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# AGENTIC AI PROJECT

## RECIPE PREPARATION AGENT

**PRESENTED BY:**

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# OUTLINE

- Problem Statement
- Proposed System/Solution
- System Development Approach
- Algorithm & Deployment
- Result (Output Image)
- Conclusion
- Future Scope
- References

# PROBLEM STATEMENT

A Recipe Preparation Agent helps users cook meals using only the ingredients they have on hand. By inputting available groceries, users receive tailored recipe suggestions using a RAG-based AI system. The agent retrieves relevant recipes and generates step-by-step instructions adapted to ingredient limitations. It offers substitutions, cooking tips, and dietary adjustments based on user preferences or restrictions. Designed to reduce food waste and save time, it turns pantry items into practical meal solutions. This AI assistant makes everyday cooking smarter, simpler, and more sustainable. .

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# PROPOSED SOLUTION

- The proposed system is a **Recipe Preparation Agent** built with IBM Watsonx Agentic AI. It allows users to input available ingredients and dietary preferences, and in return, suggests:
  - Recipe ideas
  - Substitutions
  - Cooking steps
  - Dietary tips

This system improves sustainability, saves time, and empowers smarter home cooking.

# SYSTEM APPROACH

- IBM Watsonx Agent Lab (Agentic AI framework)
- LangGraph + ReAct architecture
- Foundation model: ibm/granite-13b-instruct-v2
- No external dataset used — all logic handled by prompt instructions
- Tested with both .json inputs and live chat UI preview

# ALGORITHM & DEPLOYMENT

- **Algorithm Selection:**
  - The agent uses IBM Watsonx's Granite large language model with the LangGraph framework and ReAct architecture to enable tool-aware reasoning and dynamic conversation handling.
- **Data Input:**
  - The input is user-provided natural language text in TEXT format, including ingredients and dietary preferences.
- **INSTRUCTION DESIGN:**
  - Instead of training on datasets, the agent uses a prompt defining its role, task, rules, and tone to guide its behavior.
- **Prediction Process:**
  - The prompt and user input are processed in real time by the Granite LLM, which generates recipe suggestions, substitutions, and cooking instructions.

# STEP 1: AGENT SETUP WITH LANGGRAPH + REACT

The screenshot displays the IBM watsonx Agent Lab interface. The top navigation bar includes the IBM watsonx logo, an 'Upgrade' button, a help icon, a notification bell, and user information for 'IHSANA THAHSIN S's Ac...' with a location of 'Dallas'. The main interface is divided into two panels. The left panel, titled 'Build', contains a sidebar with 'Setup', 'Configuration', 'Instructions', 'Knowledge', and 'Tools'. The 'Configuration' section is expanded, showing 'Framework' set to 'LangGraph' and 'Architecture' set to 'ReAct'. Below this, the 'Instructions' section contains the text: 'You are a helpful assistant that uses tools to answer questions in detail. When greeted, say "Hi, I am watsonx.ai agent. How can I help you?"'. The 'Tools' section has buttons for 'Add a tool' and 'Create custom tool'. The right panel, titled 'Agent preview', shows a chat interface with a message from 'watsonx Agent 02:18 PM' saying 'Welcome to watsonx Agent' and 'Change this description to reflect your particular agent'. Below the message is a diagram of a graph with nodes and edges, and a magnifying glass icon. At the bottom of the chat interface is a text input field with the placeholder 'Type something...' and a send button.

IBM watsonx

Upgrade ? Bell IHSANA THAHSIN S's Ac... Dallas IT

Projects / Chef Buddy / Agent Lab

Share feedback β Unsaved New agent + Deploy

**Build** AI Model: llama-3-3-70b-instruct

Setup

Configuration

Framework Architecture

LangGraph ReAct

Instructions [Advanced configuration](#)

You are a helpful assistant that uses tools to answer questions in detail.  
When greeted, say "Hi, I am watsonx.ai agent. How can I help you?"

Knowledge

Tools

[Add a tool](#) [Create custom tool](#)

Added tools (1)

**Agent preview**

watsonx Agent 02:18 PM

Welcome to watsonx Agent

Change this description to reflect your particular agent

Type something...

