
CAPSTONE PROJECT

RECIPE PREPARATION AGENT

Presented By: Argha Dalal

Student name : Argha Dalal

**College Name & Department : University of Engineering and
Management, Kolkata & Computer Science Engineering**

OUTLINE

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

PROBLEM STATEMENT

Many individuals, especially students and working professionals, struggle daily to decide what to cook with limited ingredients. Traditional recipe platforms often require complete ingredient lists or offer poor substitutions, leading to food waste and repetitive meals. Busy schedules, dietary needs, and budget limits make planning even harder. As a result, people often turn to unhealthy alternatives or skip meals. There's a clear need for smart, flexible tools that suggest personalized recipes based on what's already in the kitchen.

Proposed Solution: The Recipe Preparation Agent is an AI-powered web app built with Node.js and IBM Granite LLM, using a RAG pipeline and IBM Watson tools. It accepts user-input ingredients to retrieve or generate suitable recipes, offering smart substitutions and cooking tips. The app also provides nutritional details and step-by-step instructions. Designed with a modern, mobile-friendly UI, it includes a convenient "Copy Recipe" feature for easy sharing.

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

This AI agent will significantly reduce meal planning stress, help users make the best use of available groceries, promote healthier eating habits, and reduce food wastage by providing smart, personalized cooking recommendations.

Unique Features:

Ingredient-Based Recipe Generation

Converts a list of available ingredients into complete, step-by-step recipes using AI.

Smart Substitution Engine

Suggests intelligent ingredient replacements to accommodate dietary needs or pantry limitations.

Auto-Nutritional Insights

Highlights basic nutrition facts (e.g., calories, protein, fat) for the suggested meal.

