

Nutrition AI Agent

An IBM SkillsBuild 4-Weeks Internship Project on AI & Cloud Technologies

Student Name: Satyam Kesharwani
College: DR Ambedkar Institute of Technology for Handicapped
Department: CSE



Presentation Outline

- Problem Statement
- Technology Utilized
- Core IBM Cloud Services
- Key Differentiators (Wow Factors)
- Target End Users
- Demonstration & Results
- Future Scope
- IBM Certifications
- GitHub Link

The Challenge: Generic Nutrition Advice

In today's fast-paced world, personalized nutrition is crucial. However, most existing apps offer generic solutions that fail to consider individual factors like medical conditions, allergies, cultural preferences, or dynamic lifestyles. Dietitians also face scalability issues with one-on-one consultations.



Our project, "**The Smartest AI Nutrition Assistant**," aims to solve this by leveraging **IBM WatsonX**, **Natural Language Processing (NLP)**, and **IBM Granite LLM** to:

- Generate dynamic, personalized meal plans.
- Suggest intelligent food substitutions.
- Explain nutritional choices clearly.
- Adapt based on user feedback for continuous improvement.

AI Foundation: Technology Utilized



IBM Cloud Lite Services

The essential backbone for deploying our cloud-based AI application.



IBM WatsonX Agent Lab

Our primary environment for building, training, and testing the AI assistant.



Natural Language Processing (NLP)

Enables the AI to accurately understand and interpret diverse user queries.



Granite-3B/8B Instruct LLM

The core large language model powering intelligent, context-aware responses.



RAG (Retrieval-Augmented Generation)

Ensures responses are grounded in factual, relevant data for accuracy.

Key IBM Cloud Services Employed

WatsonX Assistant / Agent Lab

The primary platform for developing and testing the Nutrition AI agent.

IBM Granite LLM

Powers smart response generation, utilizing the granite-3-3-8b-instruct model.

IBM Cloud Object Storage

Ideal for securely storing user data, historical meal plans, and nutritional databases.

IBM Cloud Functions

Enables the creation and deployment of scalable microservices, like image recognition for food or calorie calculators.

IBM Cloud Monitoring

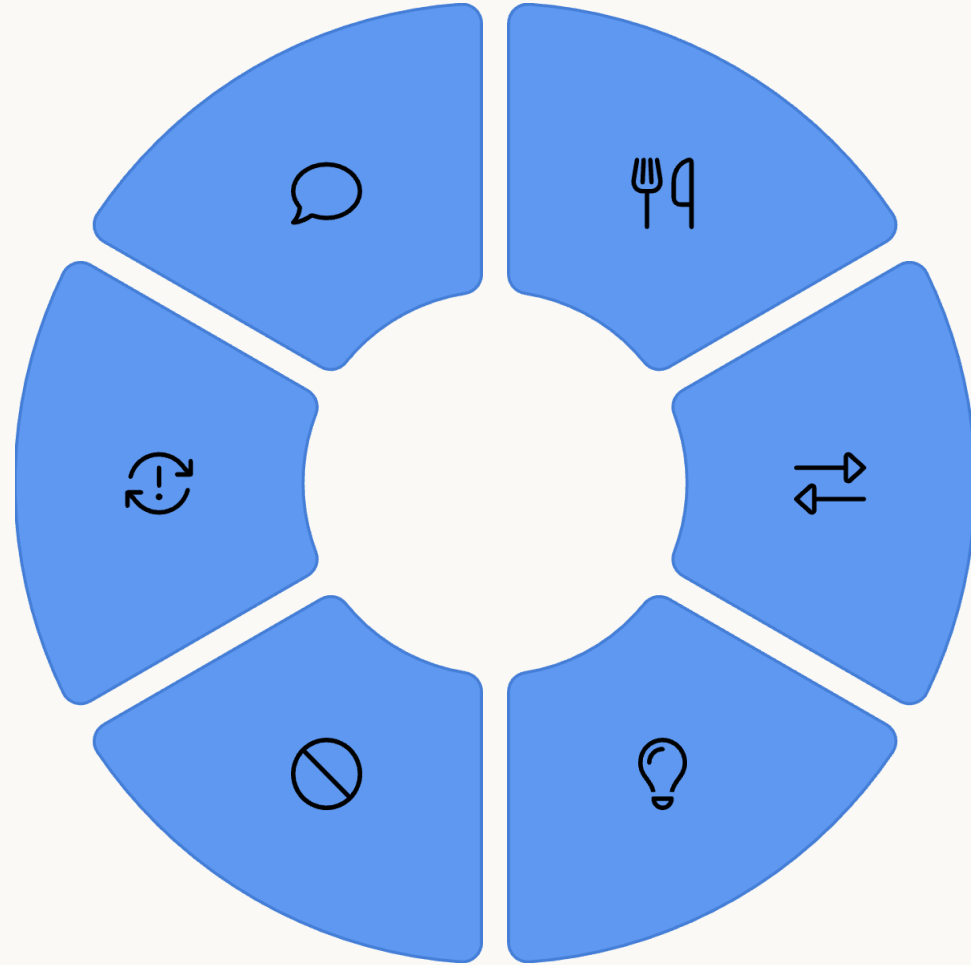
Essential for performance tracking and ensuring the agent's reliability if scaled for broader use.