## STEP 2: MODEL SELECTION (GRANITE 3-3-8B INSTRUCT)

The screenshot displays the IBM watsonx Agent Lab interface. The top navigation bar includes the IBM watsonx logo, an 'Upgrade' button, a help icon, a notification bell, the user profile 'IHSANA THAHISIN S's Ac...', the location 'Dallas', and a user icon labeled 'IT'. Below the navigation bar, the breadcrumb trail shows 'Projects / Chef Buddy / Agent Lab'. The main interface is divided into two panels. The left panel, titled 'Build', contains a sidebar with icons for 'Setup', 'Configuration', 'Framework', 'Instructions', 'Knowledge', and 'Tools'. The 'Configuration' section is active, showing a dropdown menu for 'Model: granite-3-3-8b-instruct'. The dropdown list includes 'Recents', 'granite-3-3-8b-instruct' (which is selected and has a checkmark), and 'View all foundation models' (which is highlighted with a blue border and an arrow). Below the dropdown, the 'Framework' section shows 'LangGraph' and 'ReAct' as options. The 'Instructions' section contains a text box with the instruction: 'You are a helpful assistant that uses tools to answer questions in detail. When greeted, say "Hi, I am watsonx.ai agent. How can I help you?"'. The 'Tools' section has two buttons: 'Add a tool' and 'Create custom tool'. The right panel, titled 'Agent preview', shows a chat interface. It starts with a message from 'watsonx Agent 02:19 PM' saying 'Welcome to watsonx Agent' and 'Change this description to reflect your particular agent'. Below the message is a diagram of a graph with nodes and edges, and a magnifying glass icon. At the bottom of the chat interface is a text input field with the placeholder 'Type something...' and a send button.

IBM watsonx

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Projects / Chef Buddy / Agent Lab

Share feedback beta Unsaved New agent + Deploy

**Build** AI Model: granite-3-3-8b-instruct

Recents

granite-3-3-8b-instruct ✓

View all foundation models →

Framework

LangGraph ReAct

Instructions [Advanced configuration](#)

You are a helpful assistant that uses tools to answer questions in detail.  
When greeted, say "Hi, I am watsonx.ai agent. How can I help you?"

Knowledge

Tools

Add a tool Create custom tool

Added tools (1)

**Agent preview**

watsonx Agent 02:19 PM

Welcome to watsonx Agent

Change this description to reflect your particular agent

Type something...



# STEP 3: INSTRUCTION PROMPT DEFINED

IBM watsonx

Upgrade ⓘ 🔔

IHSHANA THAHSIN S's Ac... ▾

Dallas ▾

IT

Projects / Chef Buddy / Agent Lab

Share feedback ⓘ

Unsaved 📁 ▾

New agent +

Deploy 🚀

Select a foundation model

Close ×

To choose a model, review characteristics such as tasks that models perform. Compare model benchmarks with scores in the range 0–100. Higher scores are better.

All models Model benchmarks

🔍 Search for a model or task

Agents

Want to bring your own model?

# STEP 4: ADDING GOOGLE SEARCH TOOL

The screenshot shows the IBM watsonx web interface. At the top, there's a navigation bar with 'IBM watsonx' on the left and user/account information on the right. Below this is a breadcrumb trail: 'Projects / Chef Buddy / Agent Lab'. The main content area displays the configuration for a model named 'granite-3-3-8b-instruct'. It specifies the provider as 'IBM', version as '3.3', and type as 'Provided model'. A row of tags indicates the model's capabilities: 'Question answering', 'Summarization', 'Retrieval-Augmented Generation(...)', 'Classification', 'Generation', 'Code generation and conversion', 'Extraction', 'Translation', and 'Function calling'. A blue information banner below the tags states: 'Note: By using the model you agree to these terms.' with a 'Read terms' link. The main section is titled 'Granite-3.3-8B-Instruct' and contains a 'Model Summary' paragraph describing the model's capabilities and training. Below the summary is a bulleted list of details: Developers (Granite Team, IBM), Website (Granite Docs), Release Date (April 16th, 2025), and License (Apache 2.0). At the bottom, it lists 'Supported Languages' and provides a 'Back' button and a blue 'Select model' button.

