CAPSTONE PROJECT

NUTRITION AGENT

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OUTLINE

- Problem Statement
- Proposed System/Solution
- System Development Approach
- Result
- Conclusion
- Future Scope
- References

PROBLEM STATEMENT

People today need personalized nutrition advice, but most apps provide generic plans that ignore personal needs like culture, allergies, health conditions, and changing goals. As a result, users often struggle to stay consistent or trust the advice they receive. Dieticians, though knowledgeable, cannot scale one-on-one guidance to meet everyone's needs . This project aims to develop an AI-powered Nutrition Assistant using IBM Cloud Lite or IBM Granity. The assistant interacts through text and voice, making it accessible to people of all backgrounds, including those who may not be tech-savvy. It generates personalized meal plans based on health goals, dietary restrictions, fitness routines, and preferences. Unlike static apps, this assistant learns from user behavior and feedback adapting meal suggestions over time. It also explains why a food choice is good or bad in simple language, increasing user trust and understanding. By combining real-time input, health data, and AI reasoning, the system provides a virtual diet coach that is intelligent, personal, and always available. This creates a future where expert nutrition support is no longer limited to clinics or apps, but part of everyday conversation.

PROPOSED SOLUTION

The proposed system is an AI-powered virtual nutrition assistant that interacts with users via text and voice to deliver personalized, real-time dietary guidance. It uses IBM Cloud Lite services and generative AI models to understand user needs and offer expert-level nutrition support.

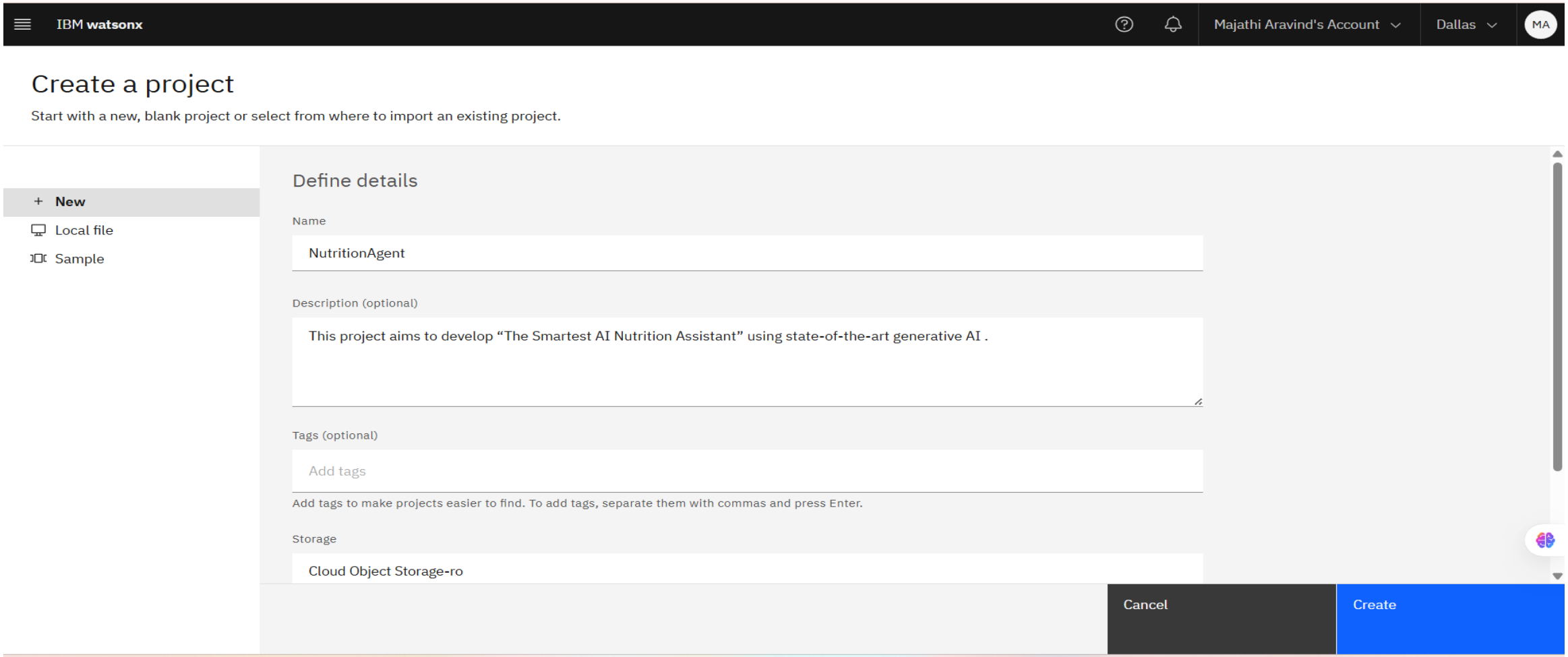
- **Conversational Input**: Users can communicate through natural language using text or voice.
- **Personalized Meal Plans**: The assistant generates diet plans tailored to user health goals, fitness routines, allergies, and preferences.
- **Contextual Explanations**: For every suggestion, the AI explains why a particular food or change is beneficial.
- **Real-Time Adaptation**: The system updates and refines recommendations based on ongoing user feedback or changing health data.
- **Powered by IBM Cloud**: Utilizes IBM Watson NLP for understanding, IBM Text-to-Speech/Speech-to-Text services for voice interaction, and IBM Granity for AI processing.