Unlocking Value: The Wow Factors

Natural Input Understanding
Seamlessly processes human text input for intuitive interactions.

Adaptive Learning
Evolves responses based on user feedback and evolving dietary goals.

Contextual Focus
Rejects unrelated queries, maintaining focus purely on nutrition topics.



Personalized Meal Plans

Generates diet plans tailored to specific health conditions (diabetes, PCOS, weight loss).

Smart Food Swaps

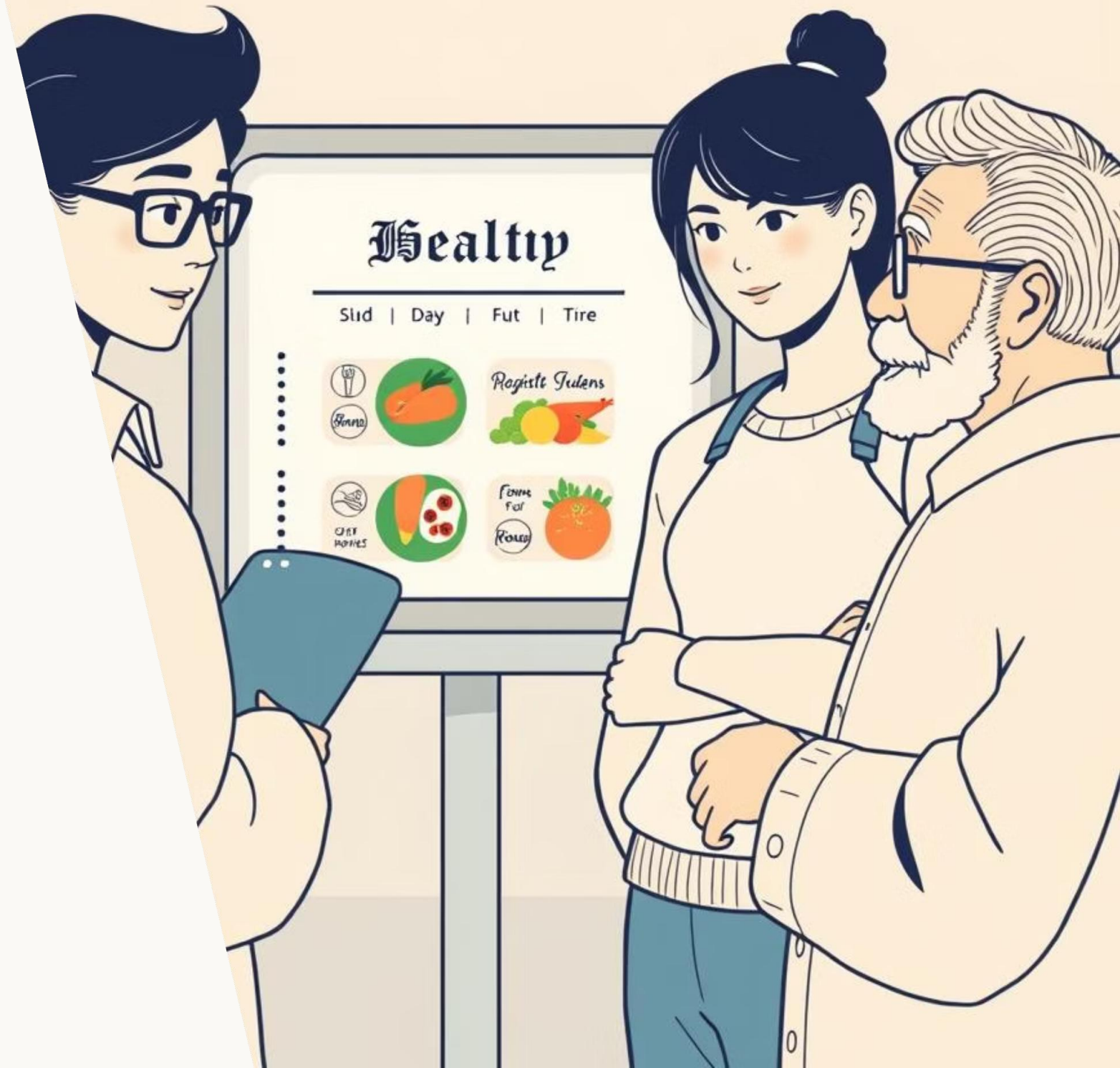
Offers intelligent substitutions, like "Use quinoa instead of rice."