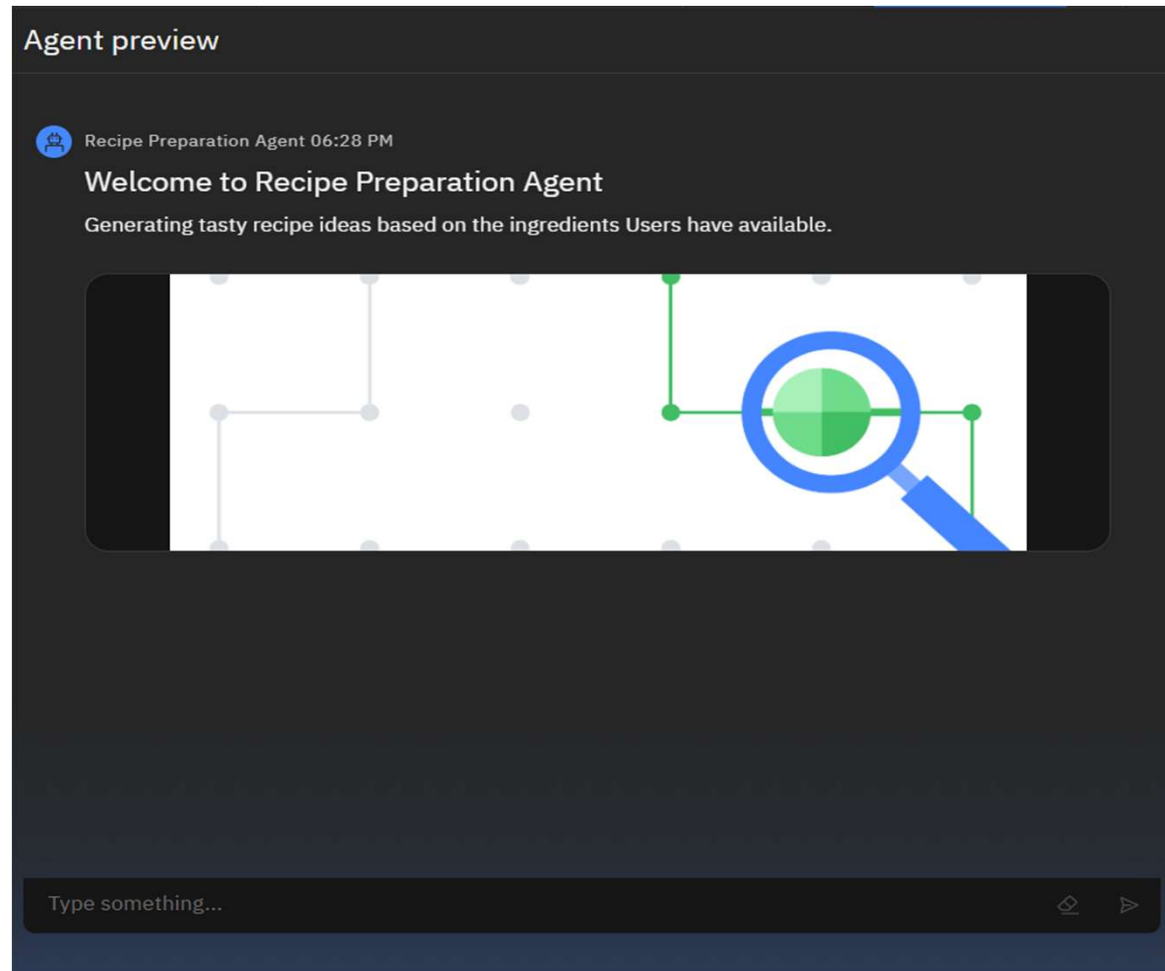
Context-Aware Cooking Tips

Offers preparation tips and enhancements specific to the chosen recipe style or ingredient pairing.

END USERS


- Home cooks and families
- Students living away from home
- Working Professionals
- Anyone wanting to save time and reduce kitchen waste

RESULTS




RESULTS

Agent preview

 You: 03:11 PM

I have tomato, onions, and rice, give me a quick idea to make a delicious dinner tonight


 Recipe Preparation Agent 03:11 PM

Here are a few delicious dinner ideas you can make using tomato, onions, and rice:



1. Tomato Rice: A simple and flavorful dish made with sautéed onions, garlic, and tomatoes, cooked with rice and seasoned with spices.
2. Spanish Rice: A classic dish made with cooked rice, tomatoes, onions, and spices, often served as a side dish.
3. Cheesy Baked Tomato Rice: A creamy and comforting casserole made with cooked rice, tomatoes, onions, and cheese, perfect for a weeknight dinner.

You can find many recipes online that use these ingredients, such as the ones from Budget Bytes, Julias Simply Southern, and Love and Lemons. Enjoy!

► How did I get this answer?



Type something...




RESULTS

Agent preview

AD

You: 06:53 PM

I'm looking for a quick dinner idea using tomatoes and pasta. Can you suggest a few options?



Recipe Preparation Agent 06:53 PM

Here are a few quick dinner ideas using tomatoes and pasta:



1. Pasta with Cherry Tomatoes: A simple and delicious recipe that combines cherry tomatoes, garlic, and basil with pasta.

2. 20-Minute Fresh Tomato Pasta: A quick and easy recipe that turns seasonal tomatoes into a super fresh and delicious pasta dish.

3. Super Easy Creamy Tomato Pasta: A creamy and flavorful recipe that combines tomato paste, garlic, and heavy cream with pasta.

You can find the recipes and instructions for these dishes on the following websites:

- feelgoodfoodie.net
- lexiscleankitchen.com
- saltandlavender.com
- budgetbytes.com
- itdoesnttastelikechicken.com
- lastingredient.com
- theburntbuttertable.com
- ohsweetbasil.com
- theclevercarrot.com
- alexandracoops.com



RESULTS

Deployed AI Agent

The screenshot displays the IBM Watsonx interface for a deployed AI agent. The top navigation bar includes the IBM Watsonx logo, an 'Upgrade' button, and user account information. The breadcrumb trail indicates the current location: 'Deployment spaces / Recipe Preparation Agent / Recipe Preparation Agent /'. The agent's name 'Recipe Preparation Agent' is shown with a green 'Deployed' status and an 'Online' indicator. The 'Preview' tab is selected, showing a chat history. The user's message is: 'I have eggs and noodles. can you suggest a quick recipe option?'. The agent's response is: 'Here are a few quick recipe options using eggs and noodles:'. The response includes three numbered recipe suggestions: 1. Egg Noodles - Tastes Better From Scratch, 2. Homemade Egg Noodles Recipe | Gimme Some Oven, and 3. Homemade Egg Noodles - The Salted Pepper. The agent also provides a link to find full recipes and instructions. A 'New chat' button is visible in the top right corner of the chat area.

IBM watsonx Upgrade ? ? Argha Dalal's Account Sydney AD

Deployment spaces / Recipe Preparation Agent / Recipe Preparation Agent /

Recipe Preparation Agent Deployed Online

API reference Test **Preview**

New chat +

AD You 06:37 PM
I have eggs and noodles. can you suggest a quick recipe option?

