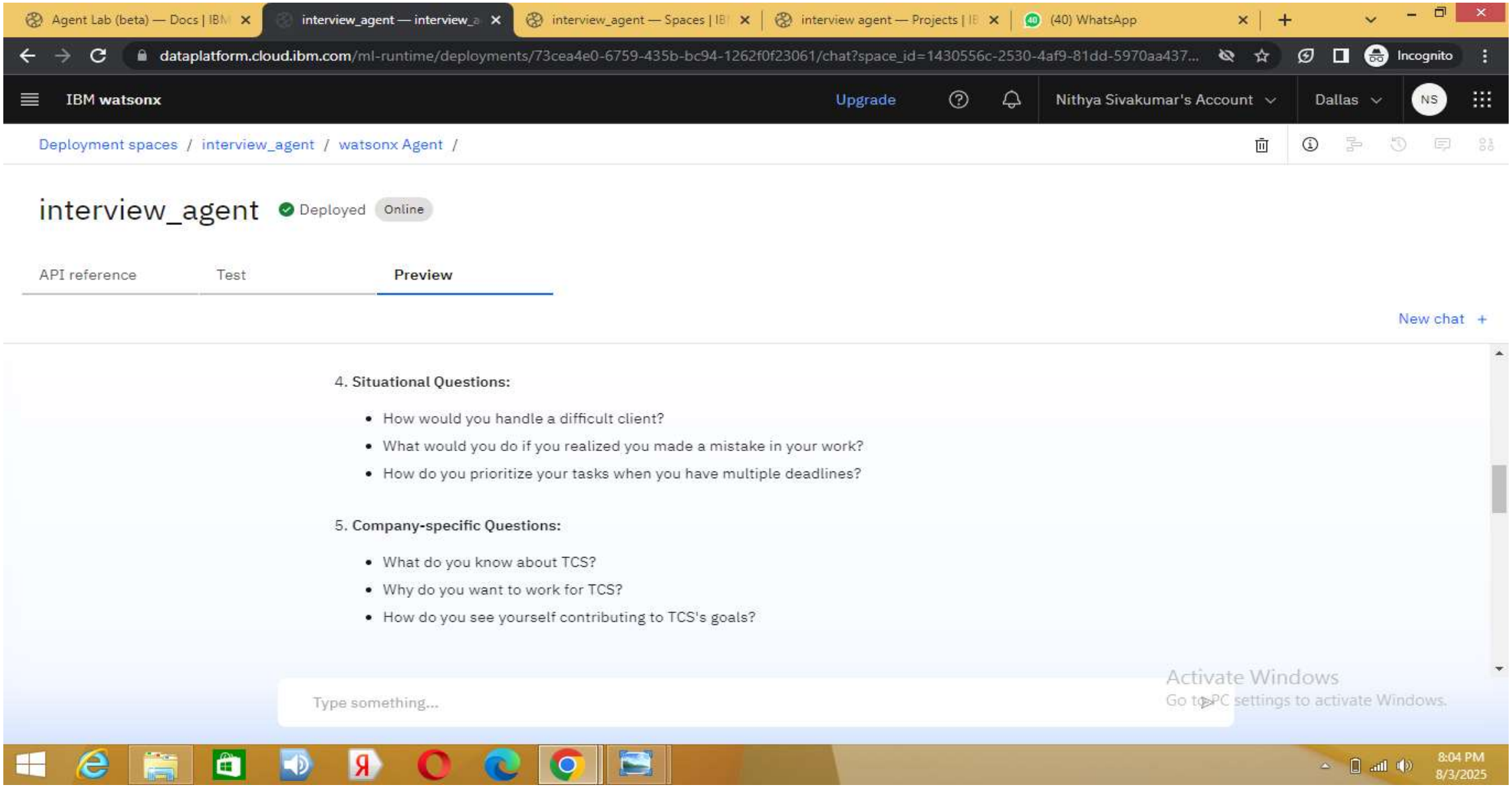

