

IBM AICTE 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
- Future scope
- Git-hub Link
- 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.

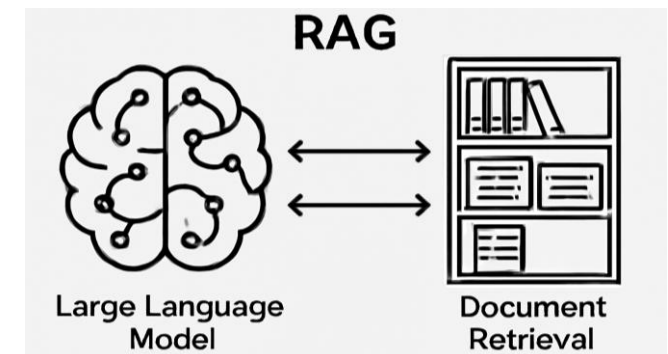
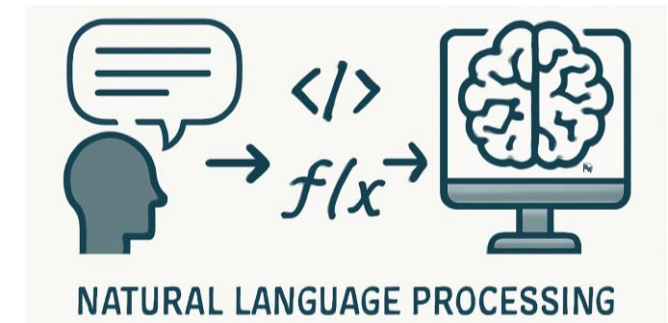
This project aims to develop “**The Smartest AI Nutrition Assistant**” using state-of-the-art generative AI models that:

- 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

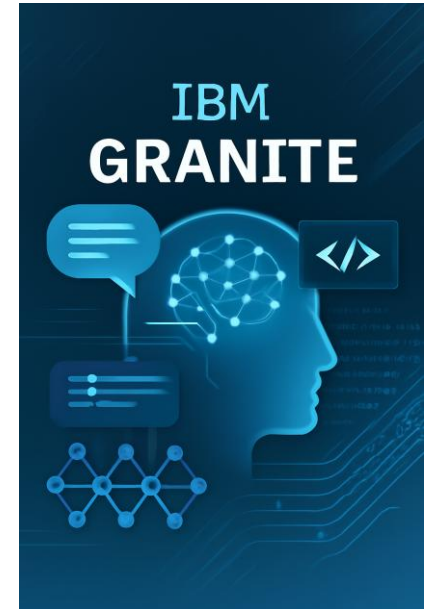
By integrating health data, food databases, and LLM-powered reasoning, the solution will bridge the gap between one-size-fits-all diet apps and in-person nutrition counselling—delivering an AI that thinks, learns, and cares like a real nutrition expert.

TECHNOLOGY USED:-

- **IBM cloud lite services:-**IBM Cloud Lite services offer free, always-available access to select cloud tools and APIs, ideal for learning and prototyping without incurring any costs.
- **Natural Language Processing (NLP):-**NLP is a field of artificial intelligence that equips computers to understand, interpret, and generate human language, enabling natural interactions between machines and people.
- **Retrieval Augmented Generation (RAG):-**RAG combines large language models with external information retrieval, allowing the model to fetch relevant data from documents or databases and generate accurate, up-to-date responses.



➤ **IBM Granite model:**-IBM Granite is a series of enterprise-ready, open-source large language models designed for generative AI tasks with a special focus on transparency, efficiency, and support for both language and code applications.

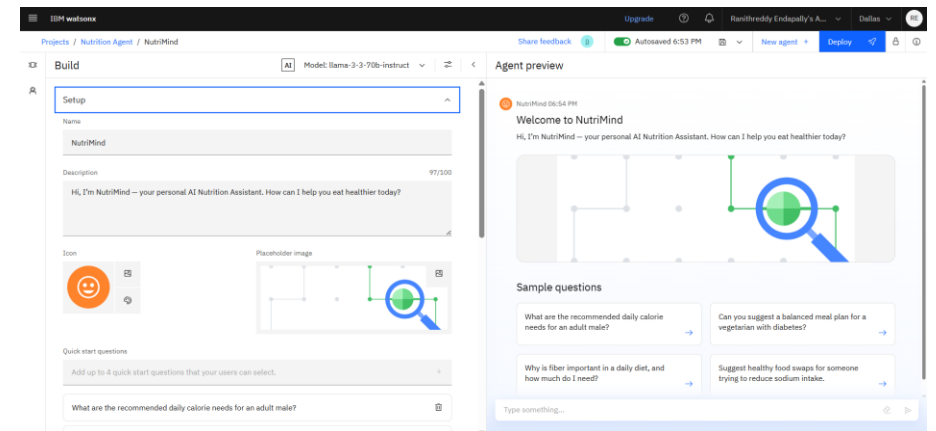


➤ **IBM Cloud Object Storage:**-IBM Cloud Object Storage is a secure, scalable service for storing and managing unstructured data like documents, images, and backups, accessible via REST APIs and suitable for cloud and hybrid deployments