SYSTEM APPROACH

- **System Requirements**
- IBM Cloud Lite account or IBM Granity environment
- Internet-enabled device with microphone support (for voice input)
- IBM Watson services (NLP, Speech-to-Text, Text-to-Speech)
- Nutrition and health data sources

- **Libraries Required to Build the Model**
- bm-watson – For IBM Watson NLP and voice services
- transformers – For generative AI responses (LLM-based reasoning)
- speechrecognition – For handling voice input

RESULT


IBM watsonx
Majathi Aravind's Account
Dallas
MA
Create a project
Start with a new, blank project or select from where to import an existing project.
New
Local file
Sample
Define details
Name
NutritionAgent
Description (optional)
This project aims to develop “The Smartest AI Nutrition Assistant” using state-of-the-art generative AI .
Tags (optional)
Add tags
Add tags to make projects easier to find. To add tags, separate them with commas and press Enter.
Storage
Cloud Object Storage-ro
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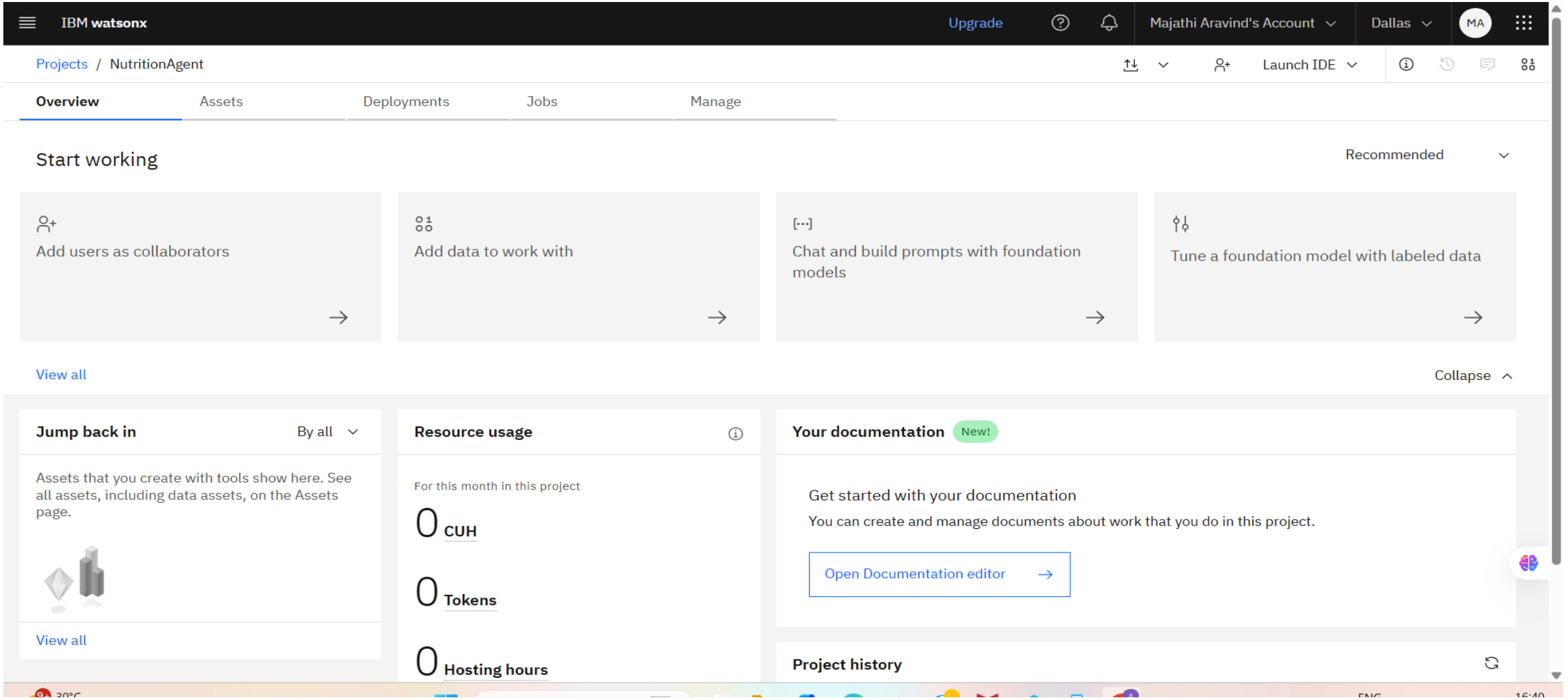
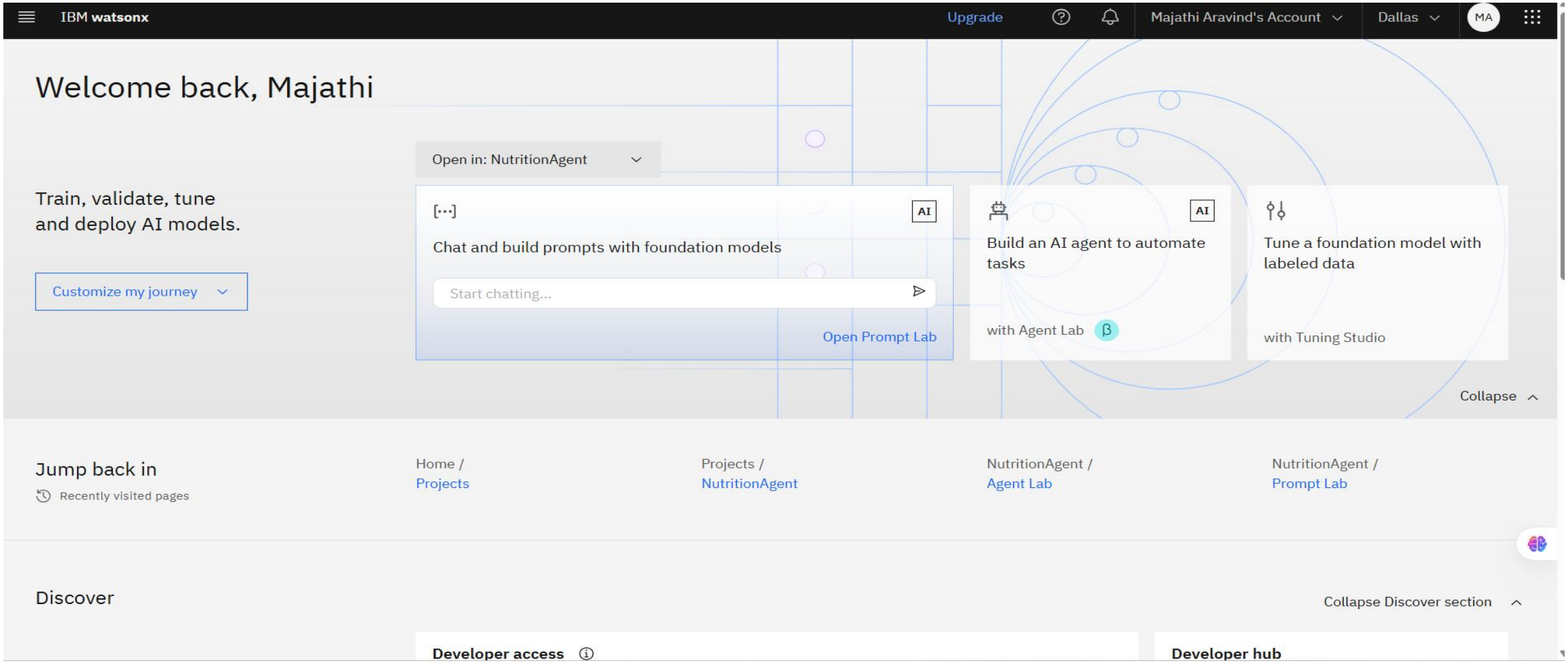
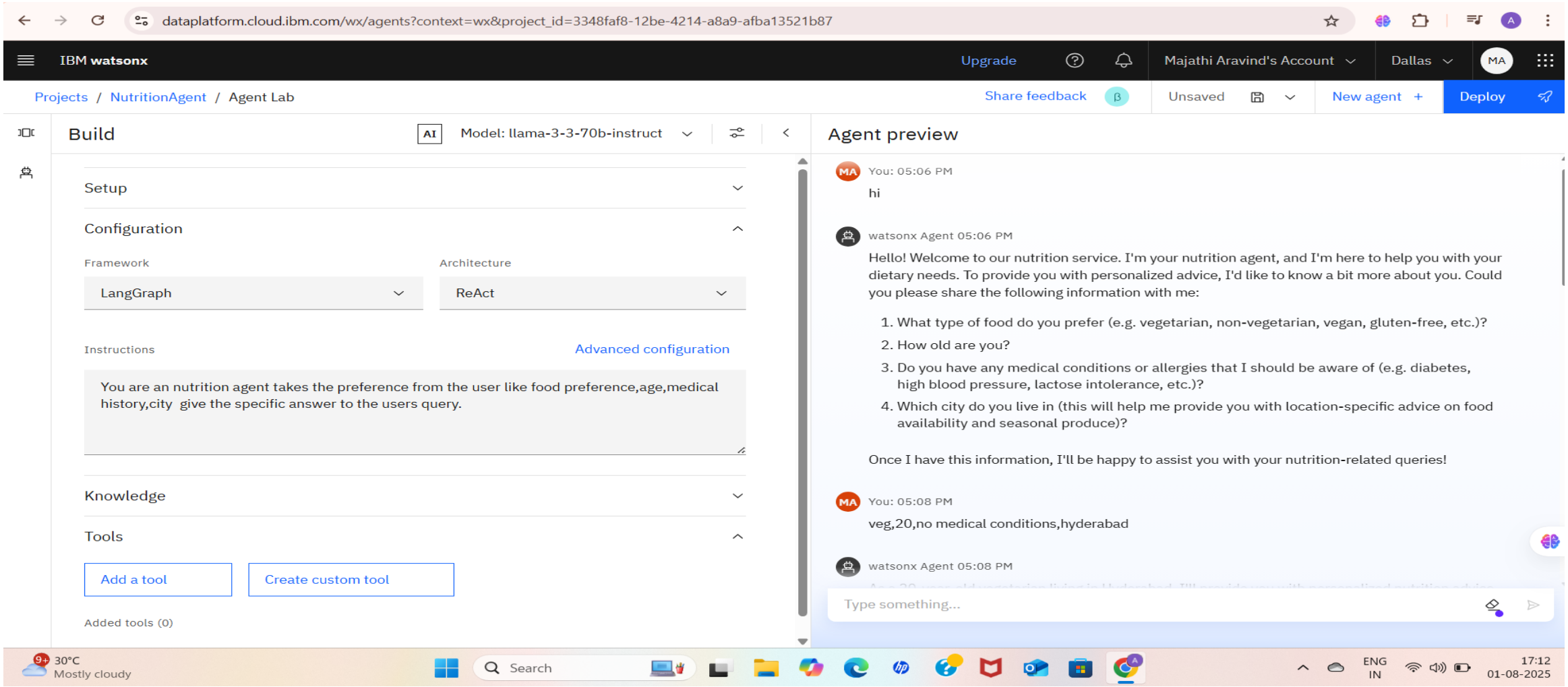
This Image Shows The IBM Watsonx Dashboard For The Nutrition Agent Project. It Confirms That The Project Is Created And Ready To Add Data, Users, And AI Models.