Clear Explanations

Provides reasoning behind suggestions (e.g., "Oats are high in fiber, good for digestion.").

Who Benefits? Target End Users

- **Health-conscious individuals:** Seeking balanced diet plans for general well-being.
- **Fitness enthusiasts:** Aligning nutrition with training goals for optimal performance.
- **Diabetic & heart patients:** Requiring strict, condition-specific dietary recommendations.
- **Busy professionals:** Needing convenient, quick, and healthy meal suggestions.
- **Students:** Aiming to maintain a healthy diet within a limited budget.
- **Dietitians:** Looking to automate and scale consultations, freeing up time for complex cases.



Deployed Online

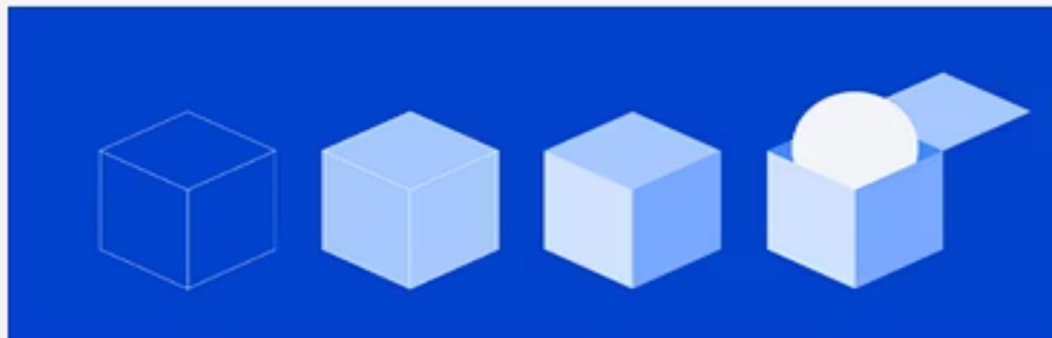
Preview



Nutrition Agent 05:02 PM

Welcome to Nutrition Agent

Personalized AI nutrition agent for meal plans, food swaps, and health-based diet advice.



