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# IBM HACKATHON PROJECT

## RECIPE PREPARATION AGENT

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# OUTLINE

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

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# PROBLEM STATEMENT

- **Problem Statement:**

Many individuals—especially students, professionals, and home cooks—face daily challenges when deciding what meals to prepare with the limited ingredients they have on hand. The process of searching for recipes that match available items, cater to dietary restrictions, and fit within time constraints can be frustrating and time-consuming. Additionally, lack of guidance often leads to food waste and missed opportunities for creative cooking.

- **Proposed Solution:**

An AI-powered Recipe Preparation Agent that leverages Natural Language Processing (NLP) and Retrieval-Augmented Generation (RAG) to suggest personalized recipes based on the user's current ingredients. The agent retrieves relevant recipes, adapts them to fit dietary preferences and time constraints, and generates step-by-step instructions. It also provides intelligent ingredient substitutions, cooking tips, and nutrition-friendly adjustments, making home cooking more efficient, sustainable, and accessible for everyone.

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## TECHNOLOGY USED

- IBM cloud lite services
- Natural Language Processing (NLP)
- Retrieval Augmented Generation (RAG)
- IBM Granite model

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## IBM CLOUD SERVICES USED

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

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## WOW FACTORS

This agent will revolutionize everyday cooking by saving time, reducing food waste, and empowering users to make the most of what they already have. It offers a smart, personalized kitchen companion that transforms simple ingredients into delicious meals while supporting dietary needs and sustainability goals.

### **Unique features:**

- Ingredient-based semantic recipe retrieval using RAG models
- Auto-generation of step-by-step cooking instructions
- Smart substitutions for missing or unavailable ingredients
- Dietary adaptation (vegetarian, vegan, gluten-free, etc.)
- Time- and serving-based recipe customization
- Tips and techniques tailored to the ingredients on hand
- This intelligent assistant makes home cooking smarter, simpler, and more resource-efficient.

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## END USERS

- Home Cooks
- Students and working professionals
- Health-conscious Individuals
- Nutritionists and Dietitians
- Smart Kitchen Application Developers
- People with Limited Access to Groceries
- Food Startups

# RESULTS

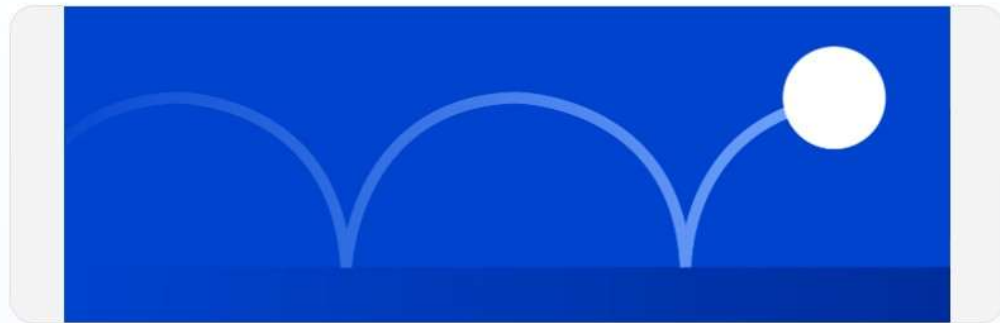
## Agent preview



ChefBot 10:45 PM

### Welcome to ChefBot

An AI-powered recipe assistant that transforms your available ingredients into delicious meals.



### Sample questions

Do you have any dietary preferences or restrictions? →






what are some quick veg recipes for breakfast →

Type something...







# RESULTS

[Share feedback](#)  Autosave on  New agent + Deploy   

### Agent preview



 You: 09:34 PM

suggest some cooking tips

 ChefBot 09:34 PM

Here are some general cooking tips to enhance your culinary skills:

1. **Preparation is Key:** Always read through the entire recipe before you start cooking. Gather all your ingredients and equipment to ensure a smooth cooking process.
2. **Temperature Matters:** Use a kitchen thermometer to check the internal temperature of meats. This ensures they are cooked to a safe and desired level.
3. **Don't Overcrowd the Pan:** When sautéing or searing, give your food space. Crowding the pan will cause it to steam rather than brown, which is essential for developing flavor.
4. **Salt to Taste:** Season your dish gradually. Add salt (and other seasonings) little by little, tasting as you go, to avoid over-salting.
5. **Rest Your Meat:** After cooking, let meats rest for about 10

Type something...  

