

IBM HACKATHON PROJECT

SMART NUTRITION AGENT

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OUTLINE

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PROBLEM STATEMENT

In an era of information overload, many individuals struggle to find reliable and personalized nutrition advice. Generic diet plans fail to consider personal health goals, lifestyle, dietary restrictions, and cultural food habits. This leads to confusion, unsustainable habits, and failure to achieve wellness objectives like weight management or improved fitness.

Proposed Solution:

An AI agent trained using IBM Watsonx.ai that delivers reliable, document-based answers about nutrition. By using trusted sources like the Indian Council of Medical Research (ICMR) and the National Institute of Nutrition (NIN), and employing Retrieval-Augmented Generation (RAG), it ensures users receive grounded, easy-to-understand, and personalized nutritional guidance.

TECHNOLOGY USED

- IBM Watsonx.ai Studio
- IBM Granite Foundation Model (LLM)
- Vector Index for Retrieval-Augmented Generation
- PDF documents from NIN/ICMR & other trusted health sources
- NLP (Natural Language Processing)
- IBM Cloud Object Storage

IBM CLOUD SERVICES USED

- Watsonx.ai Studio
- IBM Granite Model
- Watsonx Vector Index
- IBM Cloud Lite Account
- IBM Cloud IAM
- IBM Cloud Object Storage

WOW FACTORS

- Uses RAG to fetch answers from real NIN/ICMR or uploaded dietary guideline PDFs
- Built entirely on IBM Cloud using Watsonx tools
- Handles unrelated questions with polite redirection
- Provides personalized meal plans based on user goals
- Educates users on food science, nutrients, and healthy swaps
- Offers safe and reliable nutritional guidance grounded in scientific documents

END USERS

- Health-conscious individuals seeking wellness advice
- Fitness enthusiasts and athletes
- Individuals with dietary restrictions (e.g., diabetes, allergies)
- Users aiming for weight loss or muscle gain
- People looking for healthy recipes and meal plans
- Families wanting to adopt healthier eating habits
- Wellness coaches and dietitians

RESULTS

This image showcases the welcome screen of the "Nutrition Agent" — an AI-powered nutrition assistant designed to provide personalized meal plans, health-focused recipes, and easy progress tracking. The interface highlights a clean and user-friendly design, aimed at simplifying health management through intelligent guidance.

Agent preview



Nutrition Agent 10:11 AM

Welcome to Nutrition Agent

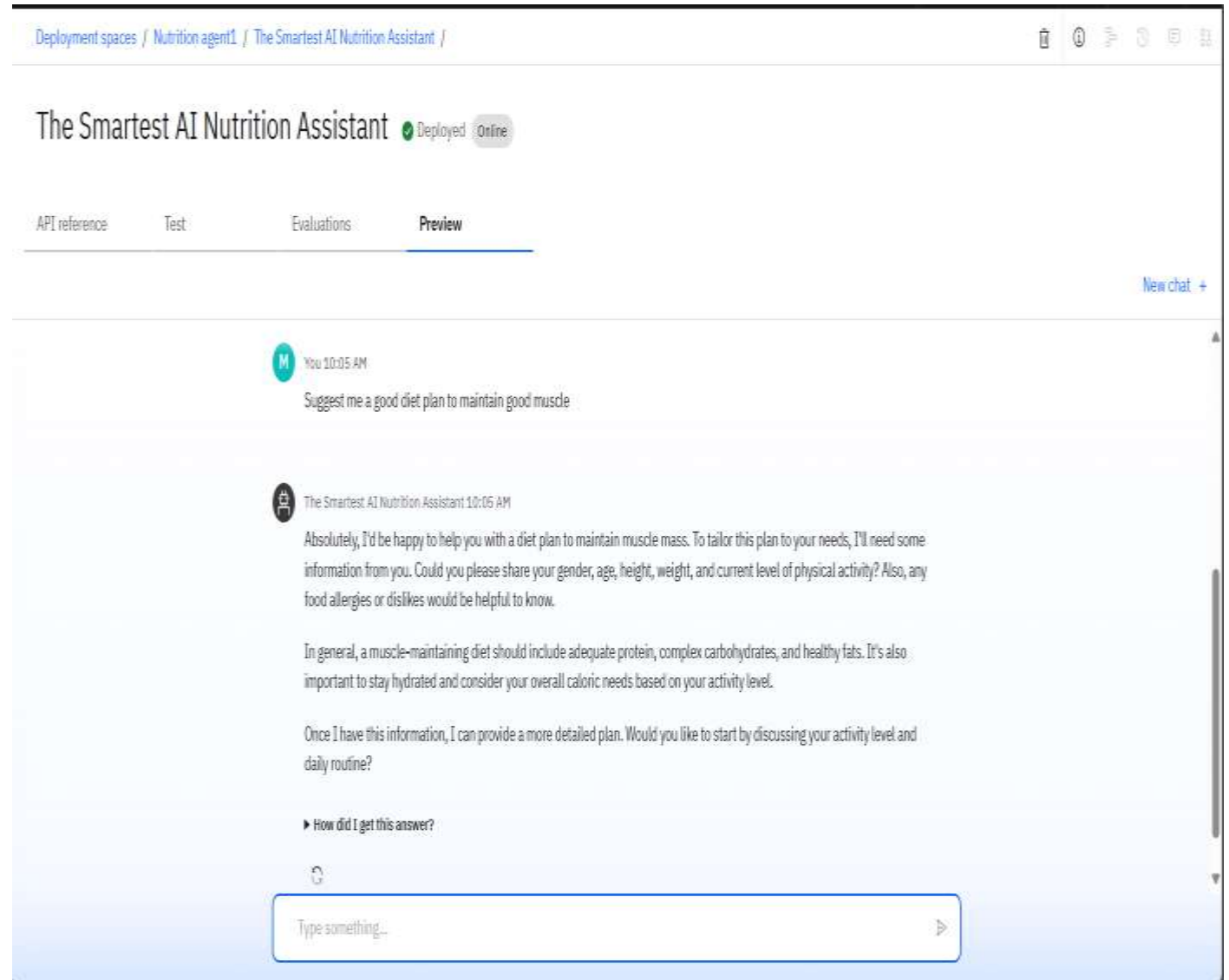
Your AI nutrition guide. Get custom meal plans & recipes for your health goals.
Tracking made easy.



