

---

# CAPSTONE PROJECT

## RECIPE PREPARATION AGENT

**Presented By: Archisman Chakraborty**  
**Student name: Archisman Chakraborty**  
**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

The core issue this project tackles is helping people figure out what to cook with the ingredients they already have on hand. This is a common problem for home cooks, students, and working professionals who want to save time and cut down on kitchen waste. The solution is to create an AI-powered agent that can generate tasty recipe ideas based on a user's available ingredients.

## Proposed Solution:

The solution is an AI agent that uses the ingredients you give it to create recipes. It's built using IBM cloud services like Watsonx AI Studio and Watsonx AI runtime, and it leverages Natural Language Processing (NLP) and Retrieval Augmented Generation (RAG). The agent is powered by the IBM Granite foundation model. The project's code is available on GitHub.

---

# 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:**

- **It generates recipes instantly from your ingredients.**
- **It provides easy-to-follow, step-by-step instructions.**
- **It can even suggest smart substitutions for ingredients you might not have.**
- **It offers cooking tips and nutritional highlights to make your meal even better.**

---

## END USERS

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

# RESULTS

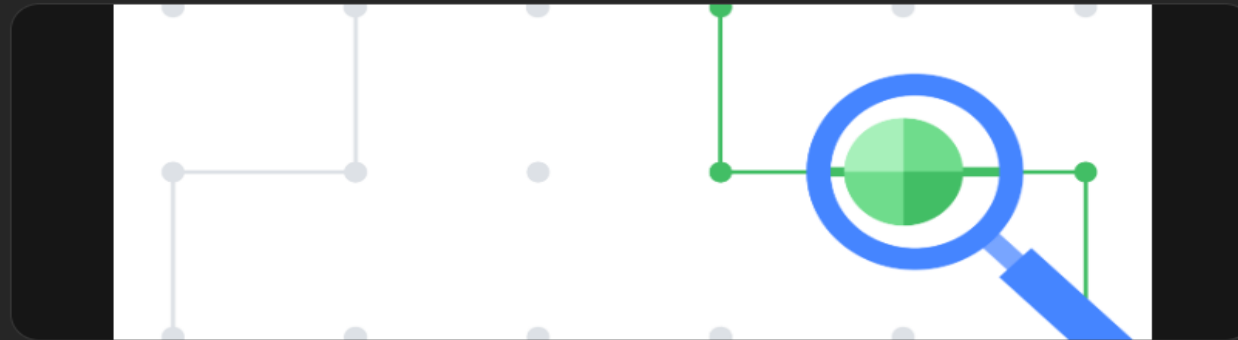
## Agent preview



Recipe Preparation Agent 06:28 PM

### Welcome to Recipe Preparation Agent

Generating tasty recipe ideas based on the ingredients Users have available.



Type something...





# 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



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](https://feelgoodfoodie.net)
- [lexiscleankitchen.com](https://lexiscleankitchen.com)
- [saltandlavender.com](https://saltandlavender.com)
- [budgetbytes.com](https://budgetbytes.com)
- [itdoesnttastelikechicken.com](https://itdoesnttastelikechicken.com)
- [lastingredient.com](https://lastingredient.com)
- [theburntbuttertable.com](https://theburntbuttertable.com)
- [ohsweetbasil.com](https://ohsweetbasil.com)
- [theclevercarrot.com](https://theclevercarrot.com)
- [alexandracooks.com](https://alexandracooks.com)

Type something...



# 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 information. The breadcrumb trail shows the path: Deployment spaces / Recipe Preparation Agent / Recipe Preparation Agent. The agent's status is 'Deployed' and 'Online'. The 'Preview' tab is active, 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 a numbered list of three recipes: 1. Egg Noodles - Tastes Better From Scratch, 2. Homemade Egg Noodles Recipe | Gimme Some Oven, and 3. Homemade Egg Noodles - The Salted Pepper. Below the list, a note states: '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.' A 'How did I get this answer?' link is also present. The interface includes a search bar at the bottom and a 'New chat' button.

IBM watsonx Upgrade ? Bell Archisman Chakraborty's A... Dallas AC

Deployment spaces / Recipe Preparation Agent / Recipe Preparation Agent /

Recipe Preparation Agent Deployed Online

API reference Test **Preview** New chat +

AC 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 project successfully created a functional AI agent that solves the problem of generating recipes from a user's available ingredients. It uses advanced technologies like IBM's Granite LLM and RAG to provide practical and helpful recipe ideas, as shown in the examples with ingredients like "tomato, onions, and rice" or "eggs and noodles". The agent is a great tool for a variety of users and effectively tackles food waste and time constraints in the kitchen.**

---

# FUTURE SCOPE

- Multi-language support for regional users (Hindi, Bengali, etc.)
- Image-to-recipe generation using food photos
- Grocery list generator from selected recipes
- Advanced nutrition tracking via barcode/grocery input
- Voice assistant integration for hands-free cooking

# IBM CERTIFICATIONS

- Screenshot/ credly certificate( getting started with AI)