This Image Shows The IBM Watsonx Welcome Screen With The Nutrition Agent Project Open. It Includes Options To Chat With AI, Build An Agent, Or Fine-tune Models. It Confirms The Project Is Active And Ready For AI Development.



This Image Shows The Nutrition Agent Working Inside IBM Watsonx Agent Lab. The User Enters Details Like Food Preference, Age, And City, And The AI Replies With A Friendly Welcome And Asks For More Info. It Confirms The Chatbot Is Active And Responding Correctly.



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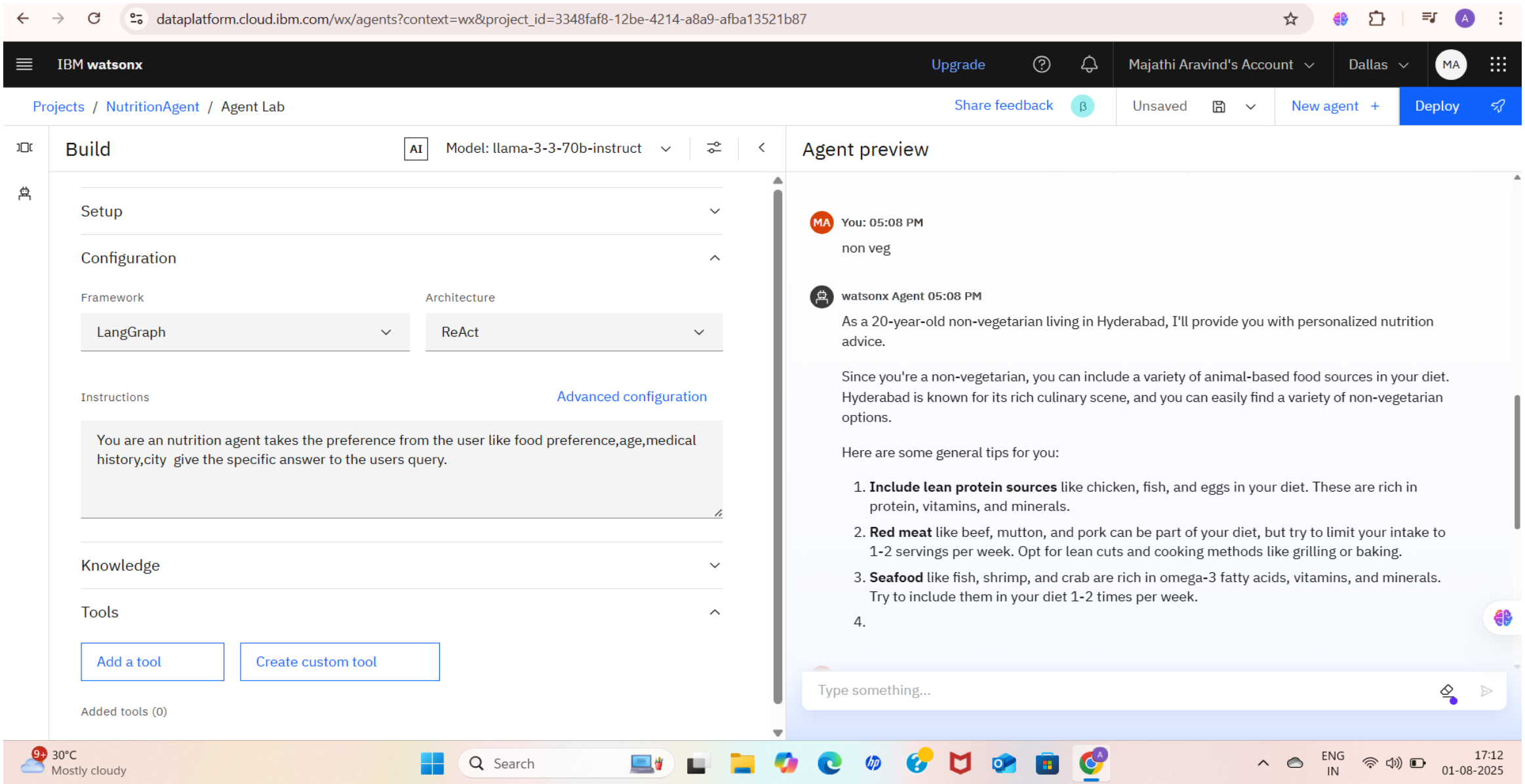