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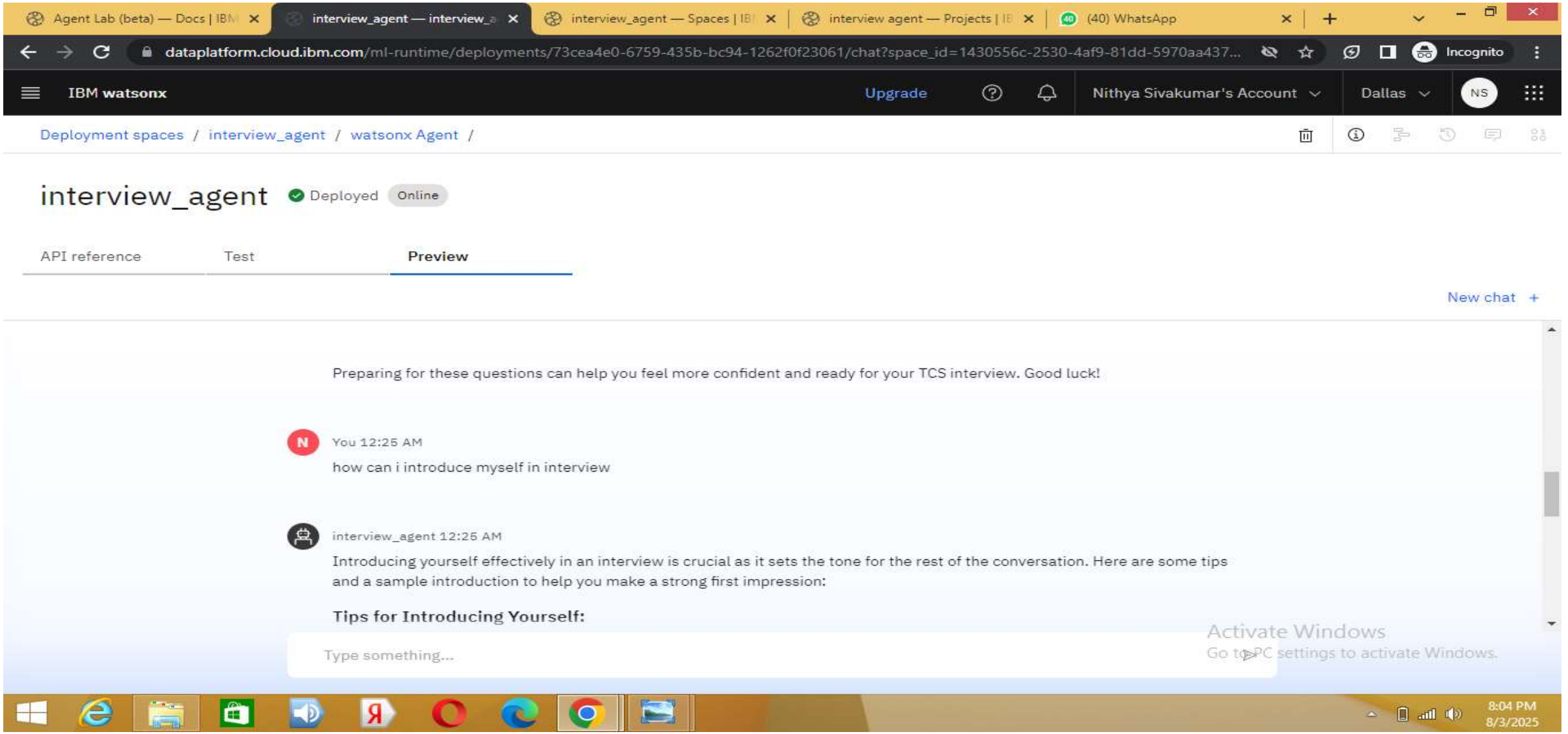