IBM watsonx

Projects / Chef Buddy / Agent Lab

Upgrade ⓘ ⓘ IHSHANA THAHSIN S's Ac... Dallas IT

Share feedback ⓘ β Unsaved ⏏ New agent + Deploy ⚙

granite-3-3-8b-instruct

Provider: IBM | Version: 3.3 | Type: Provided model

Question answering Summarization Retrieval-Augmented Generation(...) Classification Generation Code generation and conversion Extraction Translation Function calling

**Note:** By using the model you agree to these terms. [Read terms](#)

## Granite-3.3-8B-Instruct

**Model Summary:** Granite-3.3-8B-Instruct is a 8-billion parameter 128K context length language model fine-tuned for improved reasoning and instruction-following capabilities. Built on top of Granite-3.3-8B-Base, the model delivers significant gains on benchmarks for measuring generic performance including AlpacaEval-2.0 and Arena-Hard, and improvements in mathematics, coding, and instruction following. It also supports Fill-in-the-Middle (FIM) for code completion tasks and structured reasoning through <think></think> and <response></response> tags, providing clear separation between internal thoughts and final outputs. The model has been trained on a carefully balanced combination of permissively licensed data and curated synthetic tasks.

- **Developers:** Granite Team, IBM
- **Website:** [Granite Docs](#)
- **Release Date:** April 16th, 2025
- **License:** [Apache 2.0](#)

**Supported Languages:** English, German, Spanish, French, Japanese, Portuguese, Arabic, Czech, Italian, Korean, Dutch, and Chinese. However, users may finetune this Granite model for languages beyond

Back Select model

# STEP 5: CREATE DEPLOYMENT SPACE

The screenshot displays the IBM watsonx web interface. The top navigation bar includes the 'IBM watsonx' logo, an 'Upgrade' button, a help icon, a notification bell, a user profile dropdown for 'IHSANA THAHISIN S's Ac...', a location dropdown for 'Dallas', and an 'IT' icon. The main breadcrumb trail reads 'Projects / Chef Buddy / Agent Lab'. On the right side of the main header, there are buttons for 'Share feedback', 'Unsaved', 'New agent +', and a prominent blue 'Deploy' button.

The interface is split into two main panels. The left panel, titled 'Build', contains configuration options for the AI model. It shows 'Model: granite-3-3-8b-instruct'. Under the 'Configuration' section, 'LangGraph' is selected for the Framework and 'ReAct' for the Architecture. The 'Instructions' section contains a text area with the following content: 'You are a smart cooking assistant. Your task is to help users cook meals using only the ingredients they have. Given: - A list of ingredients available. A dietary preference (e.g. vegetarian, gluten free, etc.)'. Below this is the 'Knowledge' section and a 'Tools' section with buttons for 'Add a tool' and 'Create custom tool'. Under 'Added tools (1)', a 'Google search' tool is listed with the description 'Retrieve information from the internet with the Google search engine.'.

The right panel, titled 'Agent preview', shows a chat interface. It starts with a timestamp 'watsonx Agent 02:22 PM' and a welcome message: 'Welcome to watsonx Agent. Change this description to reflect your particular agent'. Below the text is a large graphic of a green circle with a blue magnifying glass over it, set against a background of a network diagram. At the bottom of the preview panel is a text input field with the placeholder 'Type something...' and icons for clearing and sending the message.

# STEP 6: NAMING THE SPACE (CHEFBUDDYSPACE)

IBM watsonx

Upgrade ⓘ 🔔 IHSHANA THAH SIN S's Ac... ▼ Dallas ▼ IT

Projects / Chef Buddy / Agent Lab

Share feedback ⓘ Ⓟ Unsaved Ⓜ ▼ New agent + Deploy ⚙

Deploy as an AI service

Create an online deployment. If you want to edit code in notebook format before deploying, save as a deployment notebook. [Learn more.](#)

Define details

Deployment name

watsonx Agent

Target deployment space

New deployment space +

Reload ↺

Why don't I see all of my deployment spaces? ⓘ

Description (optional)

Change this description to reflect your particular agent

☒ View in deployment space after deploying ⓘ

Cancel

Deploy ▶

<https://dataplatform.cloud.ibm.com/ml-runtime/spaces/create-space?context=wx>

# STEP 7: SPACE CREATED AND READY

IBM watsonx

Upgrade?🔔IHSANA THAHNIN S's Ac...▼Dallas▼IT

Create a deployment space

Use a space to collect assets in one place to create, run, and manage deployments

+ New

Local file

Define details

Name

ChefBuddySpace

Description (Optional)

0/100

What's the purpose of this space?