# RESULTS

## Deployed AI Agent:

The screenshot displays the IBM Watsonx interface for a deployed AI agent named ChefBot. The top navigation bar includes the IBM Watsonx logo, an 'Upgrade' button, and user account information (Ansh Sakalley's Account, Dallas, AS). The breadcrumb trail shows the path: Deployment spaces / IBM\_AI\_Agent / ChefBot. Below the header, the agent's status is shown as 'ChefBot' with 'Deployed' and 'Online' indicators. There are tabs for 'API reference', 'Test', and 'Preview', with 'Preview' being the active tab. A 'New chat' button is located in the top right corner of the chat area. The chat interface shows a welcome message from ChefBot at 11:00 PM: 'Welcome to ChefBot. An AI-powered recipe assistant that transforms your available ingredients into delicious meals.' Below the message is a decorative graphic with three white arches on a blue background. Underneath, there are four 'Quick start samples' buttons: 'Do you have any dietary preferences or restrictions?', 'what are some quick veg recipes for breakfast', 'suggest some cooking tips', and 'suggest a full day diet with easy recipes'. At the bottom, there is a text input field with the placeholder 'Type something...' and a send button.

# RESULTS

## Working of Agent:

IBM watsonx

Upgrade ⓘ 🔔

Ansh Sakalley's Account ▾ Dallas ▾ AS

Deployment spaces / IBM\_AI\_Agent / ChefBot /

ChefBot 🟢 Deployed Online

API reference Test **Preview**

New chat +

You 11:01 PM

what are some quick veg recipes for breakfast

ChefBot 11:01 PM

Here are a few quick vegan breakfast recipes you can try with ingredients you might already have:

1. Avocado Toast with a Twist

- Ingredients: Bread, Avocado, Cherry Tomatoes, Salt, Pepper, Lemon Juice, Red Pepper Flakes (optional).
- Steps:
  1. Toast your bread to preference.
  2. Mash avocado in a bowl, add lemon juice, salt, pepper, and red pepper flakes if using.
  3. Spread the mashed avocado on toasted bread.
  4. Top with halved cherry tomatoes.
- Note: Feel free to add a sprinkle of everything bagel seasoning or nutritional yeast for extra flavor.

2. Overnight Chia Pudding

- Ingredients: Chia Seeds, Plant-based Milk (almond, soy, oat), Sweetener (maple syrup, agave), Vanilla Extract, Fresh Fruit (optional).
- Steps:
  1. In a bowl or jar, mix 2 parts chia seeds, 3 parts plant-based milk, a touch of sweetener, and a dash of vanilla extract.
  2. Stir well, cover, and refrigerate for at least 2 hours or overnight.
  3. In the morning, give the pudding a good stir. Top with fresh fruit if desired.

type something...

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## CONCLUSION

- The agent can generate customized recipes, suggest ingredient substitutions, and guide users through the cooking process step-by-step.
- It saves time by automating meal planning, adapting to dietary needs, and reducing the effort of searching for suitable recipes.
- Recipe Preparation Agents enhance efficiency, creativity, and sustainability in everyday cooking, making home meals more accessible and resourceful.
- It encourages smarter grocery usage by promoting recipes based on available ingredients, minimizing food waste.
- The agent also empowers users with little culinary experience to cook confidently through intuitive, AI-driven guidance.

