

---

# IBM HACKATHON PROJECT

## NUTRITION AGENT

**Presented By:**

**Student name : ENDAPALLY RANITHREDDY**

**College Name : MALLA REDDY COLLEGE OF ENGINEERING  
AND TECHNOLOGY**

**Department : COMPUTER SCIENCE AND ENGINEERING**

# OUTLINE

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

# PROBLEM STATEMENT

In an era where health awareness is growing, individuals increasingly seek personalized nutrition guidance. However, most existing tools provide generic diet plans, lack real-time adaptability, and fail to consider a person's holistic lifestyle, cultural preferences, allergies, and evolving health conditions. Furthermore, dietitians and nutritionists face limitations in scaling personalized consultations due to time and resource constraints.

Generative AI presents a groundbreaking opportunity to revolutionize this space by enabling an intelligent, interactive, and adaptive virtual nutrition assistant. By leveraging natural language processing (NLP), multimodal understanding, and large-scale dietary databases, an AI-powered assistant can generate dynamic meal plans, recommend smart food swaps, and explain nutritional choices—all tailored to the individual.

This project aims to develop “**The Smartest AI Nutrition Assistant**” using state-of-the-art generative AI models that:

- Understand user inputs via text, voice, or image (e.g., food photos, grocery labels)
- Generate personalized meal plans based on health goals, medical conditions, fitness routines, and preferences
- Offer contextual explanations (e.g., “Why is this food better?”)
- Adapt suggestions dynamically with continuous feedback

By integrating health data, food databases, and LLM-powered reasoning, the solution will bridge the gap between one-size-fits-all diet apps and in-person nutrition counselling—delivering an AI that thinks, learns, and cares like a real nutrition expert.

---

# 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 intelligent assistant is designed to dramatically cut down the time spent on research, enhance the depth and quality of literature reviews, and guide early-stage researchers in finding relevant academic paths. It also encourages cross-disciplinary collaboration by transforming complex knowledge into more accessible and actionable insights.

## ➤ Key Features:

- Semantic search capability across academic journals, datasets, and research papers
- Automatic summarization of selected documents
- Citation tracking and reference mapping to understand research influence
- Paper recommendations tailored to a user's current research focus
- Keyword-based trend analysis across time and domains
- Discovery of potential collaborators or institutions based on shared research themes

---

## END USERS

- Individuals & General Public
- Healthcare & Wellness Professionals
- Education & Institutions
- Corporates & Food Services
- Retail & Food Industry
- Government & NGOs

# RESULTS

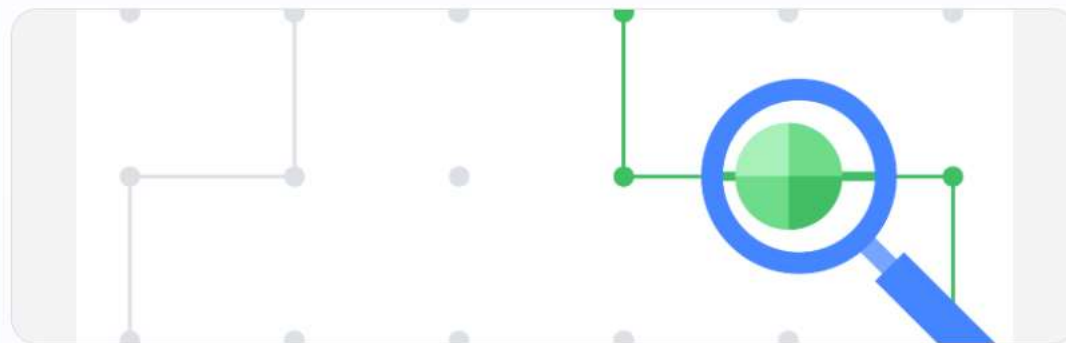
## Agent preview



Research Agent 02:54 PM

### Welcome to Research Agent

The agent can generate reports, suggest hypotheses, and even draft sections of research papers.



Type something...





# RESULTS

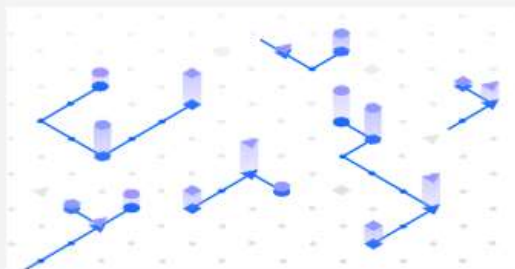
## Agent preview



NutriMind 06:29 PM

Welcome to NutriMind

Hi, I'm NutriMind — your personal AI Nutrition Assistant. How can I help you eat healthier today?



