CAPSTONE PROJECT

RECIPE PREPARATION AGENT

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Master's of Computer Applications



OUTLINE

- Problem Statement
- Technology used
- Wow factor
- End users
- Result
- Conclusion
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- 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 Al 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 Al-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
- Al-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



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:

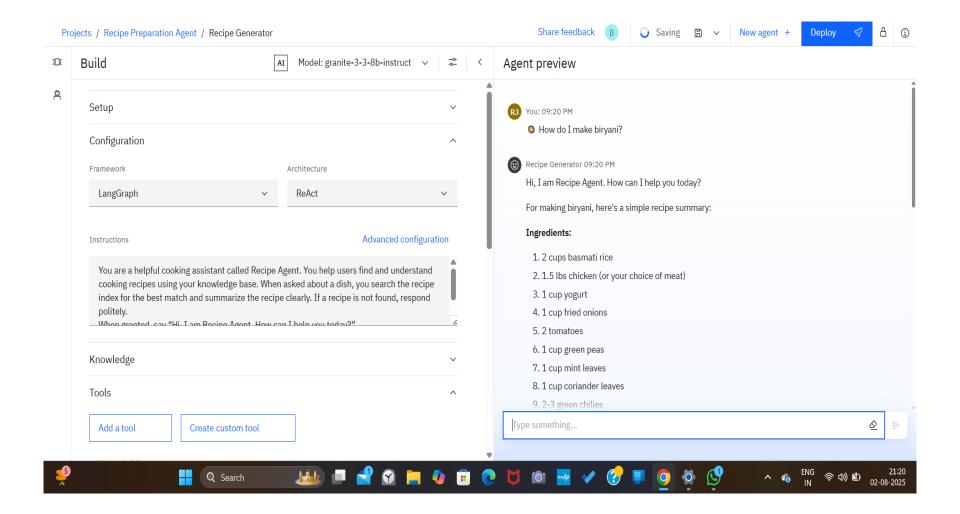
Ingredients:

- 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

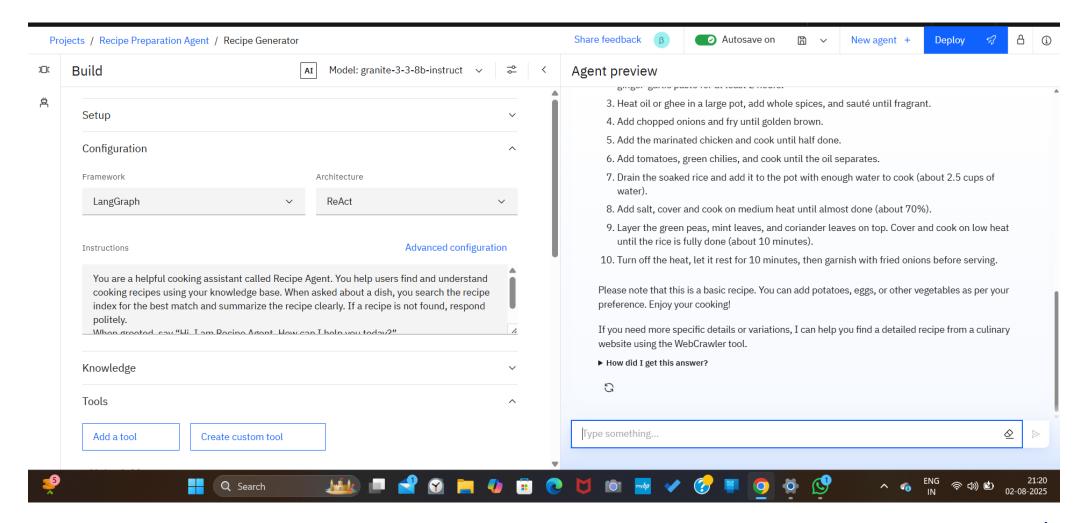
Type something...





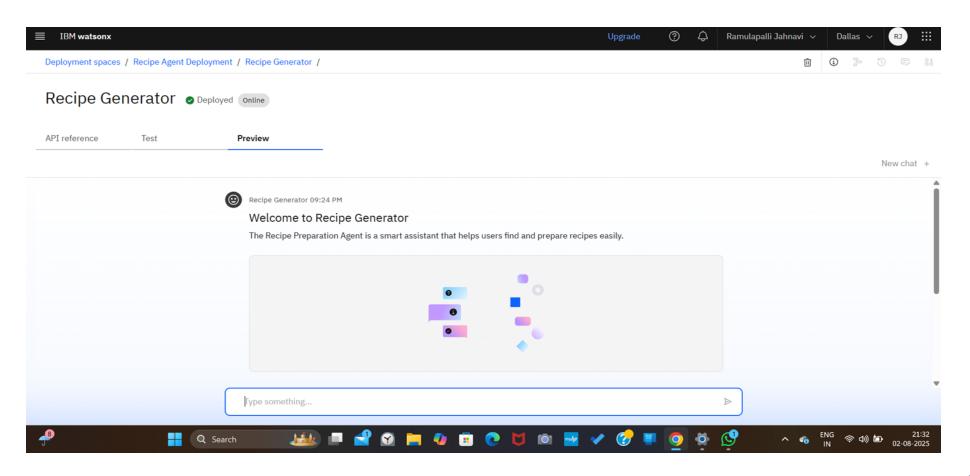








Deployed AI Agent





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

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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



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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