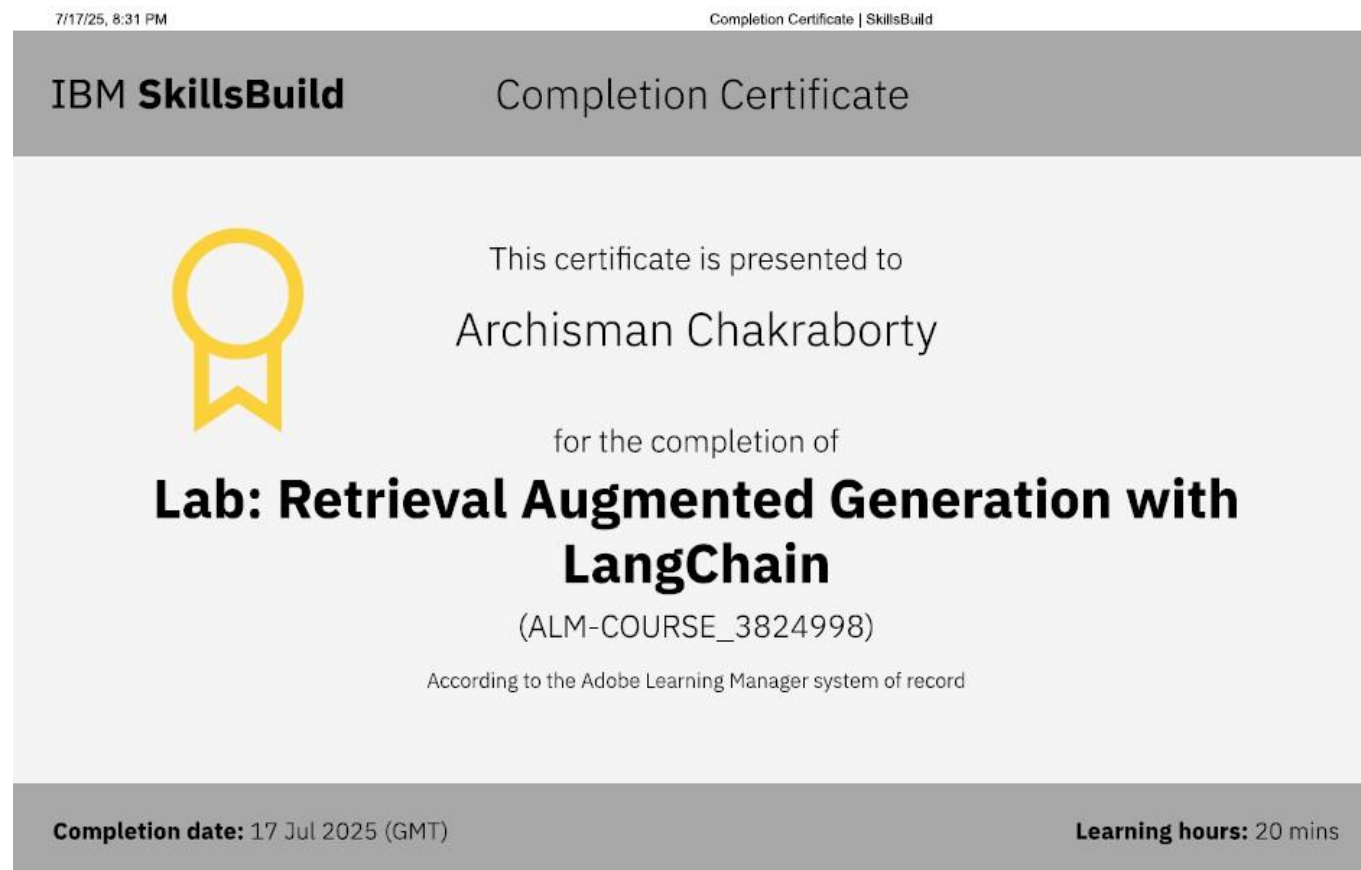
# IBM CERTIFICATIONS

Screenshot/ credly certificate( Journey to Cloud)