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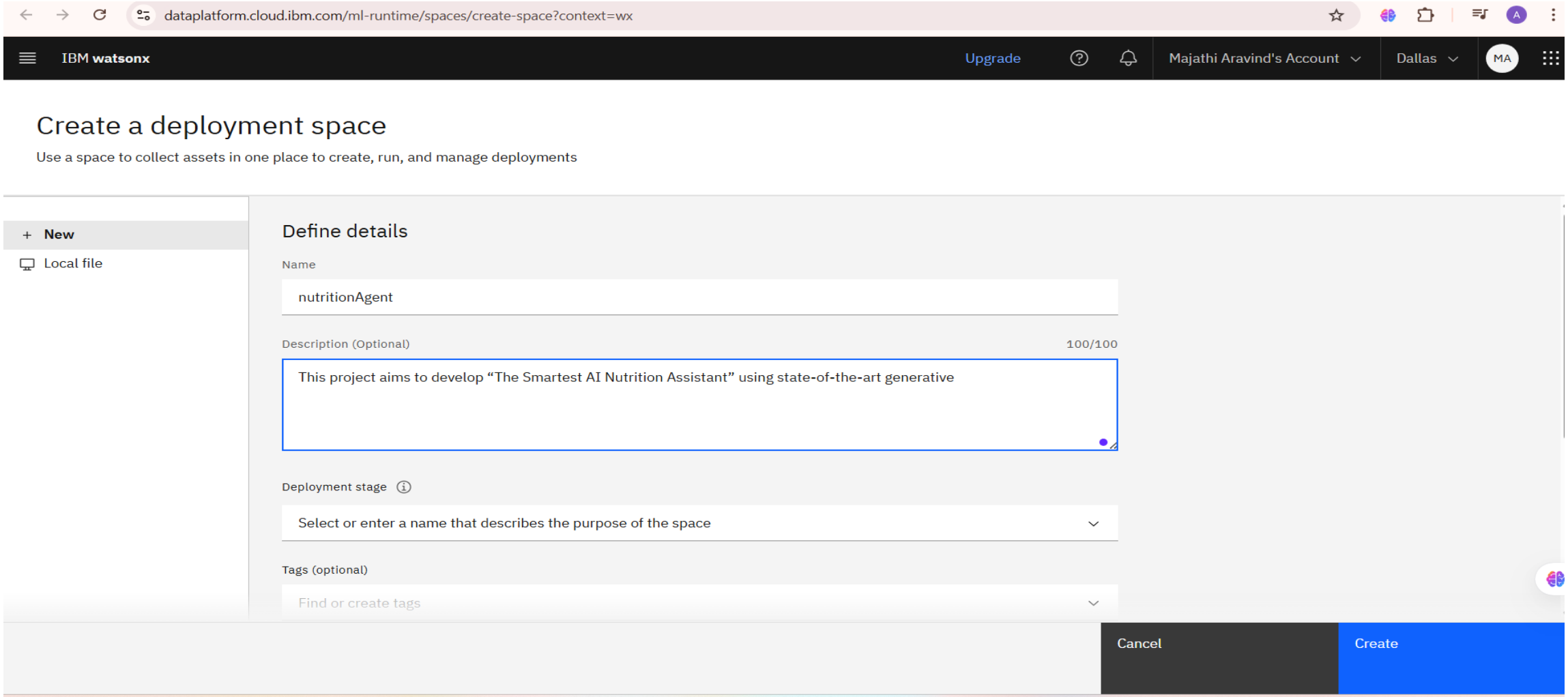
This Image Shows The Creation Of A Deployment Space For The Project Named "Nutrition agent" In IBM Watsonx. It Confirms The Setup Phase, Where The Project Is Being Prepared For Running And Managing AI Deployments.