Recipe Preparation Agent 06:37 PM
Here are a few quick recipe options using eggs and noodles:

1. Egg Noodles - Tastes Better From Scratch: A simple recipe that combines eggs, milk, and salt to make a delicious and easy-to-make egg noodle dish.
2. Homemade Egg Noodles Recipe | Gimme Some Oven: A homestyle egg noodle recipe that is incredibly easy to make by hand in just 15 minutes with 4 basic ingredients.
3. Homemade Egg Noodles - The Salted Pepper: A recipe that uses flour, egg, salt, and water to make a delicious and homemade egg noodle dish.

These recipes are all quick, easy, and delicious, and can be made with just a few ingredients. You can find the full recipes and instructions by visiting the websites listed in the search results.

► How did I get this answer?

Type something...

CONCLUSION

The Recipe Preparation Agent makes everyday cooking smarter, easier, and more sustainable by combining IBM's AI capabilities with intuitive web technology. It bridges the gap between human creativity and machine intelligence in the kitchen, helping users reduce decision fatigue and food waste. The system promotes healthier, more personalized meal choices tailored to available ingredients.

FUTURE SCOPE

Multi-language support for regional users (Hindi, Bengali, etc.)

Image-to-recipe generation using food photos

Mobile app version with offline caching

Grocery list generator from selected recipes

Advanced nutrition tracking via barcode/grocery input

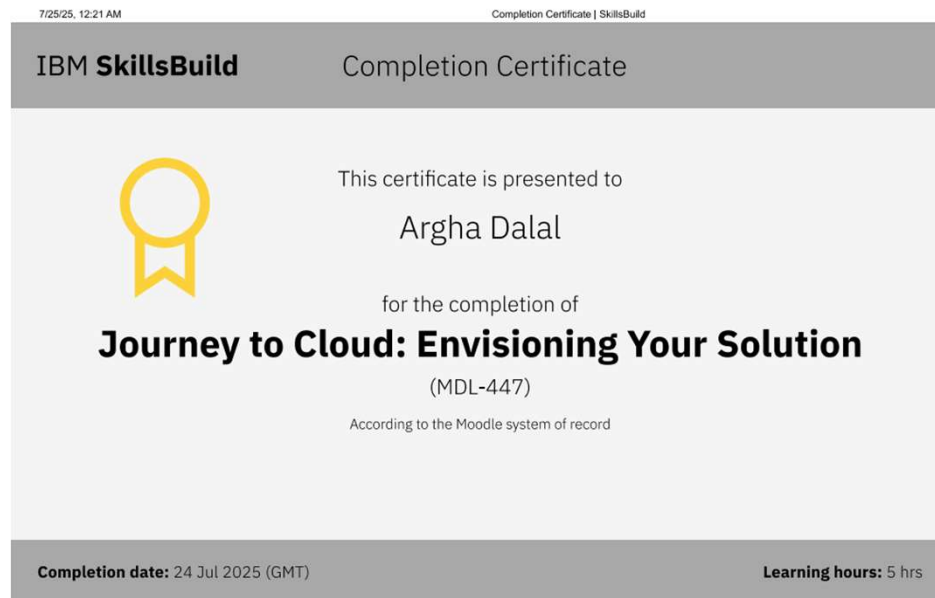
IBM CERTIFICATIONS

- Screenshot/ credly certificate(getting started with AI)