### Sample questions

What are the recommended daily calorie needs for an Human?"



Can you suggest a balanced meal plan for a vegetarian with diabetes?"



Why is fiber important in a daily diet, and how much do I need?"



Suggest healthy food swaps for someone trying to reduce sodium intake.



Type something...



# RESULTS

## Agent preview



You: 06:48 PM

Can you suggest a balanced meal plan for a vegetarian with diabetes?



NutriMind 06:48 PM

Absolutely, I'd be happy to help with that! Here's a sample balanced meal plan for a vegetarian with diabetes. Remember, it's important to consult with a healthcare provider or a registered dietitian for personalized advice.

**Breakfast:** Start your day with a high-fiber, low-sugar breakfast. A great option could be oatmeal topped with a handful of berries and a sprinkle of chia seeds. Oats are rich in fiber, which can help control blood sugar levels, and berries provide antioxidants. Chia seeds are a good source of omega-3 fatty acids.

**Mid-Morning Snack:** For a mid-morning snack, consider a small portion of nuts, like almonds. They're high in healthy fats and protein, which can help keep you full and stabilize your blood sugar.

**Lunch:** A quinoa salad with mixed vegetables (like bell peppers, cucumbers, and tomatoes) and a lean protein source like tofu or chickpeas would be a balanced lunch. Quinoa is a great source of plant-based protein and fiber, while the vegetables provide essential vitamins and minerals.

**Afternoon Snack:** In the afternoon, you might want a snack like a small apple with a tablespoon of natural peanut butter. Apples are high in fiber and low on the glycemic index, and peanut butter provides protein and healthy fats.

**Dinner:** For dinner, consider a lentil curry with brown rice. Lentils are an excellent source of protein and fiber, and brown rice provides complex carbohydrates that are released slowly into the bloodstream, helping to maintain steady blood sugar levels.

**Evening Snack (if needed):** If you're still hungry in the evening, a small bowl of mixed berries or a small portion

|Type something...



# RESULTS

## Agent preview



You: 06:49 PM

Suggest healthy food swaps for someone trying to reduce sodium intake.



NutriMind 06:49 PM

Absolutely, I'd be happy to help with that! Reducing sodium intake is a great step towards a healthier diet. Here are some smart food swaps you can consider:

1. **Instead of Salt:** Use herbs and spices to add flavor to your meals. Herbs like basil, oregano, rosemary, and thyme are great for this. Spices like turmeric, cumin, and chili powder can also add a punch of flavor without the sodium.
2. **Instead of Canned Soups:** Opt for low-sodium or no-salt-added canned soups. If possible, choose fresh soups or make your own at home using fresh ingredients.
3. **Instead of Deli Meats:** Choose fresh, lean cuts of meat and poultry. If you prefer processed meats, look for low-sodium options.
4. **Instead of Pickles:** Make your own pickles at home using fresh cucumbers, vinegar, and water with a bit of dill and other spices. This way, you can control the amount of salt.
5. **Instead of Salted Nuts:** Choose unsalted nuts or seeds. They're just as nutritious but with less sodium.
6. **Instead of Salty Snacks:** Swap potato chips for baked or roasted versions, or better yet, switch to unsalted popcorn, air-popped if possible. Veggies like carrots, cucumbers, or bell peppers with hummus are also great snacks.
7. **Instead of Processed Cheese:** Opt for fresh cheeses like mozzarella, ricotta, or feta. If you're using

|Type something...



# RESULTS

## Deployed AI Agent

Deployment spaces / Niani / NutriMind /

NutriMind Deployed Online

API reference Test **Preview**

New chat +

You 06:55 PM

Can you suggest a balanced meal plan for a vegetarian with diabetes?