CONCLUSION

The Smart AI Nutrition Assistant redefines how individuals receive personalized nutrition guidance by combining the power of generative AI with IBM Cloud technologies. Unlike traditional apps or limited consultations, this assistant offers real-time, interactive, and adaptive support through simple text and voice conversations. It not only delivers personalized meal plans but also helps users understand their food choices with meaningful explanations. By learning from feedback, it becomes smarter over time just like a real nutritionist. This solution makes expert-level health advice more accessible, scalable, and user-friendly, setting a new standard for digital wellness tools.

FUTURE SCOPE

In the future, the AI Nutrition Assistant can be expanded with deeper integrations and smarter features. It can connect with fitness trackers and wearable devices to provide real-time, data-driven recommendations based on physical activity, sleep, and vitals. Multilingual support can be introduced to reach a wider audience across different regions. The assistant could also incorporate medical records or lab reports to offer more precise and condition-specific guidance. By integrating with voice assistants like Alexa or Google Assistant, users can access nutrition advice hands-free at any time. Additionally, a dedicated dashboard for certified nutritionists could be developed to monitor and guide users alongside the AI, creating a powerful AI-human collaboration. Offline functionality can also be added to support users in areas with limited internet access, making the assistant more inclusive and reliable.

REFERENCES

- IBM Cloud Documentation – https://cloud.ibm.com/docs
- IBM Watson Speech & NLP Services – https://www.ibm.com/watson/products-services/
- USDA Food Data Central (Nutrition Database) – https://fdc.nal.usda.gov

IBM CERTIFICATIONS

In recognition of the commitment to achieve professional excellence

MAJATHI ARAVIND

Has successfully satisfied the requirements for:

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Issued on: Jul 16, 2025
Issued by: IBM SkillsBuild

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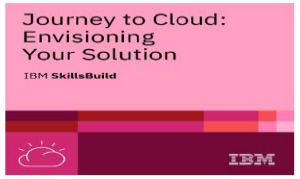

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IBM **SkillsBuild** Completion Certificate

This certificate is presented to

Aravind Majathi

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

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THANK YOU

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