
CAPSTONE 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

In today's fast-paced lifestyle, home cooks often face the challenge of preparing meals with limited ingredients on hand. Many users struggle to decide what to cook using only what's available in their kitchen, leading to food wastage, unplanned grocery runs, or unhealthy meal choices. Additionally, people with dietary restrictions (e.g., vegan, gluten-free, diabetic) or cultural preferences may find it difficult to find recipes that match both their pantry items and personal needs.

Proposed Solution:

A smart Recipe Preparation Agent powered by IBM Granite AI and Cloudant, using RAG (Retrieval-Augmented Generation), helps users turn their available ingredients into personalized recipes. It suggests step-by-step instructions, smart substitutions, and dietary adjustments—making everyday cooking easier, efficient, and waste-free.

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TECHNOLOGY USED

IBM cloud lite services

Natural Language Processing (NLP)

Retrieval Augmented Generation (RAG)

IBM Granite model

IBM CLOUD SERVICES USED

- IBM Watsonx.ai Studio – For building AI agents
- IBM Granite Foundation Model – For intelligent generation
- IBM Cloud Object Storage – To store recipe documents
- IBM Cloud Functions – For backend task handling
- Watsonx Agent Builder – To create and deploy the agent
- IBM Cloudant DB – To store and retrieve recipe data
- Deployment Space & API Integration – To make the agent live


WOW FACTORS

- This agent will significantly simplify daily cooking, reduce food waste, save time, and help users make the most of available ingredients. It empowers users with smart meal suggestions, adapts to dietary needs, and turns limited pantry items into complete meals using AI-driven personalization.
- **Unique features:**
 - Ingredient-based recipe suggestions using user input
 - Smart substitutions for missing or unavailable ingredients
 - Personalized recipes based on dietary needs (vegan, gluten-free, etc.)
 - Voice-enabled cooking assistant for hands-free usage
 - Quick recipe mode based on available time
 - Multi-cuisine filtering and cultural recipe suggestions
 - AI-powered adaptation of recipes from uploaded documents using RAG
 - Optional tips and hacks for better cooking and nutrition


END USERS


- Home cooks and food enthusiasts
- People with dietary restrictions
- Working professionals with limited time
- Students living in hostels
- Culinary learners and hobbyists

RESULTS



Agent preview



 You: 09:44 PM
tomoto curry

 Recipe Generator 09:44 PM
Hi, I am Recipe Agent. How can I help you today?

For making a simple tomato curry, here's a basic recipe summary:

Ingredients:

1. 2 lbs of your choice of protein (chicken, tofu, chickpeas, etc.)
2. 2 tbsp oil
3. 1 tsp cumin seeds
4. 1 large onion, finely chopped
5. 2-3 green chilies, finely chopped
6. 2-3 medium tomatoes, pureed
7. 1 tsp ginger-garlic paste
8. 1 tsp coriander powder
9. 1 tsp cumin powder
10. 1 tsp red chili powder



RESULTS

Projects / Recipe Preparation Agent / Recipe Generator

Share feedback β Saving ⌵ New agent + Deploy 🔗 🔒 ℹ️

Build

AI Model: granite-3-3-8b-instruct ⌵ ⚙️ <

Setup

Configuration

Framework Architecture

LangGraph ⌵ ReAct ⌵

Instructions Advanced configuration

You are a helpful cooking assistant called Recipe Agent. You help users find and understand cooking recipes using your knowledge base. When asked about a dish, you search the recipe index for the best match and summarize the recipe clearly. If a recipe is not found, respond politely.
When greeted, say "Hi, I am Recipe Agent. How can I help you today?"

Knowledge

Tools

Add a tool Create custom tool

Agent preview

RJ You: 09:20 PM

🗨️ How do I make biryani?

😊 Recipe Generator 09:20 PM

Hi, I am Recipe Agent. How can I help you today?