NutriMind 06:56 PM

Here is a balanced meal plan for a vegetarian with diabetes:

**Breakfast**

- Oatmeal with fruit and nuts: 1 cup cooked oatmeal, 1/2 cup mixed berries, 1 tablespoon chopped almonds, and 1 tablespoon chia seeds
- Whole-grain toast with avocado and eggs: 1 slice whole-grain bread, 1/2 avocado, 2 eggs, and salt and pepper to taste
- Greek yogurt with honey and walnuts: 6 ounces Greek yogurt, 1 tablespoon honey, and 1 ounce chopped walnuts

**Lunch**

- Grilled vegetable wrap: 1 whole-grain wrap, 1/2 cup hummus, 1 cup mixed grilled vegetables (such as bell peppers, zucchini, and onions), and 1/4 cup sliced cucumber
- Quinoa salad with roasted vegetables: 1 cup cooked quinoa, 2 cups mixed roasted vegetables (such as broccoli, carrots, and sweet potatoes), 1/4 cup chopped fresh parsley, and 2 tablespoons lemon juice
- Lentil soup with whole-grain bread: 1 cup cooked lentils, 2 cups vegetable broth, 1/4 cup chopped fresh cilantro, and 1 slice whole-grain bread

**Dinner**

- Grilled tofu with roasted vegetables and brown rice: 3 ounces grilled tofu, 3 cups mixed roasted vegetables (such as

Type something...

# RESULTS

## Deployed AI Agent

[Deployment spaces](#) / [Nani](#) / [NutriMind](#) /

NutriMind

● Deployed

Online

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

New chat +

You 06:58 PM

Suggest a 1-day meal plan for a vegetarian teenager.

NutriMind 06:58 PM

Here is a 1-day meal plan for a vegetarian teenager:

**Breakfast**

- Whole-grain cereal with soy milk and banana: 1 cup whole-grain cereal, 1 cup soy milk, 1 medium banana
- Scrambled eggs with spinach and whole-grain toast: 2 scrambled eggs, 1/2 cup fresh spinach, 1 slice whole-grain toast
- Yogurt parfait with granola and berries: 6 ounces yogurt, 2 tablespoons granola, 1/2 cup mixed berries

**Lunch**

- Veggie wrap with hummus and avocado: 1 whole-grain wrap, 2 tablespoons hummus, 1/2 avocado, 1 cup mixed greens, 1/2 cup sliced cucumber, 1/2 cup sliced bell peppers
- Quinoa salad with roasted vegetables and whole-grain crackers: 1 cup cooked quinoa, 1 cup mixed roasted vegetables (such as broccoli, carrots, and sweet potatoes), 1/4 cup chopped fresh parsley, 2 tablespoons lemon juice, 5 whole-grain crackers
- Lentil soup with whole-grain bread: 1 cup cooked lentils, 2 cups vegetable broth, 1/4 cup chopped fresh cilantro, 1 slice whole-grain bread

**Dinner**

Type something...

## CONCLUSION

- NutriMind showcases the potential of AI-powered assistants to revolutionize how individuals approach nutrition and dietary planning. By leveraging generative AI and IBM Watsonx, the agent can dynamically generate personalized meal plans, explain nutritional choices, and adapt to user preferences and health goals.
- Beyond basic queries, NutriMind can support decision-making by offering data-backed suggestions, interpreting dietary guidelines, and simplifying complex health information. This eliminates the need for manual research and streamlines access to credible nutrition advice.
- Ultimately, the AI Nutrition Agent enhances health literacy, saves time, and empowers users to make smarter food choices—bridging the gap between generic diet apps and personalized expert consultation.

---

## GITHUB LINK

<https://github.com/ranithreddy/AI-Nutrition-Assistant-Using-IBM-Cloud/tree/main>

---

# FUTURE SCOPE

- Voice-Activated Nutrition Assistant
- Real-Time Diet Tracking & Feedback
- Personalized Recipe Generation
- Disease-Specific Nutrition Coaching
- Integration with Telehealth Platforms
- Emotion-Aware Food Suggestions



# IBM CERTIFICATIONS:- GETTING STARTED WITH ARTIFICIAL INTELLIGENCE




# JOURNEY TO CLOUD: ENVISIONING YOUR SOLUTION



# RETRIEVAL AUGMENTED GENERATION

**IBM SkillsBuild**

Completion Certificate



This certificate is presented to  
ranithreddy endapally

for the completion of

**Lab: Retrieval Augmented Generation with  
LangChain**

(ALM-COURSE\_3824998)

According to the Adobe Learning Manager system of record

**Completion date:** 24 Jul 2025 (GMT)

**Learning hours:** 20 mins



**THANK YOU**