

---

# CAPSTONE PROJECT

## NUTRITION AGENT

**Presented By:**

**Student name : Tanushree Ray**

**College Name & Department :**

**Kalinga Institute of Industrial Technology, B.Tech CSE**

# OUTLINE

- Problem Statement
- Technology used
- IBM Cloud Services used
- Wow factors
- End users
- Results
- Conclusion
- Github Link
- Future scope
- IBM Certifications

---

# PROBLEM STATEMENT

In today's fast-paced world, individuals are increasingly seeking personalized nutrition guidance tailored to their unique health goals, medical conditions, dietary preferences, and lifestyle habits. However, most existing solutions offer generic diet plans and lack real-time adaptability, cultural sensitivity, and holistic personalization. This creates a gap between user expectations and the limited capabilities of one-size-fits-all nutrition tools.

## Proposed Solution:

An AI-powered Nutrition Agent that leverages Natural Language Processing (NLP) and Retrieval-Augmented Generation (RAG) to deliver personalized meal plans, smart food substitutions, nutritional explanations, and dietary recommendations. The agent can adapt in real-time to user feedback, support text or voice input, and provide actionable, context-aware dietary insights—empowering users to make healthier food choices sustainably.

---

# TECHNOLOGY USED

- IBM cloud lite services
- Natural Language Processing (NLP)
- Retrieval Augmented Generation (RAG)
- IBM Granite model

---

## 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 will revolutionize how individuals approach nutrition by delivering personalized, adaptive, and intelligent meal planning. It reduces reliance on generic diet plans, supports real-time customization, and bridges the gap between lifestyle, health, and food choices. It empowers users to make informed dietary decisions with ease, accessibility, and accuracy.

## Unique Features:

- Dynamic meal plan generation based on health goals, dietary preferences, allergies, and cultural habits
- Smart food substitution engine to suggest healthier or preferred alternatives in real-time
- Contextual nutritional explanations like “Why is quinoa better than white rice for your goal?”
- Multimodal input support – understands user inputs via text, voice, or food label/photo
- Feedback-driven adaptability – learns from user preferences and updates future suggestions
- Localized and culturally relevant food recommendations for enhanced personalization
- Goal-based guidance – supports weight loss, muscle gain, diabetic-friendly, heart-healthy diets, etc.


---

## END USERS

- Health-Conscious Individuals - Looking for personalized and sustainable diet guidance.
- Fitness Enthusiasts & Athletes - Seeking optimized meal plans aligned with workout goals.
- Dieticians and Nutritionists - As a support tool for client engagement and scalable consultations.
- Healthcare Providers - For patient dietary recommendations in chronic disease management.
- Educational Institutions - Teaching tools in health sciences, nutrition, and wellness programs.
- Wellness Coaches & Lifestyle Consultants - Enhancing personalized care with AI-driven insights.
- Public Health Organizations - Promoting preventive health and nutritional literacy at scale.

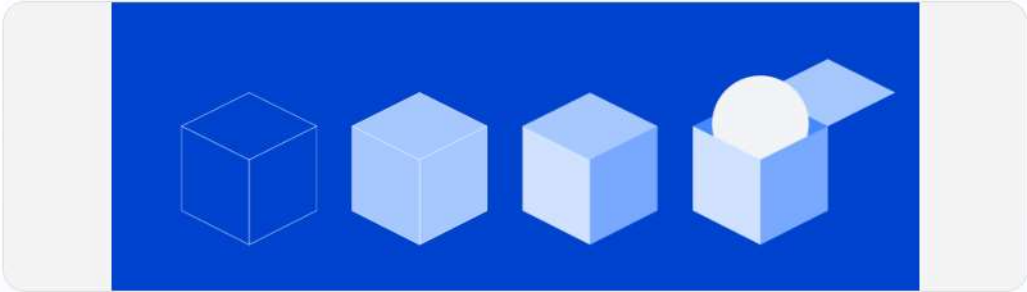
# RESULTS

## Agent preview

 NutriMate 01:16 PM

Welcome to NutriMate

I'm NutriMate – your AI guide for smart, personalized, and adaptive nutrition planning.