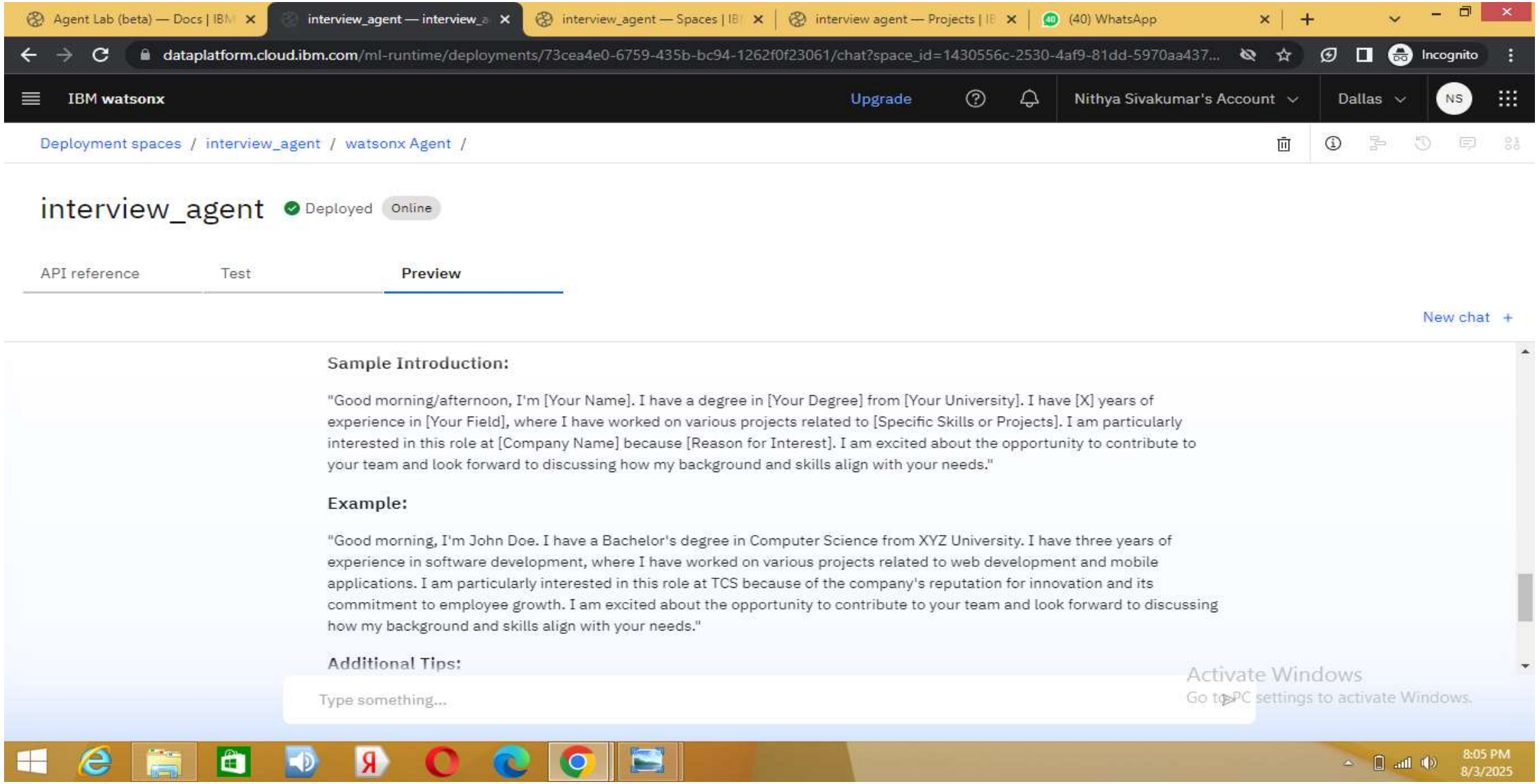

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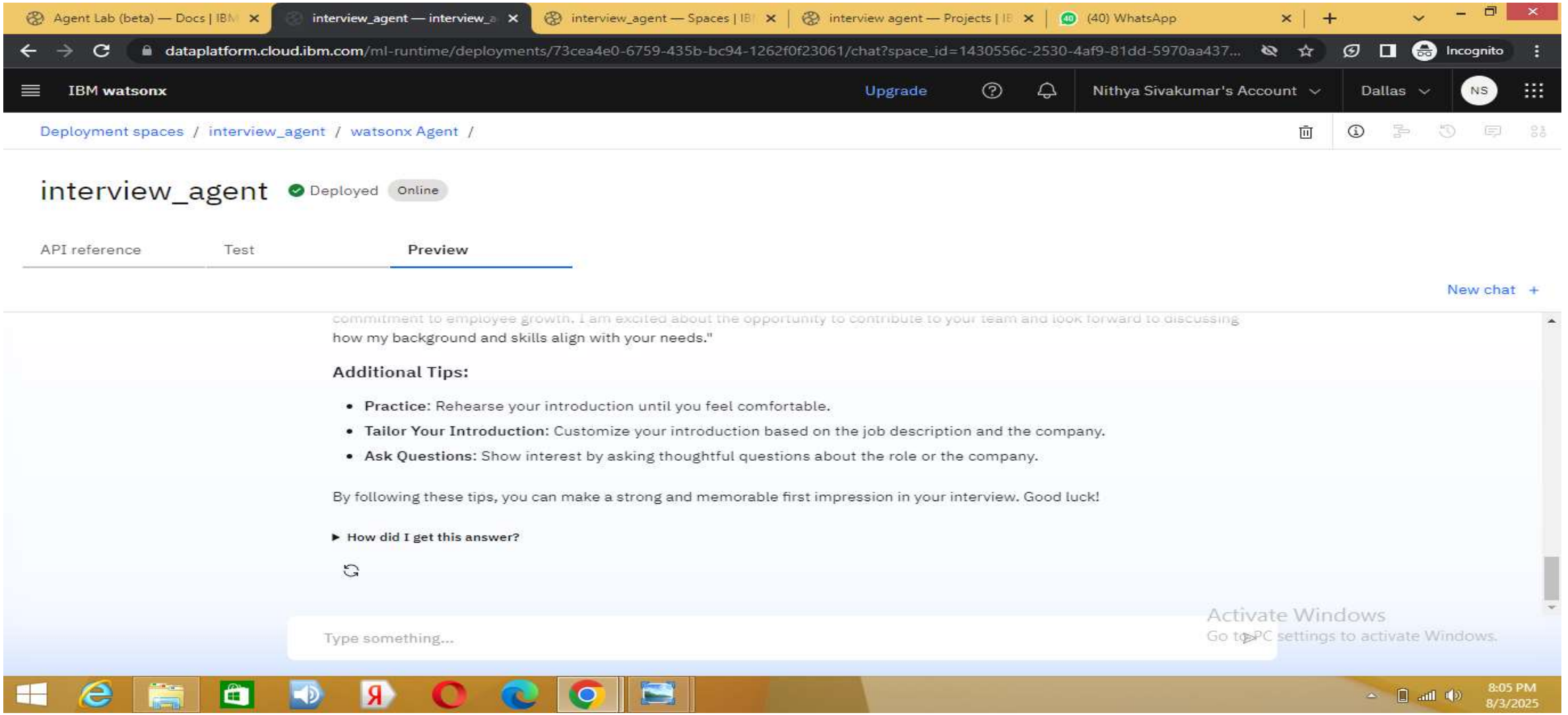

CONCLUSION

- Interview Trainer Agent project successfully leverages AI and Retrieval-Augmented Generation (RAG) to create a smart, personalized interview preparation system. By integrating IBM Watsonx, Watson Studio, and external knowledge sources like Google and Wikipedia, the system delivers targeted questions, model answers, and feedback based on user profiles, experience levels, and job roles.

- This solution enhances interview readiness by simulating real-world interview scenarios, supporting both technical and behavioral assessmentsThe. It boosts user confidence, sharpens communication, and increases the chances of success in competitive hiring environments. Overall, the project demonstrates the powerful application of AI in career readiness and skill development.

FUTURE SCOPE

- **Resume and Cover Letter Feedback:**

  Add modules to analyze and give suggestions on user-uploaded resumes and cover letters using NLP techniques.

- **Gamified Learning and Scoring:**

  Implement badges, scores, and mock test levels to keep users engaged and track improvement.

- **Real-Time Feedback with AI Coaches:**

  Incorporate chatbot-based interview coaches to give instant tips and corrections after each response.

- **Interview Recordings & Analytics:**

  Allow users to record mock interviews and provide analytics on speaking time, clarity, and filler word usage.

- **Integration with IBM Watson Orchestrate and HR Tools:**

  Extend functionality to assist HR teams in screening or training candidates based on AI-simulated interviews.