Deployment stage ⓘ

Select or enter a name that describes the purpose of the space

Tags (optional)

Find or create tags

Cancel

Create

# STEP 8: DEPLOYMENT CONFIGURATION STARTED

IBM watsonx

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Deployment spaces /

## ChefBuddySpace

Overview Assets Deployments Jobs Manage

### Jump back in

Assets that you promote or add to the space show here.



[View all](#)

### Deployments

All

|                                  |          |
|----------------------------------|----------|
| ✔ Deployed                       | ❌ Failed |
| 0                                | 0        |
| <a href="#">View deployments</a> |          |

### Job runs

|                           |                        |
|---------------------------|------------------------|
| 🔄 Active                  | ❌ Failed last 24 hours |
| 0                         | 0                      |
| <a href="#">View jobs</a> |                        |

### Space history

🔔 No notifications  
You will see your most recent notifications here.

edunet  
foundation

# STEP 9: AI DEPLOYMENT SCREEN

Projects / Chef Buddy / Agent Lab

Share feedback β Unsaved New agent + Deploy

Deploy as an AI service ×

Create an online deployment. If you want to edit code in notebook format before deploying, save as a deployment notebook. [Learn more.](#)

Define details

Deployment name

watsonx Agent

Target deployment space

New deployment space +

Reload

Why don't I see all of my deployment spaces?

Description (optional)

Change this description to reflect your particular agent

☒ View in deployment space after deploying

Only deployment spaces with an associated watsonx.ai Runtime instance are available as target deployment spaces.

# STEP 10: SELECT TARGET DEPLOYMENT SPACE

IBM watsonx

Upgrade ⓘ 🔔 IHSANA THAH SIN S's Ac... Dallas IT

Projects / Chef Buddy / Agent Lab

Share feedback ⓘ β Unsaved 📁 New agent + Deploy 🚀

Deploy as an AI service

Create an online deployment. If you want to edit code in notebook format before deploying, save as a deployment notebook. [Learn more.](#)

Define details

Deployment name

watsonx Agent

Target deployment space

ChefBuddySpace ▼

Why don't I see all of my deployment spaces? ⓘ

Description (optional)

Change this description to reflect your particular agent

☒ View in deployment space after deploying ⓘ

Cancel

⌂

Deploying



# STEP 11: DEPLOYMENT TRIGGERED

[Deployment spaces](#) / [ChefBuddySpace](#) / [watsonx Agent](#) /

watsonx Agent

✓ Deployed

Online

API reference

Test

Preview

Endpoints for inferencing ⓘ

Private endpoint

https://us-south.ml.cloud.ibm.com/ml/v4/deployments/512c9687-0af2-49f2-b6ee-f924b44ac888/ai\_service?version=2021-05-01

https://us-south.ml.cloud.ibm.com/ml/v4/deployments/512c9687-0af2-49f2-b6ee-f924b44ac888/ai\_service\_stream?version=2021-05-01

Public endpoint

https://us-south.ml.cloud.ibm.com/ml/v4/deployments/512c9687-0af2-49f2-b6ee-f924b44ac888/ai\_service?version=2021-05-01

https://us-south.ml.cloud.ibm.com/ml/v4/deployments/512c9687-0af2-49f2-b6ee-f924b44ac888/ai\_service\_stream?version=2021-05-01

