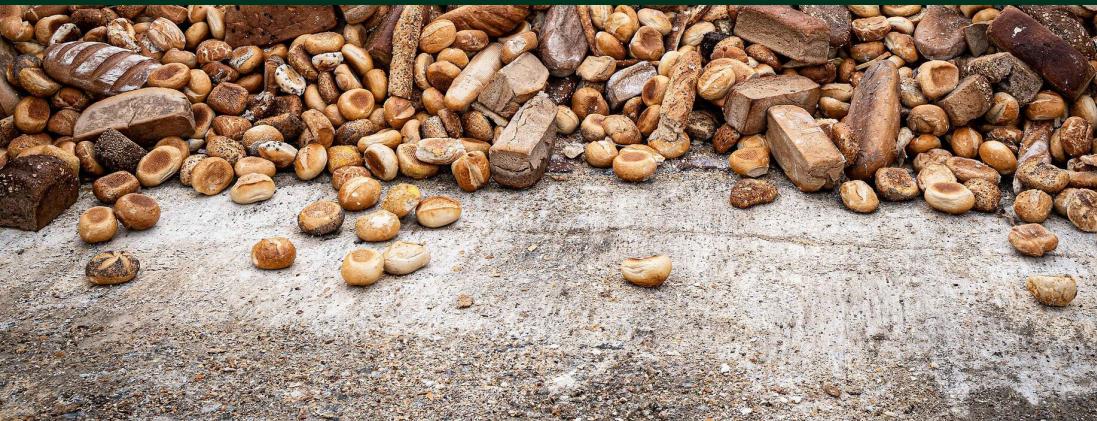


Recipes Against Food Waste

opencampus.sh
From LLMs to AI Agents
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Problem: Food Waste

- 20-40% of worldwide food production is wasted
- negative impacts
- statistics for Germany (2022):
 - 74.5 kg of food waste per person
 - 58% in private households



Idea: Recipes & Storage Advice

- Recipes using old/leftover food
- Information on best storage for different foods
 - ⇒ Chatbot provides recipe ideas and storage information



Model

- Framework: smolagent
- LLM: Qwen/Qwen2.5-Coder-32B-Instruct
- Tools: Search tools for recipes and food storage
- Prompts:
 - System prompt
 - Examples
- UI: Gradio UI

Search Tools

- 2 documents (Markdown)
 - collection of recipes
 - collection of advice for food storage
- pre-processing:
 - parsing in segments (by headings)
 - Sentence Embedding of each segment
- Search
 - embedding of query
 - similarity search
 - returns most relevant matches

Examples from documents

Old, Hard or Stale Bread:

Breadcrumbs (vegan, vegetarian):

Method: Take very dry old bread (especially white bread) and grind it in the food processor until the desired consistency is reached.

Bread soup (possibly vegan depending on the broth):

Method: Cut stale bread into bite-sized pieces and place in soup bowls. Add cooked vegetables, if desired. Then pour hot broth over the soup. It must be served and eaten quickly to avoid it becoming mushy.

Limes

Cut limes can be stored cut-side down on a plate in the refrigerator.

Onions

Onions should never be refrigerated. A dry, cool, and dark room with regular ventilation is ideal. Baskets or clay pots, whose holes allow gentle airflow through the container, also meet this requirement. Onions can also be braided and hung, just like garlic.

Example 1

I have old bread and I want soup.

Cut stale bread into bite-sized pieces and place in soup bowls. Add cooked vegetables, if desired. Then pour hot broth over the soup. It must be served and eaten quickly to avoid it becoming mushy.

Example 2

I have old bread and want to cook a sweet soup as dessert.

...

Ingredients:

- 2 cups stale bread, cut into bite-sized pieces
- 2 cups water or vegetable broth
- 1 cup milk
- 1/2 cup honey
- 1/4 cup granulated sugar
- 1/2 teaspoon ground cinnamon ...

Example 2

Can you replace the broth and vegetables with something more suitable for a dessert?

...

Ingredients:

- 2 cups stale bread, cut into bite-sized pieces
- 2 cups apple juice or pear juice
- 1 cup heavy cream
- 1/2 cup honey
- 1/4 cup granulated sugar
- 1/2 teaspoon ground cinnamon ...

Results

- + provides recipes/advice based on the documents
- + interacts with user to refine results
- + adds its own knowledge
- + enhances recipes

- recipes not found (depending on phrasing)
- weird recipe suggestions

Outlook

ideas for improvement:

- add query expander to find alternative phrasings
- use larger embedding model
- use larger LLM
- improve prompts and add more examples

Repository

- Github:

<https://github.com/C-B-001/RecipesAgainstFoodWaste>

- HuggingFace:

<https://huggingface.co/spaces/CB-001/RecipesAgainstFoodWaste>