### Sample questions

"Create a meal plan for weight loss."

→

"Suggest a diabetic-friendly dinner."

→





"What are some healthy snack options?"

→

"What should I eat to increase protein intake?"

→

Type something...





# RESULTS

## Agent preview



You: 01:16 PM

"Create a meal plan for weight loss."



NutriMate 01:16 PM

Hi, I'd be happy to help you create a meal plan for weight loss. To make it as tailored as possible, could you please tell me about your dietary preferences (e.g., vegetarian, vegan, gluten-free) and any food allergies you might have? Also, it would be helpful to know your average daily calorie needs.

In the meantime, here's a general guideline for a balanced, weight-loss-focused meal plan:

### Day 1:

- **Breakfast:** Greek yogurt with mixed berries and a drizzle of honey.
- **Lunch:** Grilled chicken salad with lots of vegetables (tomatoes, cucumbers, bell peppers) and a vinaigrette dressing.
- **Dinner:** Baked salmon with quinoa and steamed broccoli.
- **Snacks:** A piece of fruit (like an apple) or a handful of nuts.

### Day 2:

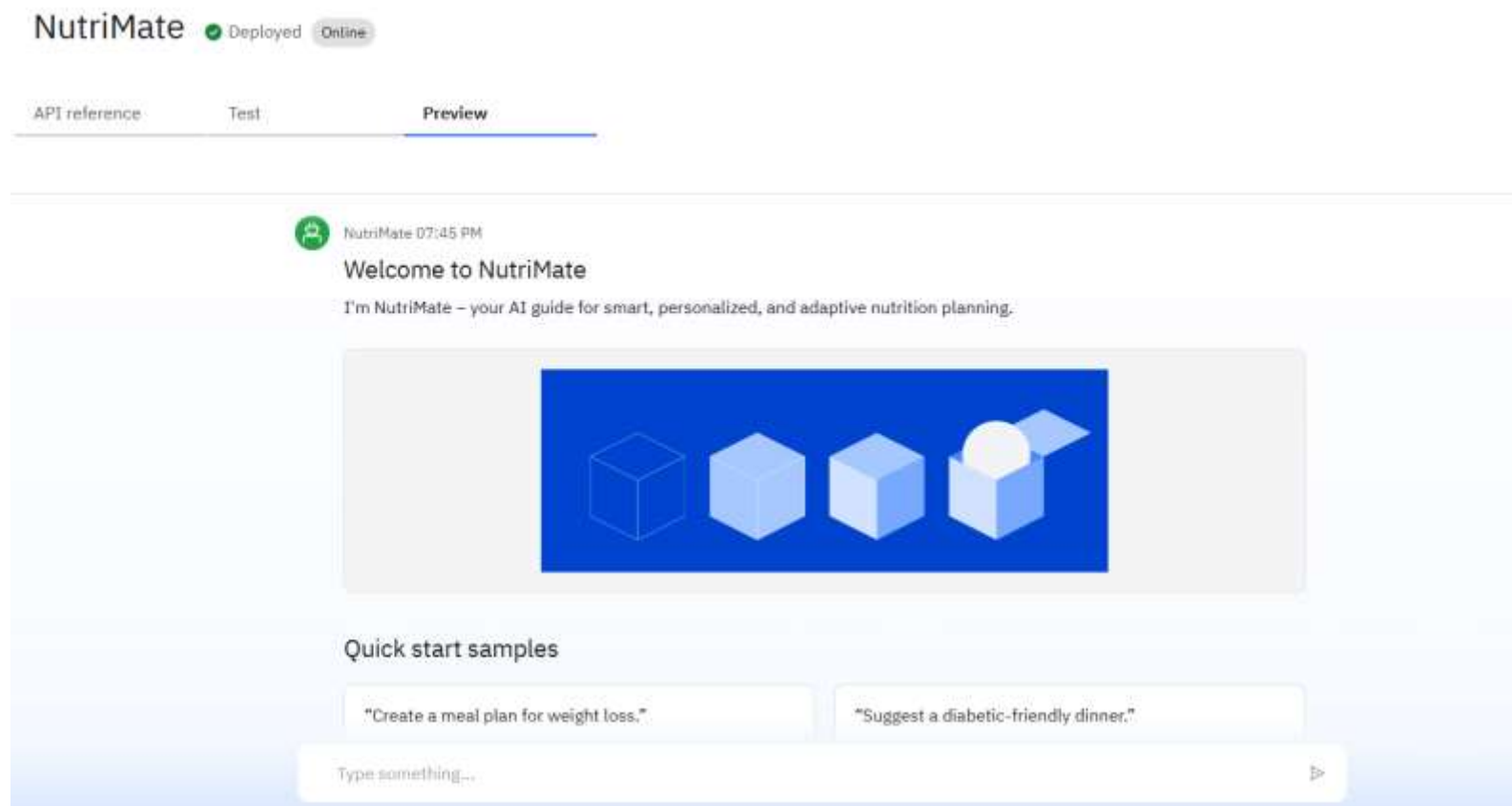
- **Breakfast:** Scrambled eggs with spinach and whole-grain toast.
- **Lunch:** Quinoa salad with chickpeas, cherry tomatoes, feta cheese, and olives.
- **Dinner:** Stir-fried tofu with mixed vegetables and brown rice.
- **Snacks:** Greek yogurt or carrot sticks with hummus.