Type something...



This screenshot captures a live preview of the "Smartest AI Nutrition Assistant" deployed using IBM Watsonx. The AI responds to a user query requesting a weight loss diet plan by prompting for relevant personal and dietary information. This enables the assistant to create a customized, data-driven nutrition plan. The interaction demonstrates the assistant's ability to deliver tailored health recommendations, highlighting its value in promoting sustainable lifestyle changes through intelligent automation.



In the example shown, the user asks for a **diet plan to maintain good muscle mass**, and the assistant responds intelligently by requesting relevant personal details (such as age, gender, height, weight, and activity level) to tailor the advice. The assistant also provides a general guideline, emphasizing the importance of **protein intake, complex carbohydrates, healthy fats, and hydration** for muscle maintenance.

Deployment spaces / Nutrition agent1 / The Smartest AI Nutrition Assistant /

The Smartest AI Nutrition Assistant Deployed Online

API reference Test Evaluations **Preview**

[New chat +](#)

You 08:29 PM
is eating rice daily useful or not?

The Smartest AI Nutrition Assistant 08:29 PM
Eating rice daily can be part of a healthy diet, but it depends on the type of rice and how it fits into your overall meal plan.

White rice is a refined grain, which means it has been processed to remove the bran and germ, along with most of the fiber and nutrients. Brown rice, on the other hand, is a whole grain, retaining the bran, germ, and more nutrients.







For weight management, it's beneficial to choose whole grains like brown rice over refined grains. Brown rice has a lower glycemic index, which means it can help maintain steady blood sugar levels and keep you feeling full for longer, potentially aiding in weight control.

However, rice, even brown, is high in carbohydrates. It's important to balance your meals with a variety of foods, including lean proteins, plenty of vegetables, and healthy fats.

Would you like to know more about how to incorporate brown rice into a balanced diet, or perhaps explore other whole grain options?

DEPLOYED AI AGENT


[Deployment spaces](#) / [Nutrition agent1](#) / [The Smartest AI Nutrition Assistant](#) /




The Smartest AI Nutrition Assistant ✓ Deployed Online

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 You 10:05 AM


Suggest me a good diet plan to maintain good muscle


 The Smartest AI Nutrition Assistant 10:05 AM


Absolutely, I'd be happy to help you with a diet plan to maintain muscle mass. To tailor this plan to your needs, I'll need some information from you. Could you please share your gender, age, height, weight, and current level of physical activity? Also, any food allergies or dislikes would be helpful to know.

In general, a muscle-maintaining diet should include adequate protein, complex carbohydrates, and healthy fats. It's also important to stay hydrated and consider your overall caloric needs based on your activity level.

Once I have this information, I can provide a more detailed plan. Would you like to start by discussing your activity level and daily routine?

 ▶ How did I get this answer?





CONCLUSION

- The Smart Nutrition Agent automates nutrition analysis and meal planning, saves time, and helps users make healthier choices daily. It transforms nutrition from guesswork to science by leveraging AI-driven insights, resulting in improved health and well-being.
- **Reduces manual effort** by automatically analyzing meals for calories, macros, and micronutrients.
- **Improves consistency** in healthy eating by offering daily guidance

GITHUB LINK

<https://github.com/nagasri1207/The-Smartest-AI-Nutrition-Assistant>

FUTURE SCOPE

- Integration with fitness trackers (e.g., smartwatches) for real-time data
- Image recognition for food logging from photos
- Speech-to-text input for hands-free queries
- Personalized grocery list generation and online ordering integration
- Multilingual expansion to support diverse user bases

IBM CERTIFICATIONS



In recognition of the commitment to achieve
professional excellence



bondili nagasri

Has successfully satisfied the requirements for:

Journey to Cloud: Envisioning Your Solution



Issued on: Jul 18, 2025
Issued by: IBM SkillsBuild

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Completion Certificate



This certificate is presented to

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for the completion of

**Lab: Retrieval Augmented Generation with
LangChain**

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 18 Jul 2025 (GMT)

Learning hours: 20 mins



THANK YOU