Quick start samples

Suggest a 1500-calorie vegetarian diet for weight loss

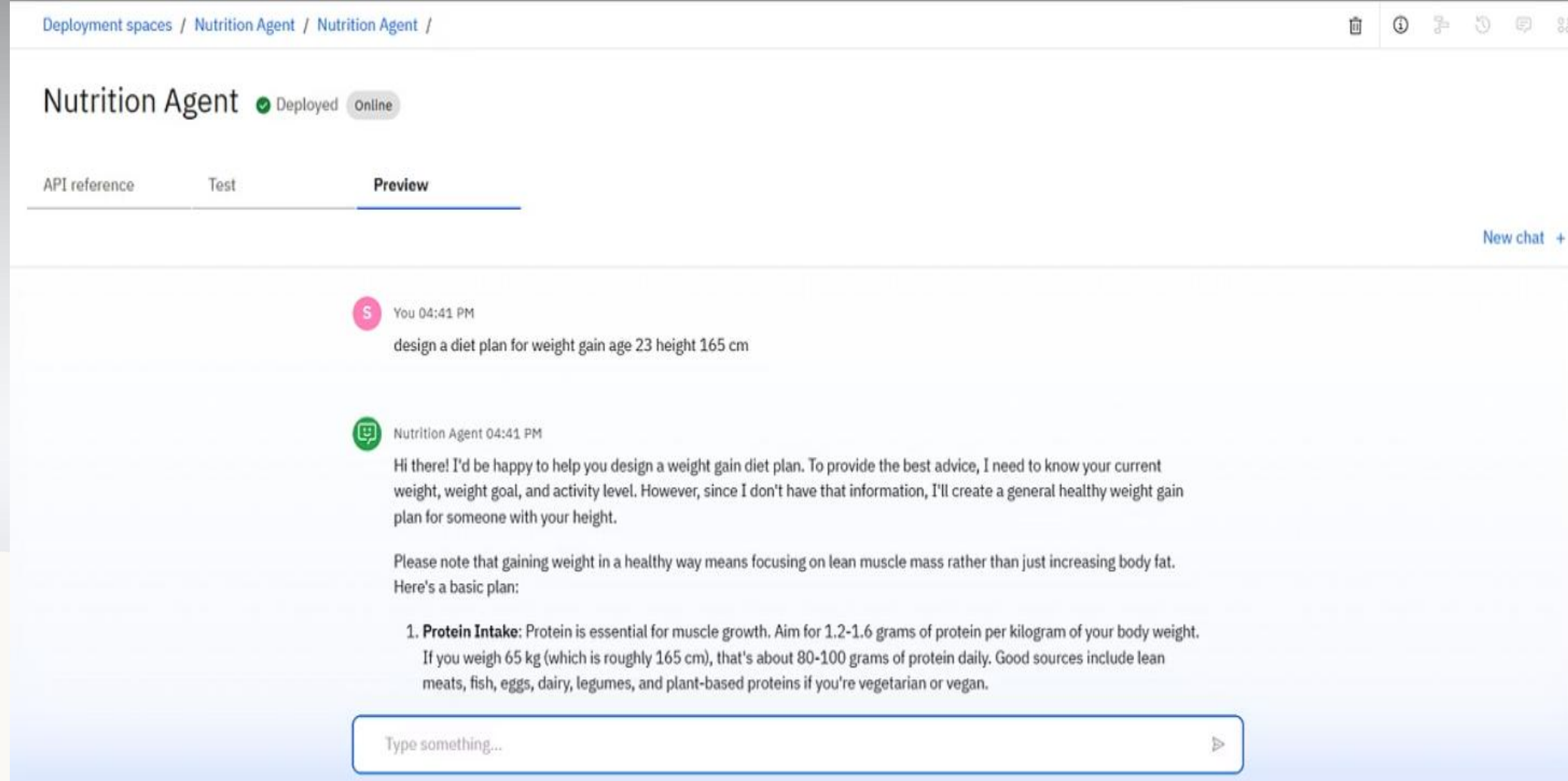


What can I cook with oats, banana, and m

Type something...

Results: Dynamic Meal Plan Generation

Our AI agent successfully generates dynamic and personalized meal plans based on user input, as demonstrated in the interaction below.

