## **IBM AICTE PROJECT**

# **CHEF AGENT**

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## **OUTLINE**

- Problem Statement
- Technology used
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- IBM Certifications



## PROBLEM STATEMENT

Home cooks, culinary learners, and even professional chefs often face challenges in finding the right recipe based on the limited ingredients they have, dietary restrictions, or specific cuisine preferences. Searching through multiple cooking websites or apps to find step-by-step instructions, substitute ingredients, or health-conscious tips is time-consuming and overwhelming.

#### Proposed Solution:

An Al-powered Recipe Agent that uses Natural Language Processing (NLP) and Retrieval-Augmented Generation (RAG) to provide personalized recipe suggestions based on user input via text, audio, or image. The assistant generates recipes with detailed cooking steps, substitution suggestions, dietary adjustments, and helpful tips, making cooking efficient, inclusive, and accessible — all built using IBM watsonx.ai and App Builder with no external tools.



## TECHNOLOGY USED

IBM cloud lite services

Natural Language Processing (NLP)

Retrieval Augmented Generation (RAG)

**IBM** Granite model



#### **IBM CLOUD SERVICES USED**

- IBM Cloud Watsonx Al Studio
- IBM Cloud Watsonx Al runtime
- IBM Cloud Agent Lab
- IBM Granite foundation model



## **WOW FACTORS**

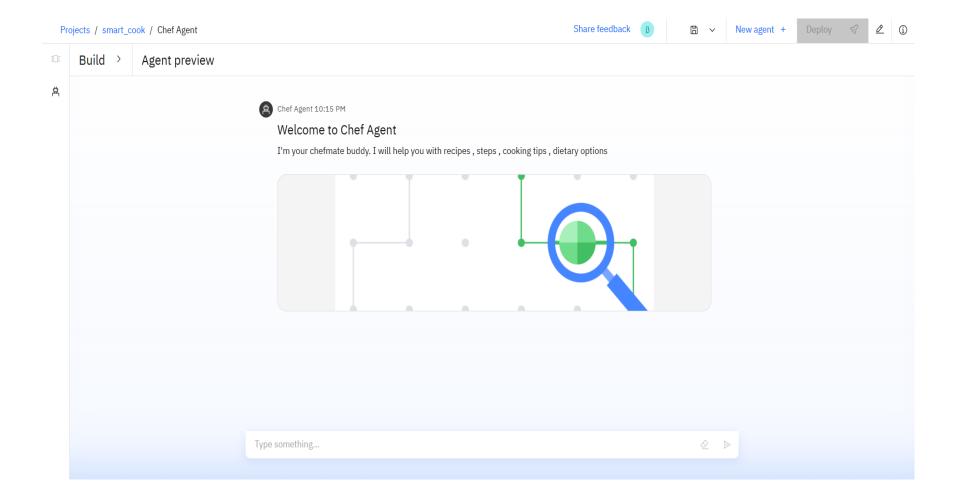
- Ingredient-to-Recipe AI: Generates complete recipes based on whatever ingredients users have even leftovers.
- Smart Substitution Suggestions: Recommends suitable alternatives for missing or restricted ingredients (e.g., tofu instead of chicken).
- Dietary Personalization: Tailors recipes for dietary preferences like vegan, gluten-free, low-carb, lactose-free, etc.
- Multimodal Input: Accepts text, voice, and image inputs to recognize ingredients or describe needs naturally.
- **Step-by-Step Cooking Instructions**: Provides detailed, easy-to-follow steps for even beginner-level cooks.
- PHelpful Cooking Tips: Shares practical kitchen advice and tips to avoid common mistakes.
- Nutrition Awareness (Optional): an be extended to offer calorie and nutrient estimates using ingredient data.
- Localized Recipes: Suggests regional or culturally relevant recipes based on language or user preferences.



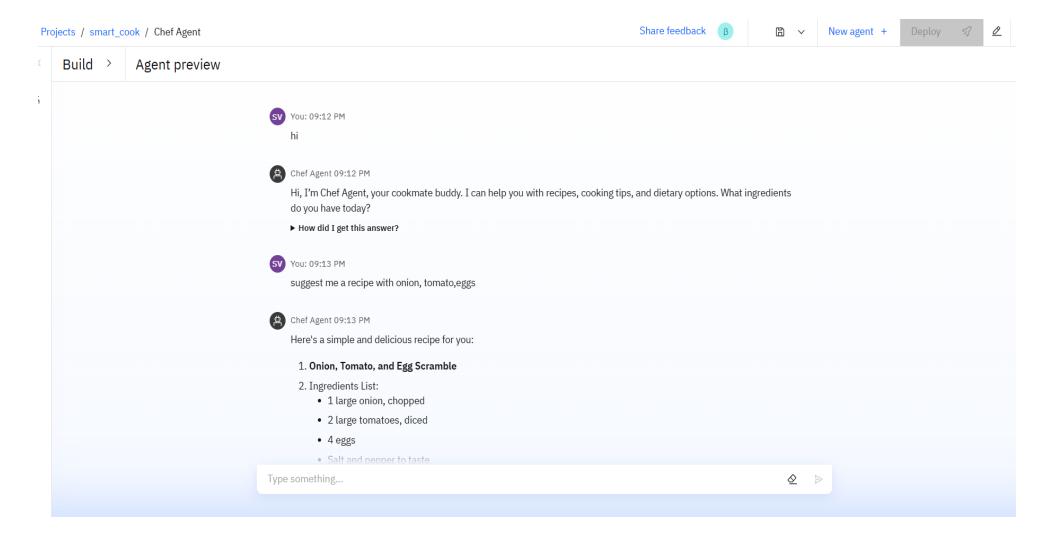
### **END USERS**

- Academic Researchers
- Research Institutions and Universities
- Industry R&D Teams
- Educators