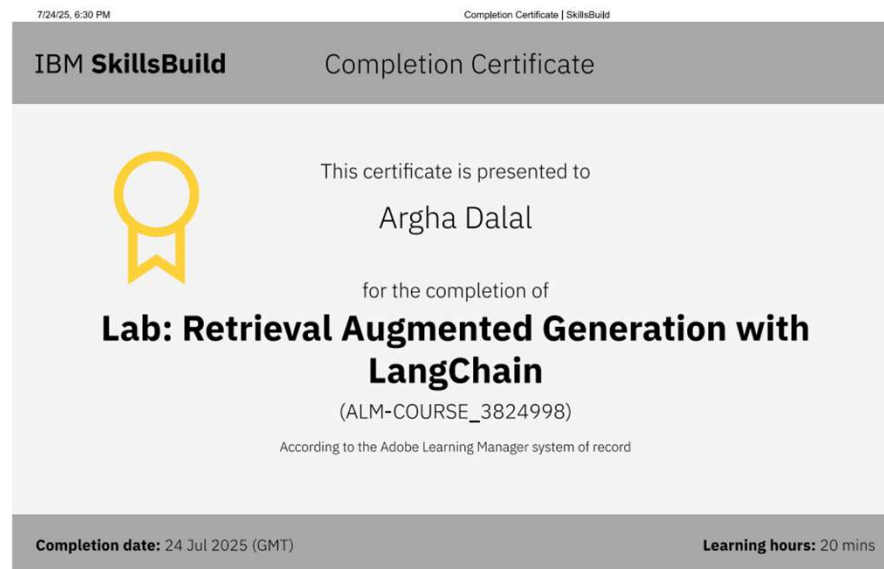
IBM CERTIFICATIONS

- Attach your Cloud certificate here



IBM CERTIFICATIONS

- Attach your RAG LAB certificate here



https://skills.yourlearning.ibm.com/certificate/ALM-COURSE_3824998

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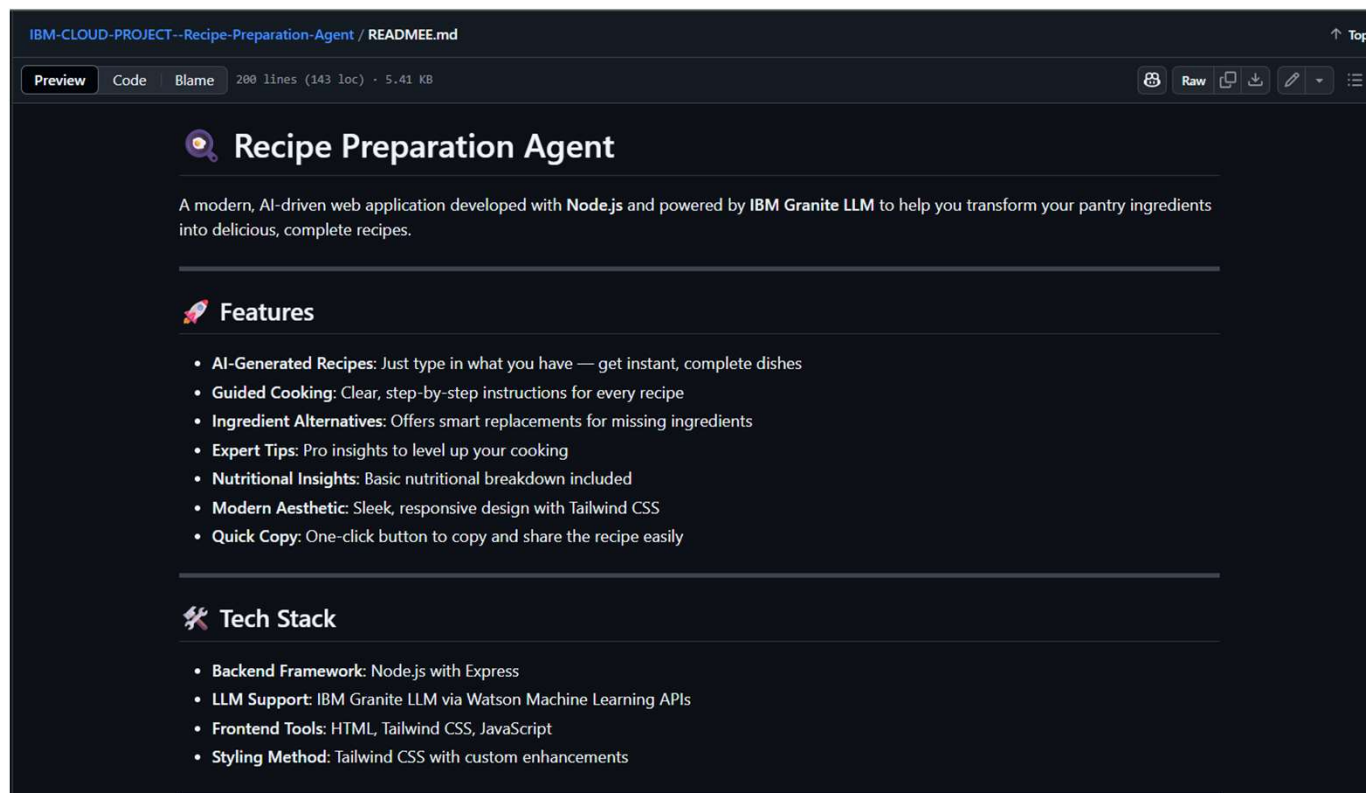


GitHub Link: <https://github.com/Argha0004/IBM-CLOUD-PROJECT--Recipe-Preparation-Agent>

GITHUB LINK

- Make sure that there should be readme file

- <https://github.com/Argha0004/IBM-CLOUD-PROJECT--Recipe-Preparation-Agent>



THANK YOU