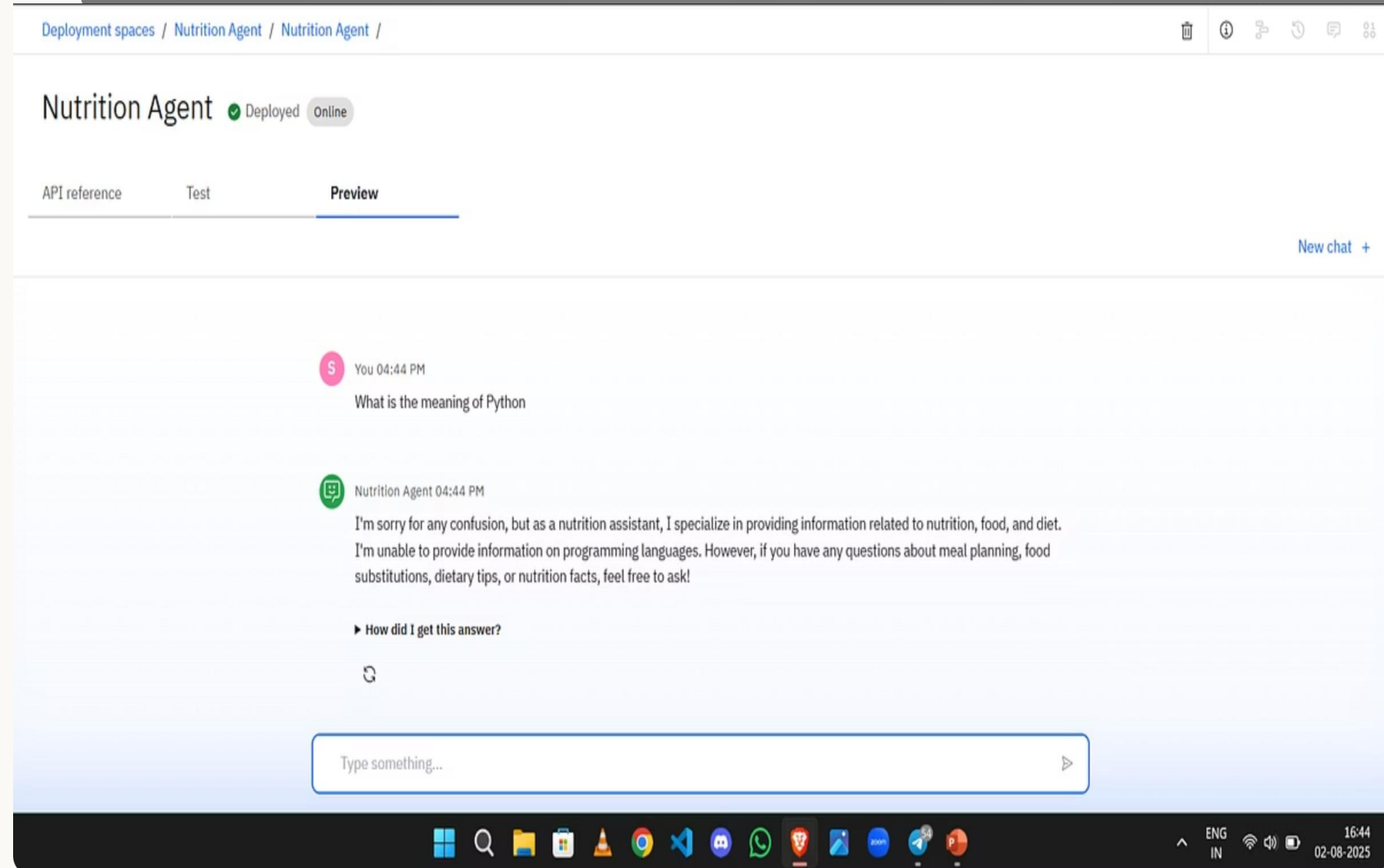


Results: Smart Food Substitutions

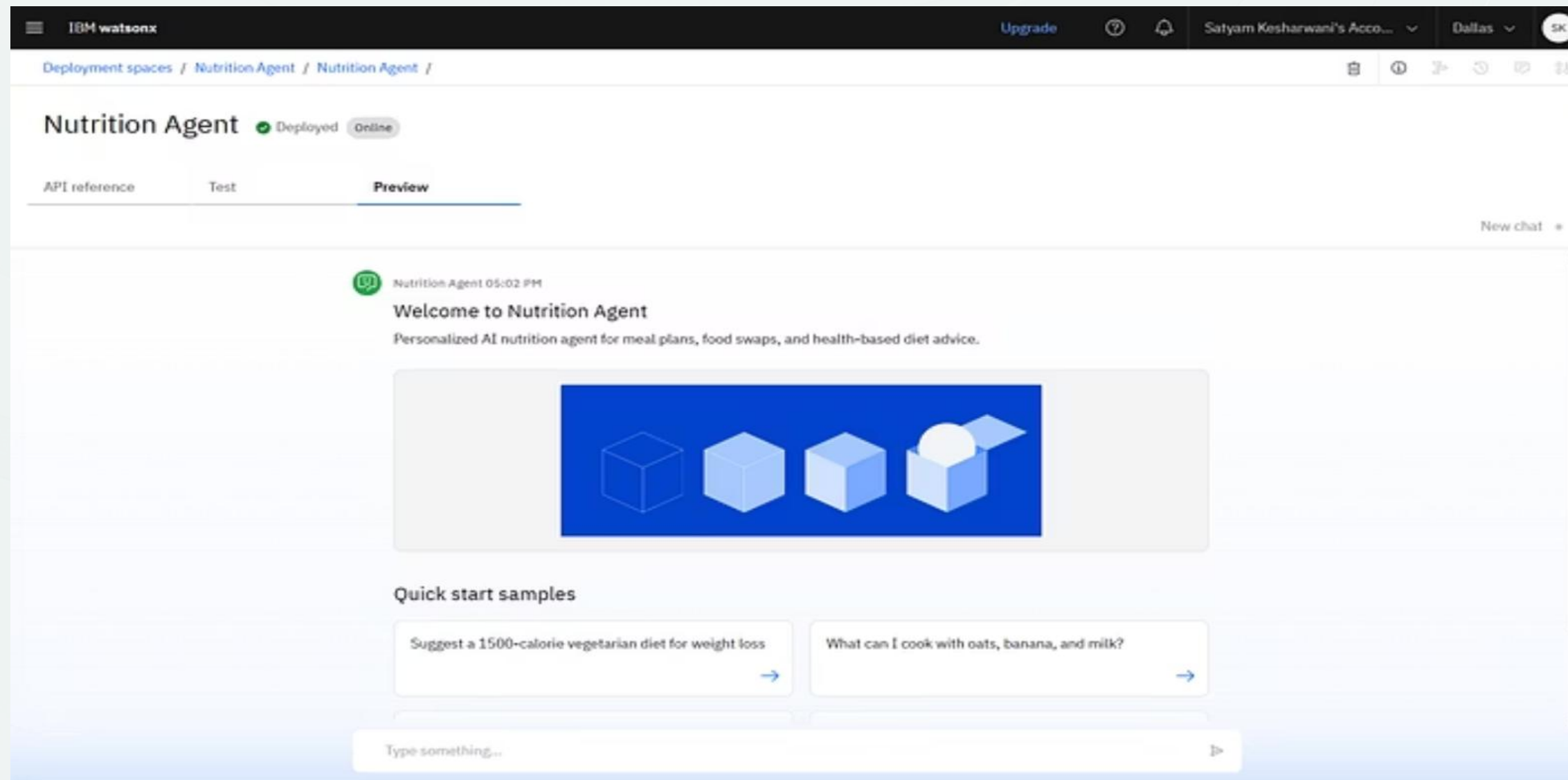
The agent's ability to suggest smart and contextually relevant food substitutions is a key feature, making diet adherence easier and more flexible for users.

Results: Focused and Accurate Responses

The Nutrition AI Agent is designed to only answer questions related to nutrition and food queries, maintaining high relevance and avoiding off-topic responses.



Deployed Nutrition AI Agent



Conclusion

The Nutrition Agent project proves how **Generative AI + NLP** can solve real-world problems like personalized health management. Using **IBM Cloud + WatsonX**, this intelligent assistant can:

- Reduce dependency on one-size-fits-all diet plans
- Increase accessibility of expert nutrition guidance
- Provide a foundation for smart health-focused AI assistants

It can also serve as a **building block** for future health-tech products integrated with wearables, apps, or smart homes.

Future scope

- Add **multilingual support** (Hindi, Tamil, etc.)
- Integrate with **Google Fit or smartwatches** to match meals with activity levels
- Enable **calorie tracking** and nutrient logging
- Add a **recipe suggestion engine** based on local cuisine
- Use **image recognition** to identify food items from photos
- Connect with **grocery APIs** to recommend where to buy items

In recognition of the commitment to achieve
professional excellence



Satyam Kesharwani

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



Issued on: Jul 17, 2025

Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/7583fff9-7b91-4044-b335-aaaaddde0399>



Getting Started with AI

7/25/25, 2:59 PM

Completion Certificate | SkillsBuild

IBM **SkillsBuild**

Completion Certificate



This certificate is presented to
Satyam Kesharwani

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

https://skills.yourlearning.ibm.com/certificate/ALM-COURSE_3824998

1/1

RAG Lab

GitHub Link:

<https://github.com/Sk13-Satyam/Nutrition-Agent>

THANK YOU