
IBM HACKATHON PROJECT

THE SMARTEST AI NUTRITION ASSISTANT

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OUTLINE

- Problem Statement
- Technology used
- Wow factor
- End users
- Result
- Conclusion
- Git-hub Link
- Future scope
- IBM Certifications

PROBLEM STATEMENT

The Problem: Individuals seeking health-conscious diets are often met with generic, one-size-fits-all meal plans from existing apps. These tools lack real-time adaptability and fail to consider a person's complete lifestyle, including cultural preferences, allergies, and evolving health goals. Furthermore, expert dietitians face significant time and resource constraints, making it difficult to provide personalized consultations at scale.

Proposed Solution:

An AI-powered Nutrition Assistant that uses Generative AI to function as an intelligent, interactive, and adaptive virtual nutrition expert. It generates dynamic meal plans, recommends smart food swaps, and explains nutritional choices—all tailored to the individual's unique needs and continuous feedback.

TECHNOLOGY USED

- IBM Cloud Lite Services
- Agentic AI (using Large Language Models)
- IBM watsonx.ai (for the Granite foundation model)
- External Food Database APIs (for accurate nutritional data)

IBM CLOUD SERVICES USED

- IBM Cloud Watsonx AI Studio
- IBM Cloud Watsonx AI runtime
- IBM Cloud Agent Lab
- IBM Granite foundation model

WOW FACTORS

- This agent bridges the gap between generic diet apps and in-person nutrition counseling, delivering an AI that thinks, learns, and cares like a real nutrition expert. It makes personalized health guidance accessible and affordable for everyone.
- **Unique Features:**
 - **Hyper-Personalization:** Generates meal plans based on health goals, medical conditions, fitness routines, and preferences.
 - **Multimodal Input:** Understands user requests via text, voice, or even images of food.
 - **Contextual Explanations:** Answers questions like, “Why is this food better for me?” to educate the user.
 - **Adaptive Learning:** Dynamically adapts suggestions based on continuous user feedback (e.g., “I didn't like that meal”).

END USERS

- Health-conscious individuals seeking to improve their diet.
- Fitness enthusiasts and athletes tracking macronutrients.
- Users with specific dietary needs (e.g., allergies, diabetes, vegetarianism).
- Anyone looking for affordable and accessible nutrition guidance.

RESULTS

The screenshot displays the IBM Watsonx Agent Lab interface in a web browser. The browser's address bar shows the URL: `dataplatfom.cloud.ibm.com/wx/agents?context=wx&project_id=ab3c3436-da93-43da-9f8f-7cf35b434197`. The page header includes the IBM Watsonx logo, an 'Upgrade' button, a user profile for 'Dhruv Gupta's Account' in 'Dallas', and a 'Deploy' button. The main navigation bar shows 'Projects / nutritionAgent / Agent Lab' and a 'Share feedback' button.

The interface is divided into two main panels:

- Build Panel:** This panel is used to configure the agent. It includes a 'Setup' section, a 'Configuration' section with dropdowns for 'Framework' (set to 'LangGraph') and 'Architecture' (set to 'ReAct'), and an 'Instructions' section. The instructions text reads: "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?'". There is also a link for 'Advanced configuration'.
- Agent preview Panel:** This panel shows the agent's responses. It displays a conversation history where a user asks, "I'm trying to build muscle. What foods should I focus on?". The agent responds with a list of 11 food items that can help build muscle:

1. **Eggs:** High in protein and essential amino acids.
2. **Salmon:** Rich in protein and omega-3 fatty acids.
3. **Chicken breast:** Lean protein source.
4. **Greek yogurt:** High in protein and calcium.
5. **Tuna:** Lean protein source with omega-3 fatty acids.
6. **Lean beef:** High in protein and iron.
7. **Shrimp:** Lean protein source.
8. **Soybeans:** Plant-based protein with all essential amino acids.
9. **Oatmeal:** Complex carbohydrates for energy.
10. **Almonds:** High in protein and healthy fats.
11. **Edamame:** Plant-based protein.

At the bottom of the preview panel is a text input field with the placeholder "Type something..." and a send button.

RESULTS

Agent preview



You: 11:10 AM

I'm trying to build muscle. What foods should I focus on?



watsonx Agent 11:10 AM

Here are some foods that can help you build muscle:

1. **Eggs:** High in protein and essential amino acids.
2. **Salmon:** Rich in protein and omega-3 fatty acids.
3. **Chicken breast:** Lean protein source.
4. **Greek yogurt:** High in protein and calcium.
5. **Tuna:** Lean protein source with omega-3 fatty acids.
6. **Lean beef:** High in protein and iron.
7. **Shrimp:** Lean protein source.
8. **Soybeans:** Plant-based protein with all essential amino acids.
9. **Oatmeal:** Complex carbohydrates for energy.
10. **Almonds:** High in protein and healthy fats.
11. **Edamame:** Plant-based protein.

Type something...



RESULTS

Deployed AI Agent

IBM watsonx Upgrade ? Dhruv Gupta's Account Dallas DG

Deployment spaces / Dhruv_Agent_01 / watsonx Agent

watsonx Agent ✓ Deployed Online

API reference Test **Preview**

New chat +

D You 11:29 AM
what are the nutrition essential for vitamin B

watsonx Agent 11:29 AM
Here are some relevant links for your query:

1. [Vitamins and minerals - B vitamins and folic acid - NHS](#)
2. [Vitamin B | Better Health Channel](#)
3. [B-Complex Vitamins: Benefits, Side Effects, and Dosage](#)
4. [Vitamin B12 - Health Professional Fact Sheet](#)
5. [B Vitamins • The Nutrition Source](#)

Type something...

Windows taskbar: Type here to search, 11:29 31-07-2025

CONCLUSION

- The AI Nutrition Assistant successfully generates personalized meal plans tailored to complex user requirements.
- It saves users time and uncertainty in planning their diet, automating a task that requires significant research and knowledge.
- By making expert-level guidance scalable and adaptive, the agent enhances user efficiency, knowledge, and health outcomes in their nutritional journey.

FUTURE SCOPE

- **Wearable Integration:** Sync with fitness trackers (Apple Health, Fitbit) to automatically adjust plans based on daily activity. Voice-Activated Research Assistant
- **Real-Time Visual Analysis:** Allow users to take a photo of their meal for instant nutritional estimation and feedback. Research Gap and Novel Topic Identification
- **AI-Assisted Meal Logging:** Simplify the process of tracking daily food intake.
- **Grocery List Generation:** Create shopping lists from meal plans with options to export to e-commerce sites.

IBM CERTIFICATIONS

- Getting started with AI



Journey to Cloud

In recognition of the commitment to achieve
professional excellence



Dhruv Gupta

Has successfully satisfied the requirements for:

Journey to Cloud: Envisioning Your Solution



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- RAG Lab

IBM **SkillsBuild**

Completion Certificate



This certificate is presented to

Dhruv Gupta

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

GITHUB LINK

- <https://github.com/dhruvgupta2005/AI-Nutrition-Assistant>



THANK YOU