IBM CLOUD SERVICES USED:-

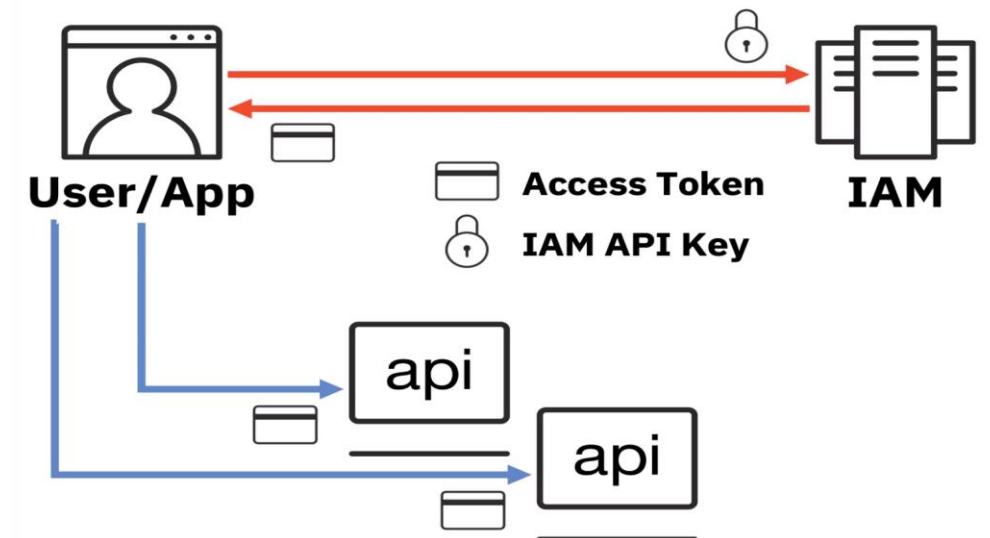
- **IBM Cloud Watsonx AI Studio:** An integrated, collaborative environment featuring robust tools to build, train, and manage generative AI and machine learning models, supporting both code-based and no-code workflows for all skill levels.
- **IBM Cloud Watsonx AI Runtime:** Provides the computing resources and runtime services necessary for training, deploying, and running AI models developed in Watsonx Studio, including support for autoML and foundation model inferencing.
- **IBM Cloud Agent Lab:** A low-code interface within Watsonx AI that enables developers to create, configure, and deploy AI agents capable of automating complex tasks using large language models—with minimal coding.



- **IBM Granite Foundation Model:** A family of open-source, enterprise-focused large language models created by IBM, designed for generative AI applications that require transparency, security, and adaptability for language and code tasks

- **IBM Cloud IAM (Identity and Access Management):** The security framework that allows you to authenticate users and authorize access to IBM Cloud resources through centralized policies, supporting users, service identities, and access groups

Open sourcing IBM's Granite code models



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:** Services and solutions aimed at empowering everyday people to make informed decisions and improve their lifestyles.
- **Healthcare & Wellness Professionals:** Tools and technologies tailored for medical experts to enhance patient care, diagnostics, and wellness programs.
- **Education & Institutions:** Resources designed to support schools, colleges, and educational bodies in delivering quality learning experiences and efficient administration.
- **Corporates & Food Services:** Solutions that help businesses and food service providers optimize operations, ensure compliance, and deliver value to customers.
- **Retail & Food Industry:** Innovations for retailers and food producers to enhance supply chains, product offerings, and customer engagement.
- **Government & NGOs:** Systems and platforms that assist governmental and non-governmental organizations in public service delivery, policy enforcement, and community development.

RESULTS

- This image showcases the **final preview of the deployed NutriMind agent**, developed using **IBM Watsonx.ai** and associated IBM Cloud technologies. The AI interface is capable of understanding and responding to user queries related to nutrition in real-time.
- Suggested sample questions that demonstrate the agent's ability to:
 - Recommend calorie needs.
 - Create custom meal plans (e.g., for diabetics or vegetarians).
 - Explain nutritional concepts (e.g., fiber importance).
 - Provide healthy food swaps.

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...

