Danmarks Tekniske Universitet

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Executive Summary

42578 Advanced business analytics
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Authors

Fie Christina Møller - s205291
Raquel Moleiro Marques - s243636
Sabina Maria Kozlowska - s233185
Sree Keerthi Desu - s243933

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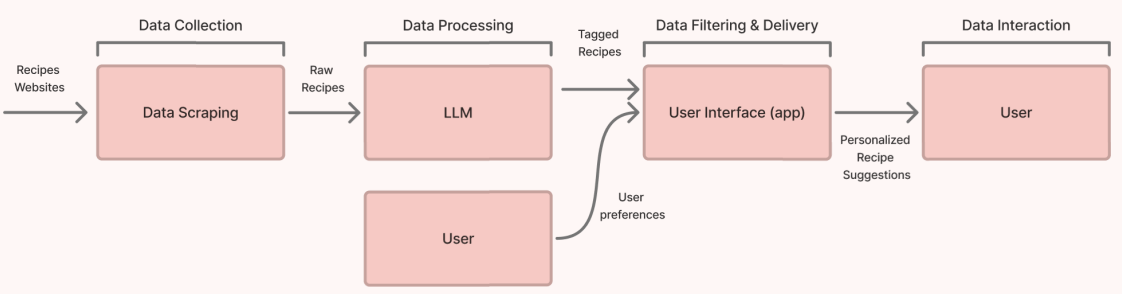
1 Purpose

Food waste is a serious global issue, with a huge amount of edible food thrown away every year. A reason for this waste is that people often don't know what to cook with near-expiry ingredients. This project introduces the **Anti-Food Waste Recommender**, a smart digital tool designed to potentially help individuals, food sharing platforms, and supermarkets reduce waste by suggesting recipes using ingredients near their expiration date.
The final solution ensures food safety and usability by recommending only recipes that involve heat-based cooking methods, such as *baking*, *boiling*, or *frying*, which are more appropriate for items that are near expiration. Users can also filter results based on their dietary preferences, such as vegan or vegetarian, making the tool both personalized and user-friendly.

2 Project Structure



3 Market Potential

The **Anti-Food Waste Recommender** presents a scalable, low-maintenance solution, and has a strong potential in both business-to-consumer and business-to-business models. On the **business-to-consumer** side, the tool empowers individuals to reduce food waste at home by providing recipe suggestions based on near-expiry ingredient(s) added by the user. On the **business-to-business** side, the Recommender offers integration opportunities for a variety of food-related businesses: meal-kit providers, food-sharing platforms, and supermarkets. The **meal-kit provider**, such as *Hello Fresh*, can offer our tool to help them use leftover ingredients from meal boxes. The **food-sharing platform**, such as *Too Good To Go*, can enhance their user experience by recommending ways to cook rescued food, increasing engagement and value for the user. The **supermarkets** can embed the tool in their digital platforms to suggest recipes tied to near-expiry or promotional items, helping reduce food waste while driving sales.

4 Highlights

1. Scraping recipes from various websites around the world.
2. Providing an end-to-end solution: *Scraping* $\rightarrow$ *LLM* $\rightarrow$ *Interface*.
3. Designing an interface that makes the solution practical and user-friendly.
4. Creating a solution that serves not only individuals, but also food-sharing platforms and supermarkets.
5. Developing a solution with potential applications beyond this course.

5 Limitations

1. Using an open-source scraper, which did not yield the best results - for example, recipe titles were poorly formatted.
2. Working exclusively with English-language recipes.
3. Relying on a small-scale LLM, which performs worse compared to a larger commercial one.
4. Losing some recipes due to errors occurring during LLM processing.
5. The app only matches exact ingredient phrases when more than one word is entered (e.g., "chicken breasts"), which can limit recipe variety by excluding similar ingredients like "chicken".