[Learn more](#) about the 2021-05-01 version query parameter

Code snippets

cURL

Java

JavaScript

Python

Scala


Bearer <token> ⓘ

IAM

edunet  
foundation

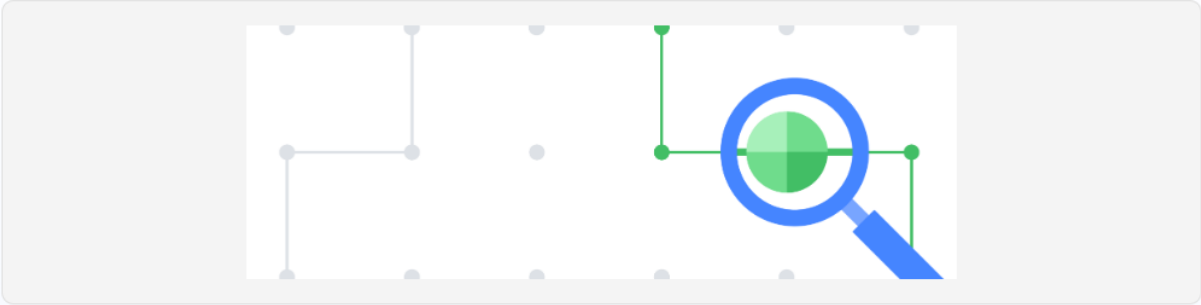
# STEP 12: DEPLOYED STATUS: ONLINE

[Deployment spaces](#) / [ChefBuddySpace](#) / [watsonx Agent](#) /

 Chef Buddy 03:06 PM

Welcome to Chef Buddy

An AI-powered cooking assistant that suggests recipes based on available ingredients .



API reference

Test

Preview

New chat +

Send

edunet  
foundation

# RESULT

[Deployment spaces](#) / [ChefBuddySpace](#) / [watsonx Agent](#) /

Chef Buddy ✓ Deployed Online

[API reference](#) [Test](#) [Preview](#)

New chat +

I

You 03:06 PM

I have rice, garlic, onion, and butter. I'm vegetarian. Can you suggest a recipe with steps and tips

Chef Buddy

Chef Buddy 03:06 PM

Here's a simple recipe for garlic butter rice that you can try:

Ingredients:

- 1 cup uncooked white rice
- 2 cloves garlic, minced
- 1 medium onion, finely diced
- 2 tablespoons butter
- Salt and pepper to taste
- Optional: green onions for garnish

Type something...

## RESULT:

The deployed agent was tested with various user inputs through the IBM Watsonx Agent Lab interface.

### Example Input:

*"I have rice, garlic, onion, butter. I'm vegetarian. Can you suggest a recipe with steps?"*

### AI Response:

*"Try this vegetarian Garlic Butter Rice recipe:*

- 1.Sauté onion and garlic in butter.
- 2.Add rice and stir briefly.
- 3.Pour in water, cover, and cook until fluffy.
- 4.Season and serve.

*You can substitute butter with ghee or olive oil for a vegan version.*

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# CONCLUSION

- The Recipe Preparation Agent successfully transforms available ingredients into practical meal ideas using Agentic AI.  
The solution is simple, scalable, and user-friendly. It aligns well with goals like reducing food waste and making AI more accessible in everyday life.

# FUTURE SCOPE

- Incorporate **speech or image input** for ingredient recognition
- Integrate **nutrition APIs** to provide calorie and health info
- Expand the agent into a **mobile app** for on-the-go use
- Add support for **regional and international cuisines**
- Train on **custom recipe datasets** for enhanced personalization

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# REFERENCES

- IBM watsonx.ai documentation
- Agentic AI Overview by IBM

# IBM CERTIFICATIONS

In recognition of the commitment to achieve  
professional excellence



## IHSHANA THAHSIN S

Has successfully satisfied the requirements for:

### Getting Started with Artificial Intelligence



Issued on: Jul 16, 2025  
Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/c88dd9ee-7abd-49a1-ab53-27e2d55800c9>





# IBM CERTIFICATIONS

In recognition of the commitment to achieve  
professional excellence



## IHSHANA THAHSIN S

Has successfully satisfied the requirements for:

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### Journey to Cloud: Envisioning Your Solution

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Issued on: Jul 17, 2025  
Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/12774055-0a9d-4476-9b71-f60607a79f5e>



# IBM CERTIFICATIONS

|   |  |
|---|--|
| IBM <b>SkillsBuild</b>  | Completion Certificate   |
|  | This certificate is presented to<br><b>IHSHANA THAHSIN S</b><br><br>for the completion of<br><b>Lab: Retrieval Augmented Generation with<br/>LangChain</b><br>(ALM-COURSE_3824998)<br><br>According to the Adobe Learning Manager system of record |
| <b>Completion date:</b> 23 Jul 2025 (GMT)   | <b>Learning hours:</b> 20 mins   |



**THANK YOU**