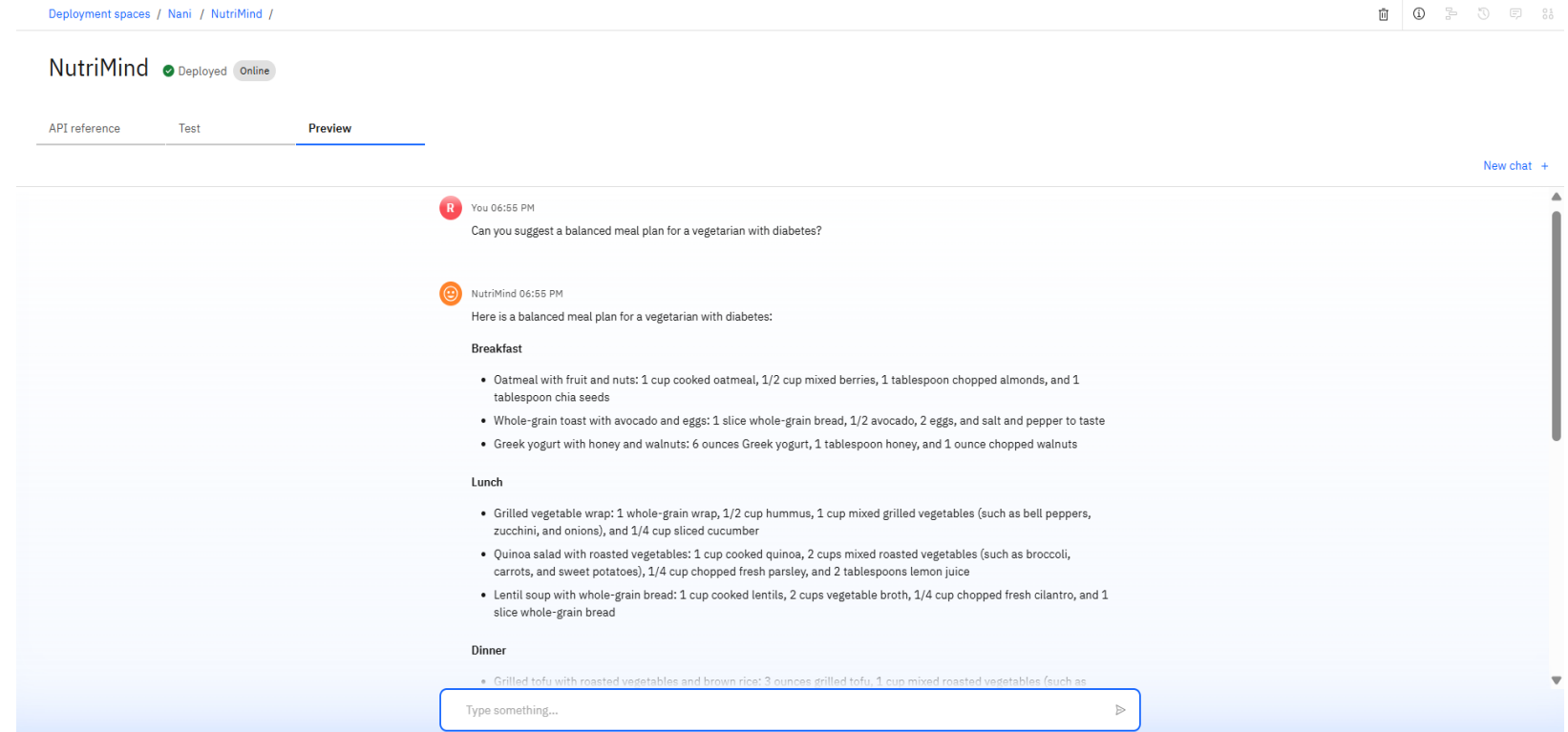


RESULTS

This image displays the deployed version of the NutriMind AI Nutrition Agent running live in the IBM Cloud environment. After successful training and configuration using IBM Watsonx.ai, the agent is now able to provide real-time, personalized responses to nutrition-related queries.

In this instance, the user asked for a balanced meal plan for a vegetarian with diabetes, and the agent generated a detailed, structured response with meal suggestions categorized by time of day (e.g., breakfast, lunch, dinner). This demonstrates the agent's ability to combine retrieval-augmented generation (RAG) with user context to deliver custom health advice at scale.

Deployed AI Agent



RESULTS

Deployed AI Agent

Deployment spaces / Nani / NutriMind /



NutriMind

✓ Deployed

Online

API reference

Test

Preview

New chat +



You 06:55 PM

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



NutriMind 06:55 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.

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

GITHUB LINK

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

IBM CERTIFICATIONS:- GETTING STARTED WITH ARTIFICIAL INTELLIGENCE

In recognition of the commitment to achieve
professional excellence



Ranithreddy Endapally

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



Issued on: Jul 16, 2025
Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/ac9ef843-d8da-4ecf-92cf-4d7746fc8908>



JOURNEY TO CLOUD: ENVISIONING YOUR SOLUTION

In recognition of the commitment to achieve
professional excellence



Ranithreddy Endapally

Has successfully satisfied the requirements for:

Journey to Cloud: Envisioning Your Solution



Issued on: Jul 21, 2025
Issued by: IBM SkillsBuild


Verify: <https://www.credly.com/badges/fd52e0d0-ae88-4bdc-befd-791809a06530>



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