Type something...



# RESULTS

## Deployed AI Agent




# RESULTS


## Deployed AI Agent

**NutriMate** ✓ Deployed Online

[API reference](#) [Test](#) [Preview](#)

 You 07:46 PM

"What are some healthy snack options?"

 NutriMate 07:46 PM

Here are some healthy snack options for you to consider:

- **Fresh Fruits:** Apples, bananas, oranges, berries, and grapes are all great choices. They're naturally sweet, refreshing, and packed with vitamins.
- **Nuts and Seeds:** Almonds, walnuts, pistachios, sunflower seeds, and pumpkin seeds are high in protein and healthy fats. Just be mindful of portion sizes as they are calorie-dense.
- **Yogurt:** Opt for plain, unsweetened Greek yogurt. It's high in protein and can be paired with fresh fruits or a sprinkle of nuts for added nutrition.
- **Hummus and Veggies:** Carrot sticks, cucumber slices, or bell pepper strips paired with hummus make for a satisfying and nutrient-rich snack.

---

## CONCLUSION

- The agent can generate personalized meal plans, suggest healthier food alternatives, and provide contextual nutritional guidance tailored to individual needs.
- It saves time by automating routine tasks like dietary planning, nutrient analysis, and food substitution.
- The Nutrition Agent enhances health awareness, supports goal-based eating, and brings personalization, consistency, and intelligence to everyday nutrition decisions.

---

## GITHUB LINK

- Github Link - [https://github.com/tanushree-ray/IBM-SkillsBuild\\_Nutrition-Agent](https://github.com/tanushree-ray/IBM-SkillsBuild_Nutrition-Agent)

# FUTURE SCOPE

- Multilingual Nutrition Guidance - Support for regional languages to improve accessibility and inclusivity.
- Voice-Activated Meal Planning Assistant - Hands-free interaction for quick dietary queries and suggestions.
- Integration with Health Wearables and Apps - Use real-time health data (e.g., steps, vitals) to fine-tune diet plans.
- Cultural and Regional Cuisine Personalization - Tailor meal suggestions based on local ingredients and traditional diets.
- AI-Powered Grocery List and Meal Prep Scheduler - Automatically generate shopping lists and prep plans based on meal suggestions.
- Health Goal Tracking and Adaptive Recommendations - Adjust plans dynamically based on user progress, feedback, or lifestyle changes.
- Nutrition Education and Awareness Modules - In-app learning content for schools, communities, and public health campaigns.

# IBM CERTIFICATIONS

## Getting Started with Artificial Intelligence



# IBM CERTIFICATIONS

## Journey to Cloud





# IBM CERTIFICATIONS

## RAG Lab





**THANK YOU**