

Department of Computer Science and Engineering
University of Nevada, Reno

Project Title: AIChef
(AI Powered Grocery and Meal Planner)

Author: Illya Gavlovskyi

Team 19

Instructor: Sergiu Dascalu

Date: Nov 10, 2025

Abstract

The AI Assisted Grocery and Meal Planner helps users save time and money by simplifying meal preparation and grocery planning. It assists health oriented individuals who want to maintain balanced diets and their personal goals. Users enter what they already have in their refrigerators, the period of time they are shopping for, and any allergies or dietary restrictions. The system uses AI (API platform like OpenAI's platform) to generate customized meal plans and grocery lists that fit within the boundary of user's needs. This app combines inventory tracking, scheduling, and adaptive feedback with a interface that is interactive for the user's personalized experience that simplifies and speeds up the decision making and preplanning that is involved in shopping. In addition, this reduces waist by avoiding any unnecessary items that might be outside of the dietary plan.

Requirements discovery

Interviews

Illya Gavlovskyi: A user and creator of this app

1. How do you currently plan your meals and grocery shopping each week?

I just try to remember what i need and go to the store multiple times if I forget an item

2. What are the biggest frustrations or time consuming parts of that process?

If I end up forgetting something i have to go to the closest sore to me and end up spending more money because its not the cheapest option.

3. Do you track your diet goals, such as calorie intake or macronutrients, and if so, how?

I don't usually, I just try not to overeat and avoid sugar as much as possible.

4. How do allergies or food restrictions affect your grocery decisions?

I try to avoid soda and snaks as much as possible and buy more protein rich foods.

5. Would you prefer to talk to an AI assistant in a conversational way or fill out a short form when planning meals?

fill out a short form would be fine I wouldn't have a long conversation I would just want to tell it that I have this and that and then it gives me a list to go off so that i can save time

6. How often do you cook at home versus eating out?

I like to make food 1-2 a week and i end up eating out 3 times a week because there is to a lot of time to go home to eat so it ends up costing a lot of money.

7. How far in advance do you shop for food?

1-2 weeks mainly

8. How important is saving money or reducing food waste to you?

I would like to save money as much as possible. And I don't like seeing food expire.

9. If an app could automatically suggest recipes and generate a shopping list based on what you already have, what features or details would make it most useful for you?

I think an app that would come up with the cheapest stores and also give cupons to those items would be very nice to have so that you automatically save money. If it reduces your spending by 20% I think it's a good app to have.

Thomas Vasile: A UNR student that likes to save money and cock.

1. How do you currently plan your meals and grocery shopping each week?

I usually plan meals a few days ahead and make a quick list before going to the store.

2. What are the biggest frustrations or time-consuming parts of that process?

Forgetting items or having to go back to the store.

3. Do you track your diet goals, such as calorie intake or macronutrients, and if so, how?

Not really, I just try to eat balanced meals.

4. How do allergies or food restrictions affect your grocery decisions?

No major allergies, so it doesn't affect much.

5. Would you prefer to talk to an AI assistant in a conversational way or fill out a short form when planning meals?

Conversational way cuz feels easier and faster.

6. How often do you cook at home versus eating out?

Mostly cook at home, eat out once or twice a week.

7. How far in advance do you shop for food?

Usually once a week.

8. How important is saving money or reducing food waste to you?

Very important cuz I try not to waste food.

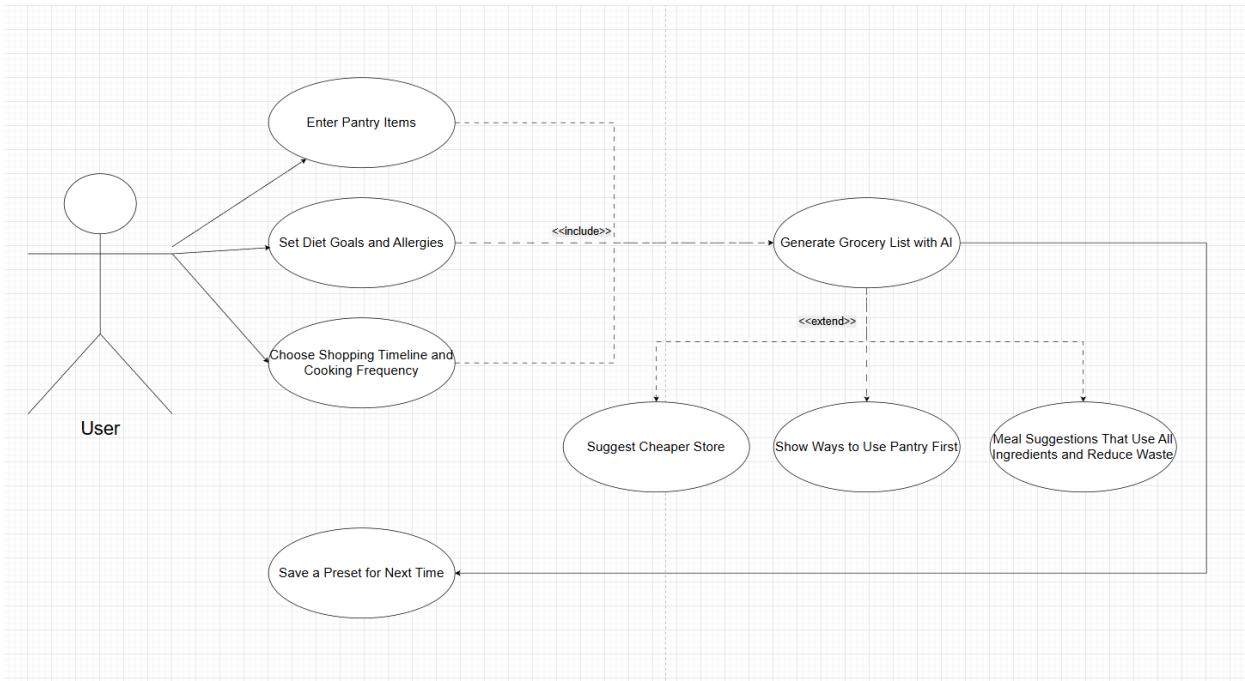
9. If an app could automatically suggest recipes and generate a shopping list based on what you already have, what features or details would make it most useful for you?