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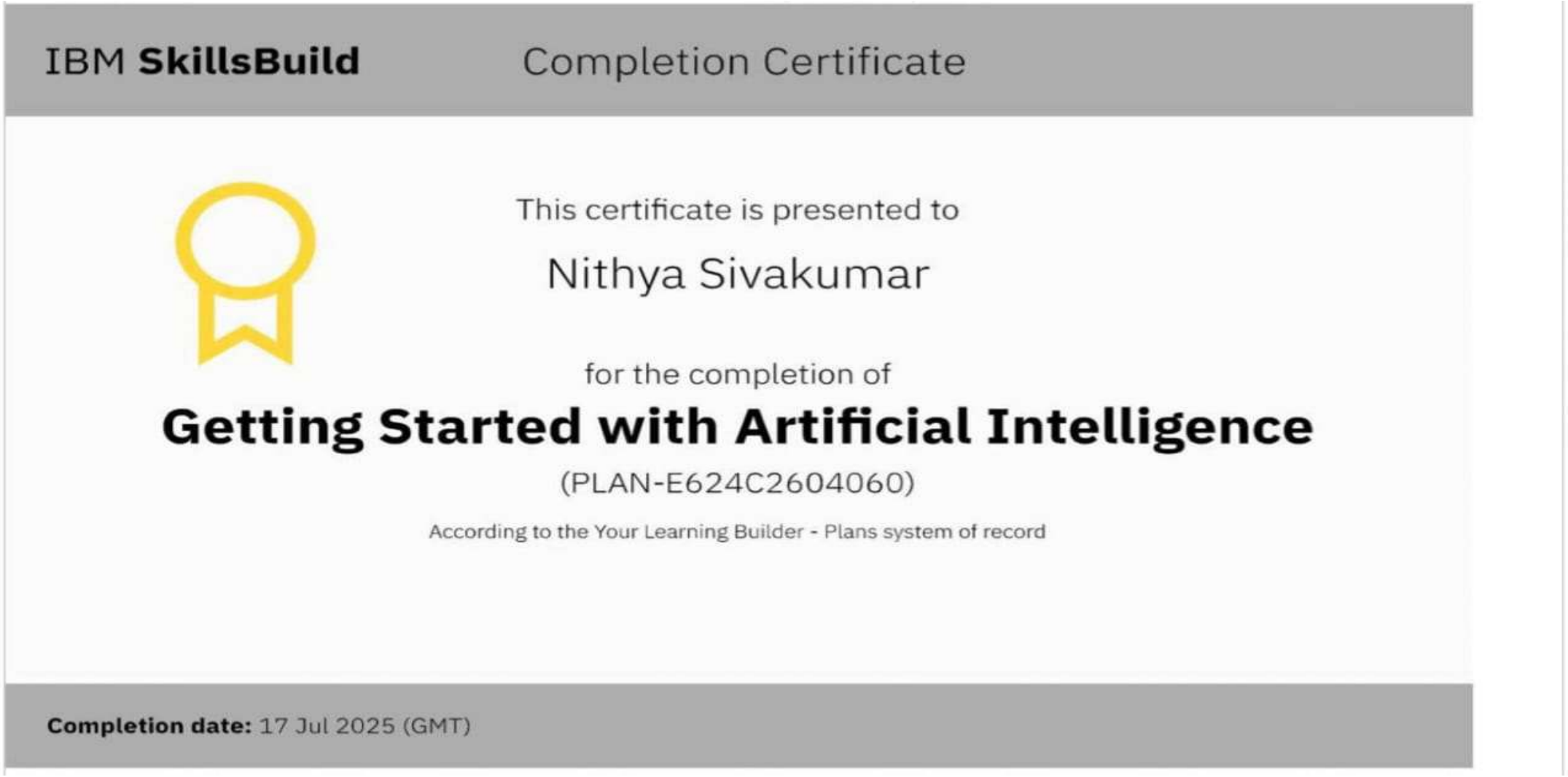
IBM CERTIFICATIONS



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According to the Your Learning Builder - Plans system of record

Completion date: 17 Jul 2025 (GMT)

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(ALM-COURSE_3824998)

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Completion date: 24 Jul 2025 (GMT) **Learning hours:** 20 mins

THANK YOU

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