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## GITHUB LINK

- Github Profile link: <https://github.com/CodeExplorerExtraordinaire>
- Github Repository link: <https://github.com/CodeExplorerExtraordinaire/Recipe-Preparation-AI-agent>

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## FUTURE SCOPE

- Multilingual Research Support
- Voice-Activated Cooking Assistant
- Real-Time Kitchen assistance with IoT Integration
- Smart Pantry Tracking and Grocery List Generation
- Integration with Health and Fitness Apps
- AI-Powered Meal Scheduling and Weekly Planning
- Visual Ingredient Recognition through Image Input

# IBM CERTIFICATIONS

- Getting started with AI

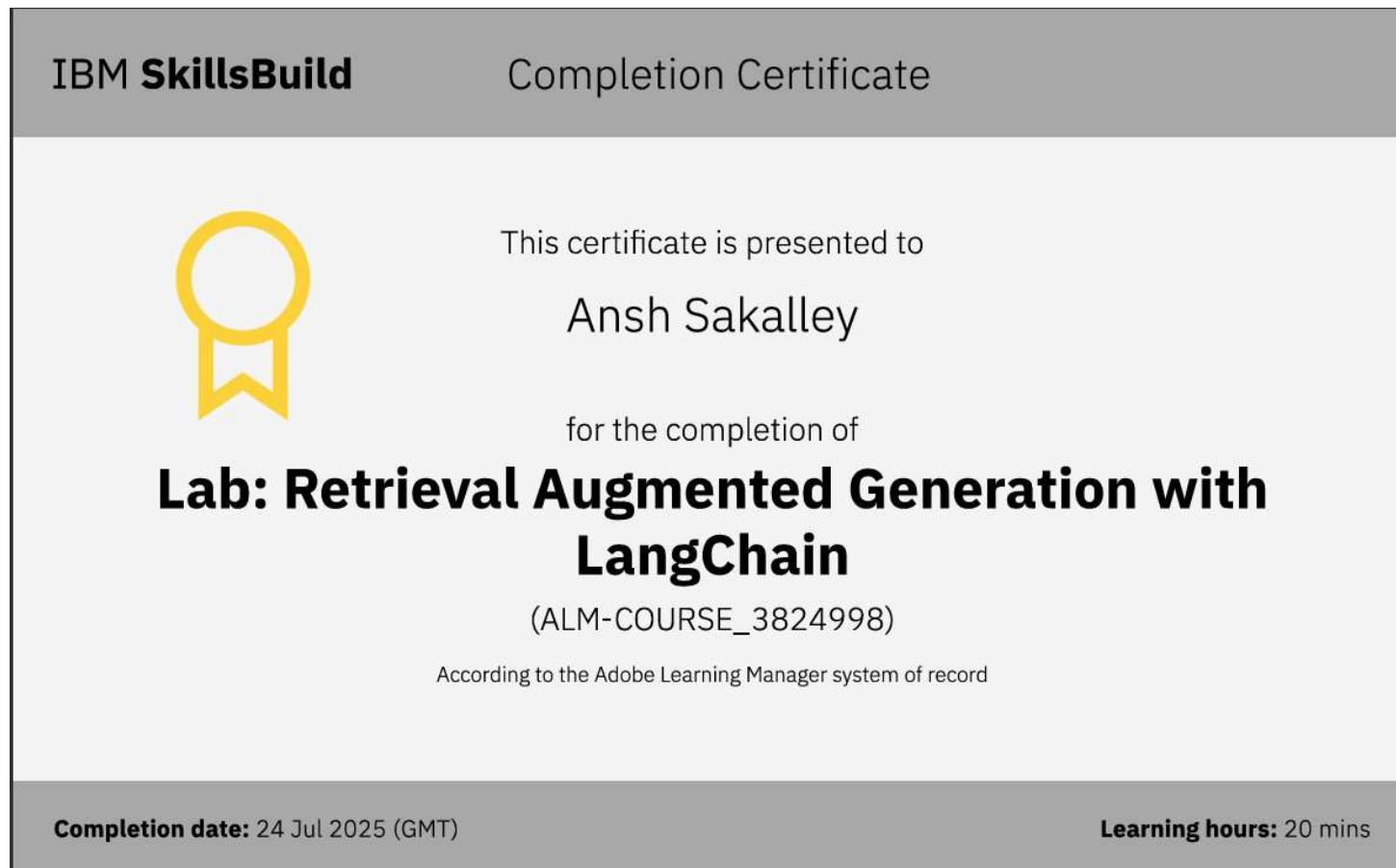


## ■ IBM journey to Cloud





- RAG LAB certificate





**THANK YOU**