
IBM HACKATHON PROJECT

RECIPE PREPARATION AGENT

Presented By:

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OUTLINE

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

PROBLEM STATEMENT

Many individuals face challenges in preparing meals due to limited time, lack of cooking knowledge, and unavailability of specific ingredients, often leading to food waste and reliance on takeout. There is a need for an intelligent system that can suggest recipes based on available ingredients, provide substitutions, and offer step-by-step guidance, helping users prepare meals efficiently while reducing waste and accommodating dietary preferences. A Recipe Preparation Agent helps users cook meals using only the ingredients they have on hand.

Proposed Solution:

The proposed solution is a **Recipe Preparation Agent** powered by AI and Retrieval-Augmented Generation (RAG) that:

- 🧑🍳 Accepts user input of available ingredients.
- 🧑🍳 Suggests tailored recipes based on the given ingredients.
- 🧑🍳 Provides step-by-step cooking instructions for easy meal preparation.
- 🧑🍳 Offers ingredient substitutions to accommodate shortages or dietary needs.
- 🧑🍳 Gives nutritional insights and cooking tips for healthier choices.

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

- AI-Powered Recipe Suggestions (RAG):**

Uses Retrieval-Augmented Generation to fetch recipes from a large database and adapt them dynamically to the user's ingredients.

- Ingredient Substitution Engine:**

Suggests intelligent alternatives when an ingredient is missing (e.g., replace cream with yogurt for healthier options).

- Dietary Preference & Allergy Handling:**

Supports customization for vegan, keto, gluten-free diets, or allergen-free cooking.

- Voice-Assisted Cooking Guide:**

Provides real-time **voice instructions** while cooking, enabling hands-free interaction.

- Nutritional Analysis:**

Displays calories, macronutrients, and health tips for each recipe.

- Smart Pantry Management:**

Tracks available groceries, suggests recipes before items expire, and reduces food waste.

- Multilingual Support:**

Offers recipes and instructions in multiple languages for better accessibility.

- Meal Planning & Shopping List Generator:**

Creates weekly meal plans and auto-generates shopping lists based on missing ingredients.

- Image Recognition (Optional AI Feature):**

Allows users to click a photo of their pantry/fridge and automatically detect available ingredients.

- Personalization Through Learning:**

Learns user preferences over time to give better, personalized suggestions.

END USERS

- **Students and Working Professionals**

Who have limited time and cooking skills but want quick, easy meal solutions.

- **Homemakers**

Who want to explore new recipes using existing groceries efficiently.

- **Health-Conscious Individuals**

Who follow specific diets (e.g., keto, vegan) and need customized meal options.

- **People with Dietary Restrictions or Allergies**

Who need safe and suitable ingredient substitutions.

- **Elderly Individuals**

Who require simple instructions and minimal effort cooking.

- **Budget-Conscious Users**

Who want to minimize food waste and save money by using ingredients on hand.

- **Beginner Cooks**

Who lack cooking experience and need guided, step-by-step help.

- **Busy Families**

Who want to plan meals quickly and ensure efficient use of household groceries.

RESULTS

Agent preview



Recipe Preparation Agent 08:32 AM

Welcome to Recipe Preparation Agent

I'm an your cooking buddy who helps you turn whatever ingredients you have into delicious meals!



Type something...



RESULTS

Agent preview



You: 09:08 AM

how to make biryani



Recipe Preparation Agent 09:08 AM

```
<function_call>{"name": "GoogleSearch", "arguments": {"q": "biryani recipe"}}</function_call>
```

Here's a simple recipe for Chicken Biryani using the ingredients you have on hand:

Ingredients:

1. 500g chicken, cut into pieces
2. 2 cups basmati rice
3. 1 large onion, thinly sliced
4. 3 tomatoes, chopped
5. 1 cup yogurt
6. 1 tsp ginger-garlic paste
7. 1 tsp red chili powder
8. 1 tsp turmeric powder
9. 1 tsp coriander powder
10. 1 tsp garam masala powder
11. Salt to taste
12. Fresh mint leaves
13. Fresh coriander leaves
14. 2 bay leaves
15. 4 cloves
16. 4 green cardamom

Type something...



RESULTS

Agent preview



You: 09:44 PM

how to make tea



Recipe Preparation Agent 09:44 PM

<function_call>{"name": "GoogleSearch", "arguments": {"q": "how to make tea"}} <function_response>

How to Make Tea

Ingredients:

1. Water
2. Tea leaves or tea bag
3. Sugar or honey (optional)
4. Milk (optional)

Instructions:

1. Boil water in a kettle or a pot.
2. Place a tea bag or some loose tea leaves into your teapot or cup.
3. Once the water has boiled, pour it over the tea bag or leaves.
4. Steep the tea for 3-5 minutes depending on how strong you like your tea.
5. Remove the tea bag or strain the loose leaves out.
6. Add sugar, honey, or milk to taste, if desired. Stir well.
7. Serve hot.

Tips:

Type something...



RESULTS

IBM watsonx

[Deployment spaces](#) / [Recipe Preparation Agent](#) / [Recipe Preparation Agent](#) /

Recipe Preparation Agent ✓ Deployed Online

[API reference](#)

[Test](#)

[Preview](#)



You 09:41 PM
how to make biryani



Recipe Preparation Agent 09:41 PM
<function_call>{"name": "GoogleSearch", "arguments": {"q": "biryani recipe"}}</function_call>

Here's a simple recipe for Chicken Biryani:

Ingredients:

1. 500g chicken, cut into pieces
2. 2 cups basmati rice
3. 1 large onion, thinly sliced
4. 2 tomatoes, finely chopped
5. 1 cup yogurt
6. 1 tsp ginger-garlic paste
7. 1 tsp red chili powder
8. 1 tsp turmeric powder
9. 1 tsp coriander powder
10. 1 tsp garam masala powder
11. Salt to taste

Type something...



CONCLUSION

- ✓ Simplifies meal preparation by providing personalized recipe suggestions.
- ✓ Reduces food waste by utilizing available ingredients efficiently.
- ✓ Saves time and money for users with busy schedules or limited cooking skills.
- ✓ Offers ingredient substitutions to handle shortages and dietary restrictions.
- ✓ Promotes healthier eating habits with nutritional insights.
- ✓ Provides step-by-step guidance suitable for beginners and experienced cooks.
- ✓ Enhances user convenience and accessibility through AI-driven features.
- ✓ Transforms cooking into an enjoyable and stress-free experience.

GITHUB LINK

https://github.com/Sivasaireddy04/Recipe_Preparation_Agent

FUTURE SCOPE

- 🕒 Integration with Smart Kitchen Appliances
- 🕒 Image-Based Ingredient Detection
- 🕒 AI-Powered Taste Personalization
- 🕒 Voice-Activated Virtual Cooking Assistant
- 🕒 Augmented Reality (AR) Cooking Mode
- 🕒 Advanced Nutritional & Health Tracking
- 🕒 Global Recipe Database Expansion
- 🕒 Smart Shopping Integration
- 🕒 Sustainability Insights

IBM CERTIFICATIONS

7/24/25, 8:45 PM

Completion Certificate | SkillsBuild

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IBM **SkillsBuild**

Completion Certificate



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for the completion of

Getting Started with Artificial Intelligence

(PLAN-E624C2604060)

According to the Your Learning Builder - Plans system of record

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IBM **SkillsBuild**

Completion Certificate



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**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