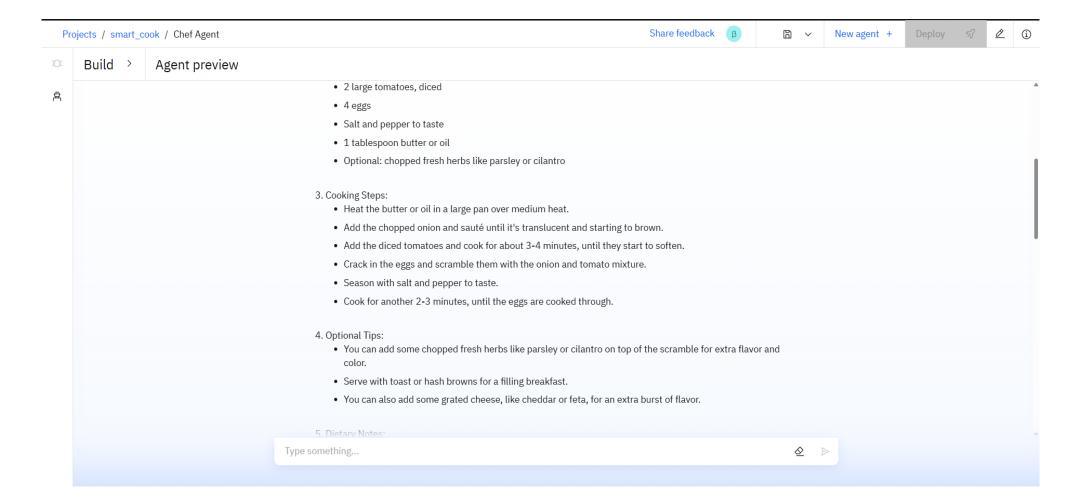




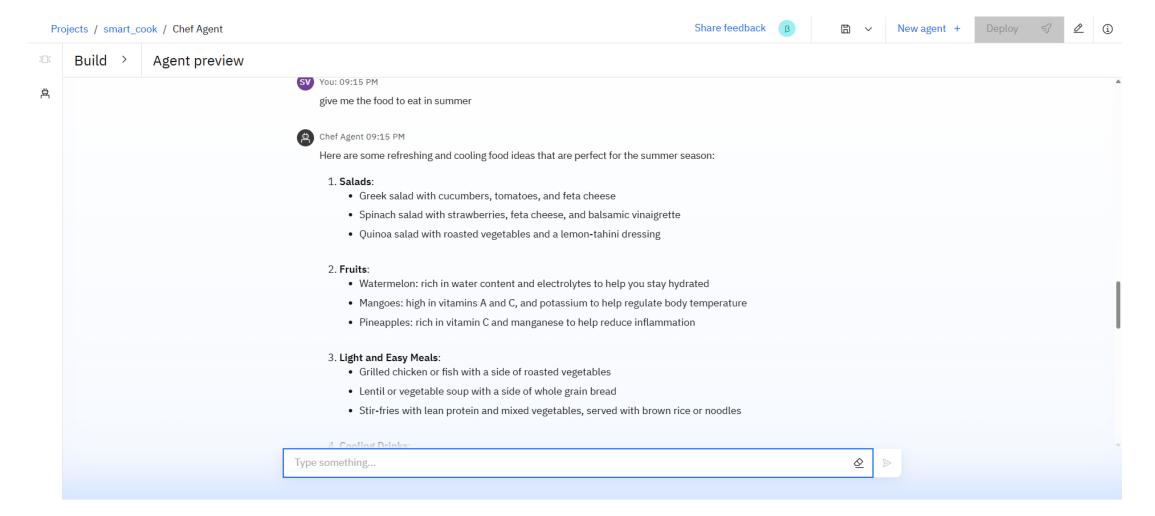














#### CONCLUSION

- The agent can generate personalized recipes based on user-input ingredients.
- It suggests ingredient substitutions to accommodate availability or preferences.
- It offers dietary advice (e.g., vegan, gluten-free, low-carb) tailored to user needs.
- Reduces food waste by making use of available ingredients efficiently.
- Enhances convenience, nutrition awareness, and creativity in home and professional kitchens.
- Saves time by automating daily cooking decisions.



### **FUTURE SCOPE**

- Al-Assisted Recipe Generation
  - Let users input cooking goals, cuisine types, or dietary rules to generate entirely new, creative recipes using foundation models. Voice-Activated Research Assistant
- Wultilingual Cooking Support
  - Enable the assistant to understand and respond in multiple languages to serve a global audience. Research Gap and Novel Topic Identification
- Voice-Activated Cooking Assistant
   Hands-free voice interaction to guide users through step-by-step instructions while cooking.
- Ingredient Recognition from Images
   Use computer vision to recognize ingredients from photos and suggest recipes accordingly.
- Al-Powered Diet Planning
   Extend the system to provide full weekly meal plans based on fitness, health goals, or medical restrictions.
- Integration with Grocery Services
   Generate a shopping list from selected recipes and integrate with online grocery delivery platforms.



#### **IBM CERTIFICATIONS**

In recognition of the commitment to achieve professional excellence



## Sharmila Vakamullu

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



Issued on: Jul 15, 2025 Issued by: IBM SkillsBuild

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#### IBM SkillsBuild

#### Completion Certificate



This certificate is presented to

Sharmila Vakamullu

for the completion of

# Lab: Retrieval Augmented Generation with LangChain

(ALM-COURSE\_3824998)

According to the Adobe Learning Manager system of record

Completion date: 25 Jul 2025 (GMT)

Learning hours: 20 mins



## **THANK YOU**

