
IBM HACKATHON PROJECT

RECIPE PREPARATION AI AGENT

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OUTLINE

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- Technology used
- Wow factor
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- Conclusion
- Git-hub Link
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PROBLEM STATEMENT

In many households, people struggle with deciding what to cook using the limited ingredients they already have. This often leads to food wastage or unnecessary shopping. Additionally, those with dietary restrictions or limited cooking skills face challenges in preparing meals efficiently.

Proposed Solution

The Recipe Preparation Agent is an AI-powered assistant that helps users cook smartly by suggesting meal ideas based on available groceries.

Using RAG (Retrieval-Augmented Generation), it provides step-by-step cooking instructions, ingredient substitutions, dietary adjustments, and cooking tips.

This solution is built using IBM Cloud Lite Services and IBM Granite models on Watsonx.

TECHNOLOGY USED

IBM Cloud Lite Services

Natural Language Processing (NLP)

Retrieval-Augmented Generation (RAG)

IBM Granite Foundation Model

Watsonx Prompt Lab

IBM CLOUD SERVICES USED

- IBM Cloud Watsonx AI Studio
- IBM Cloud Watsonx AI runtime
- IBM Cloud Agent Lab
- IBM Granite foundation model
- Cloud Object Storage (COS)

WOW FACTORS

This AI agent transforms everyday cooking into a smart, efficient, and sustainable experience. It doesn't just suggest recipes — it adapts them intelligently to what the user has on hand.

Unique Features:

- **Ingredient-Aware Intelligence:** Generates recipes tailored to available groceries, minimizing waste.
- **Smart Substitutions:** Automatically offers ingredient alternatives based on regional availability or dietary needs.
- **RAG-Based Personalization:** Uses Retrieval-Augmented Generation (RAG) to fetch the best-suited recipe logic and dynamically generate step-by-step instructions.
- **Cooking Tips & Health Tweaks:** Suggests low-oil, gluten-free, or vegan adjustments as needed.
- **Real-time Suggestions:** Delivers fast, contextualized recipe responses for daily use.
- **Supports Sustainability:** Helps reduce food waste by turning leftover pantry items into practical meals.

END USERS

- Home Cooks
- Working Professionals
- Students
- Culinary Enthusiasts
- Anyone with random groceries in the kitchen

RESULTS



You: 07:44 PM

Ingredients:milk,eice,mango



watsonx 07:44 PM

 **Recipe Name:** Mango Milk Rice Pudding 

 **Preparation Steps (Step-by-Step):**

1. Soak the Rice:

- Measure out **1 cup of long-grain white rice** (such as Basmati or Jasmine) and place it in a bowl.
- Cover the rice with **2 cups of water** and let it soak for **at least 30 minutes**.

2. Prepare the Mango:

- Peel and dice **2 ripe mangoes** into small chunks. Set aside.

3. Make the Milk Mixture:

- In a large saucepan, combine **4 cups of whole milk** with **1/2 cup of granulated sugar**.
- Add the diced mango pieces directly into the saucepan.

RESULTS

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3. Make the Milk Mixture:

- In a large saucepan, combine **4 cups of whole milk** with **1/2 cup of granulated sugar**.
- Add the diced mango pieces directly into the saucepan.

4. Cook the Rice:

- Drain the soaked rice and add it to the milk-mango mixture in the saucepan.
- Stir well to ensure all the rice grains are coated with the milk and mango.

5. Simmer:

- Cook over **medium-low heat**, stirring occasionally. The mixture should bubble gently but not boil furiously.
- After about **20 minutes**, check the rice for doneness. It should be tender and have absorbed most of the liquid.

6. Finish and Blend:

- Once the rice is cooked, remove from heat.
- Use an **immersion blender** to puree the pudding until smooth and creamy, or blend in batches using a regular blender. This step is optional if you prefer a chunkier texture.

7. Chill and Serve:

- Pour the pudding into serving glasses or bowls.
- Chill in the refrigerator for at least **2 hours** or overnight for best results.
- Serve cold, garnished with **fresh mango cubes** and a sprinkle of cinnamon or chopped nuts if desired.

 **Cuisine Type:** Dessert 

 **Estimated Preparation Time:** 1 hour 15 minutes 

Suggested Substitutions:

- **Rice:** Use Arborio rice for a creamier Italian-style pudding.
- **Milk:** Substitute with coconut or almond milk for a dairy-free version.
- **Sugar:** Adjust to taste or use honey or maple syrup for a different sweetness profile.

RESULTS

Deployed AI Agent

Suggested Substitutions:

- **Rice:** Use Arborio rice for a creamier Italian-style pudding.
- **Milk:** Substitute with coconut or almond milk for a dairy-free version.
- **Sugar:** Adjust to taste or use honey or maple syrup for a different sweetness profile.

Cooking Tips:

- Stir frequently to prevent the pudding from sticking to the bottom of the pan and burning.
- The pudding will thicken as it cools, so it's better to err on the side of slightly thinner when hot.
- For a smoother texture, blending the pudding after cooking ensures a creamy consistency.

Dietary Adjustments:

- **Vegan:** Use plant-based milk (like almond or oat) and maple syrup or date sugar. Ensure to use a vegan butter substitute if you choose to add butter.
- **Gluten-Free:** This recipe is naturally gluten-free as rice is a gluten-free grain.
- **Lower Sugar:** Reduce the sugar to 1/4 cup and sweeten individual servings with a drizzle of honey or fresh fruit.

CONCLUSION

- The agent makes cooking simple and efficient
- Encourages sustainable food usage
- Meets all aspects of Problem Statement 16
- Leverages IBM Cloud + Granite model + RAG effective

GITHUB LINK

<https://github.com/AnjaliB22/recipe-preparation-agent>

FUTURE SCOPE

- Voice assistant integration
- Mobile app interface
- Multi-language support
- Calorie estimation & nutritional insights
- Smart meal planning for the week

IBM CERTIFICATIONS

In recognition of the commitment to achieve
professional excellence



Anjali Bhadoriya

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



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Learning hours: 20 mins



THANK YOU