# IBM CERTIFICATIONS

Attach your RAG LAB certificate here

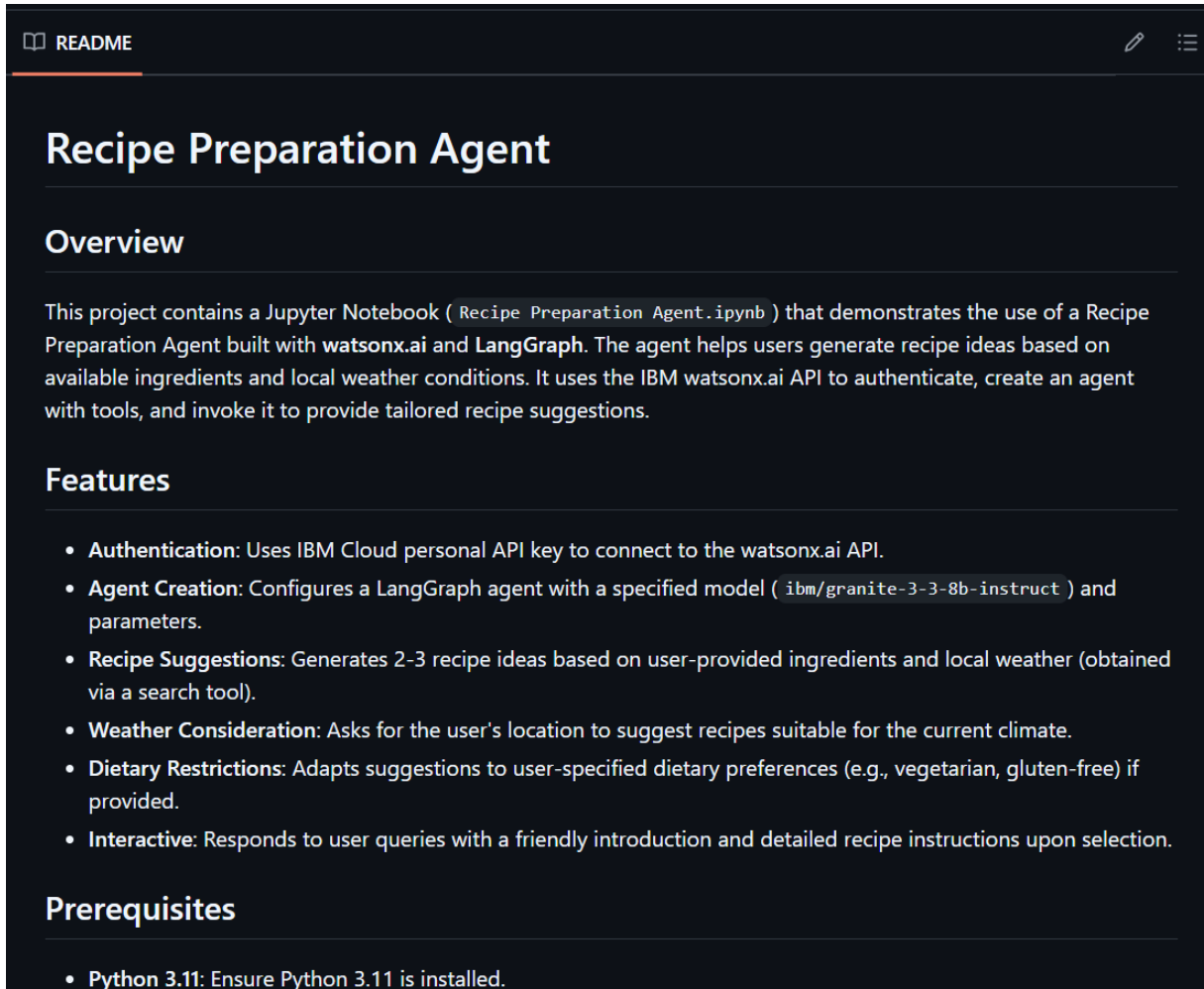




**GitHub Link:** <https://github.com/archisman44/IBM-CLOUD-EDUNET>

# GITHUB LINK

- Make sure that there should be readme file
- <https://github.com/archisman44/IBM-CLOUD-EDUNET>



The screenshot shows a GitHub repository page for 'Recipe Preparation Agent'. The page has a dark theme. At the top, there's a 'README' tab. The title 'Recipe Preparation Agent' is prominently displayed. Below it, the 'Overview' section describes the project as a Jupyter Notebook demonstrating a Recipe Preparation Agent built with watsonx.ai and LangGraph. The 'Features' section lists several capabilities: Authentication (using IBM Cloud personal API key), Agent Creation (configuring a LangGraph agent with a specific model and parameters), Recipe Suggestions (generating 2-3 ideas based on ingredients and weather), Weather Consideration (suggesting recipes suitable for the current climate), Dietary Restrictions (adapting suggestions to user preferences), and Interactive (responding to user queries). The 'Prerequisites' section mentions that Python 3.11 must be installed.

README

## Recipe Preparation Agent

### Overview

This project contains a Jupyter Notebook ( `Recipe Preparation Agent.ipynb` ) that demonstrates the use of a Recipe Preparation Agent built with **watsonx.ai** and **LangGraph**. The agent helps users generate recipe ideas based on available ingredients and local weather conditions. It uses the IBM watsonx.ai API to authenticate, create an agent with tools, and invoke it to provide tailored recipe suggestions.

### Features

- **Authentication:** Uses IBM Cloud personal API key to connect to the watsonx.ai API.
- **Agent Creation:** Configures a LangGraph agent with a specified model ( `ibm/granite-3-3-8b-instruct` ) and parameters.
- **Recipe Suggestions:** Generates 2-3 recipe ideas based on user-provided ingredients and local weather (obtained via a search tool).
- **Weather Consideration:** Asks for the user's location to suggest recipes suitable for the current climate.
- **Dietary Restrictions:** Adapts suggestions to user-specified dietary preferences (e.g., vegetarian, gluten-free) if provided.
- **Interactive:** Responds to user queries with a friendly introduction and detailed recipe instructions upon selection.

### Prerequisites

- **Python 3.11:** Ensure Python 3.11 is installed.



**THANK YOU**