Show easy recipes, track ingredients I already have, and organize the shopping list by store sections.

Use cases and HCI scenarios

Shopper: The user that enters pantry items, sets dietary goals, allergens and budget goals. Then receives AI generated grocery and meal plans.

Use Case Summaries



1. Enter Pantry Items: user types in ingredients they have and then adds the quantity of the item (oz, lb, ect.)
2. Set Diet Goals and Allergies: user defines the type of diet they are on, and an allergy list so the AI can filter recipes safely.
3. Choose Shopping Timeline and Cooking Frequency: user selects timeframe (one week, two weeks, ect.) for the shopping list and how often they are planning to cook.
4. Generate Grocery List with AI: system analyzes pantry data and goals, then produces a complete list of needed items and meal ideas.
5. Suggest Cheaper Store: user sees an optional breakdown of where to buy each item at lower cost.
6. Show Ways to Use What's Already in the Pantry First: system prioritizes recipes that consume existing food to cut waste.
7. Meal Suggestions That Use All Ingredients and Reduce Waste: AI creates balanced meal plans using overlapping ingredients to minimize leftovers.

8. Save a Preset for Next Time: user saves diet, allergy, and timeline settings for faster weekly repeats.

HCI Persona

Archetype	College student with a part time job
Name	Chris J.
Job Title	Starbucks worker
Demographics	<ul style="list-style-type: none"> • 22 years old • Getting B.S. in Computer Science • Works part-time at a coffee shop
Goals	Chris wants to save money, eat healthier, and reduce food waste while keeping meal prep simple. He wants fast shopping runs, simple meals that hit all his diet goals and an app that gives him everything he need with no need for planning.
Environment	Chris rents an apartment and half of his paycheck goes to pay for that. He shops once per week but ends up buying things he does not use and is outside his diet which hinders his fitness goals. He likes using his phone to assist with any tasks in his day to day life. Now he is looking to fix his shopping and food problems. When looking for an app he knows AI can do a good job, but he wants AI to explain why it recommends certain meals or store options.
Scenario	Chris opens the AI-Powered Grocery and Meal Planner on Sunday afternoon before heading to the store. His preset includes a 2 week meal plan with three cooking sessions and a \$100 budget. The AI quickly checks his pantry list, noting leftover chicken, rice, and vegetables. It generates a new shopping list. The list is grouped by store and highlights cheaper options for several ingredients. Chris swaps out two dinners for variety, accepts the changes, and saves the preset for next week. The interface prompts: "This list will cost \$83 and use all current ingredients." He likes that the process took under five minutes, required

	minimal effort, and helped him avoid both overspending and food waste.
--	--

Requirement levels (priorities)

Level 1	Functions to fully implement
Enter Pantry Items with Quick Add	The system shall let the user add ingredients and quantities with minimal input and smart suggestions.
Set Diet Goals and Allergies	The system shall let the user select diet goals and specify allergies so unsafe items are excluded.
Choose Shopping Timeline and Cooking Frequency	The system shall let the user pick a planning horizon and how often they cook each week.
Generate Grocery List with AI	The system shall call the AI service and return a grocery list and a matching meal plan.
Save a Preset for Next Time	The system shall save the user's diet, allergy, and timeline choices for fast repeats.
Level 2	Prototype only or partial functions
Suggest Cheaper Store Splits	The system shall show example suggestions for buying some items at different stores to lower cost. Data may be mocked.
Meal Suggestions That Use All Ingredients and Reduce Waste	The system shall display example recipes that use overlapping ingredients. Data may be mocked.
Level 3	Future enhancements
Real time Price Integration	The system should connect to retailer pricing APIs to estimate totals and substitutions.
Multi store Route Optimization	The system should suggest an efficient order of store visits when splitting a list.
Nutritional Analytics Dashboard	The system should summarize calories, macros, and spend per week and per plan.

AI Tools Usage

This project I had assistance from ChatGPT (<https://chatgpt.com/>). I used the tool for brainstorming ideas and organizing sections. All the final work was done by me.