For making biryani, here's a simple recipe summary:

Ingredients:

1. 2 cups basmati rice

2. 1.5 lbs chicken (or your choice of meat)

3. 1 cup yogurt

4. 1 cup fried onions

5. 2 tomatoes

6. 1 cup green peas

7. 1 cup mint leaves

8. 1 cup coriander leaves

9. 2-3 green chilies

Type something... 🔍 ➤

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ENG
IN 02-08-2025

RESULTS

Projects / Recipe Preparation Agent / Recipe Generator

Share feedback β Autosave on 📁 ▼ New agent + Deploy 🔗 🔒 ℹ️

Build

AI Model: granite-3-3-8b-instruct ⚙️ ◀

Setup

Configuration

FrameworkArchitectureLangGraph ▼ReAct ▼

Instructions

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Knowledge

Tools

Add a tool>Create custom tool

Agent preview

ginger-garlic paste for at least 2 hours.

3. Heat oil or ghee in a large pot, add whole spices, and sauté until fragrant.
4. Add chopped onions and fry until golden brown.
5. Add the marinated chicken and cook until half done.
6. Add tomatoes, green chilies, and cook until the oil separates.
7. Drain the soaked rice and add it to the pot with enough water to cook (about 2.5 cups of water).
8. Add salt, cover and cook on medium heat until almost done (about 70%).
9. Layer the green peas, mint leaves, and coriander leaves on top. Cover and cook on low heat until the rice is fully done (about 10 minutes).
10. Turn off the heat, let it rest for 10 minutes, then garnish with fried onions before serving.

Please note that this is a basic recipe. You can add potatoes, eggs, or other vegetables as per your preference. Enjoy your cooking!

If you need more specific details or variations, I can help you find a detailed recipe from a culinary website using the WebCrawler tool.

► How did I get this answer?

🔄

Type something...

🔍

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ENG IN

21:20

02-08-2025

RESULTS

Deployed AI Agent

The screenshot displays the IBM watsonx web interface. At the top, the header includes the 'IBM watsonx' logo, an 'Upgrade' button, and user information for 'Ramulapalli Jahnavi' in 'Dallas'. Below the header, a breadcrumb trail shows the path: 'Deployment spaces / Recipe Agent Deployment / Recipe Generator /'. The main content area is titled 'Recipe Generator' with a green checkmark indicating it is 'Deployed' and an 'Online' status badge. There are three tabs: 'API reference', 'Test', and 'Preview', with 'Preview' being the active tab. The chat interface shows a message from 'Recipe Generator' at 09:24 PM: 'Welcome to Recipe Generator. The Recipe Preparation Agent is a smart assistant that helps users find and prepare recipes easily.' Below the message is a large, light gray rectangular area containing a colorful, abstract graphic of various shapes and colors. At the bottom of the chat area is a text input field with the placeholder 'Type something...'. The bottom of the screen shows a Windows taskbar with various application icons and a system tray indicating the time as 21:32 on 02-08-2025.

CONCLUSION

- Transforms daily cooking into a smarter and stress-free experience.
- Promotes zero-waste kitchens by utilizing what users already have.
- Uses cutting-edge AI (RAG + Granite) to adapt recipes in real-time.
- Encourages healthy and inclusive eating through personalized suggestions.
- Eliminates dependency on fixed recipes by offering dynamic alternatives.
- Fully powered by IBM Cloud Lite, demonstrating practical use of modern cloud AI.
- Easily scalable and ready for integration with smart homes or mobile apps.
- Bridges the gap between everyday users and powerful AI tools in a meaningful way.

FUTURE SCOPE

- Community Features
- Nutritional Insights
- Health-Based Suggestions
- Health-Based Suggestions
- Regional & Multilingual Support
- Smart Grocery Lists

IBM CERTIFICATIONS

In recognition of the commitment to achieve professional excellence



Ramulapalli Jahnavi

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



Issued on: Jul 20, 2025
Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/80b8fc56-e9e2-4a16-b0f7-6521367d0a3a>



IBM **SkillsBuild**

Completion Certificate



This certificate is presented to

Ramulapalli Jahnavi

for the completion of

**Lab: Retrieval Augmented Generation with
LangChain**

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 21 Jul 2025 (GMT)

Learning hours: 20 mins

IBM **SkillsBuild**

Completion Certificate



This certificate is presented to
Ramulapalli Jahnavi

for the completion of

Journey to Cloud: Envisioning Your Solution

(PLAN-32CB1E21D8B4)

According to the Your Learning Builder - Plans system of record

Completion date: 20 Jul 2025 (GMT)

GITHUB LINK

- Git hub link :
- https://github.com/ramulapallijahnavi/Recipe_Genarator-Agent



THANK YOU