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01
The Problem

A Troubling Issue

Problem Chosen: Food Waste in Households

Why it matters:
According to the USDA, approximately 30-40% of the food supply in the U.S. is wasted. This not only leads to environmental consequences (greenhouse gas emissions from landfills) but also ethical and economic issues in a world where millions still face food insecurity.
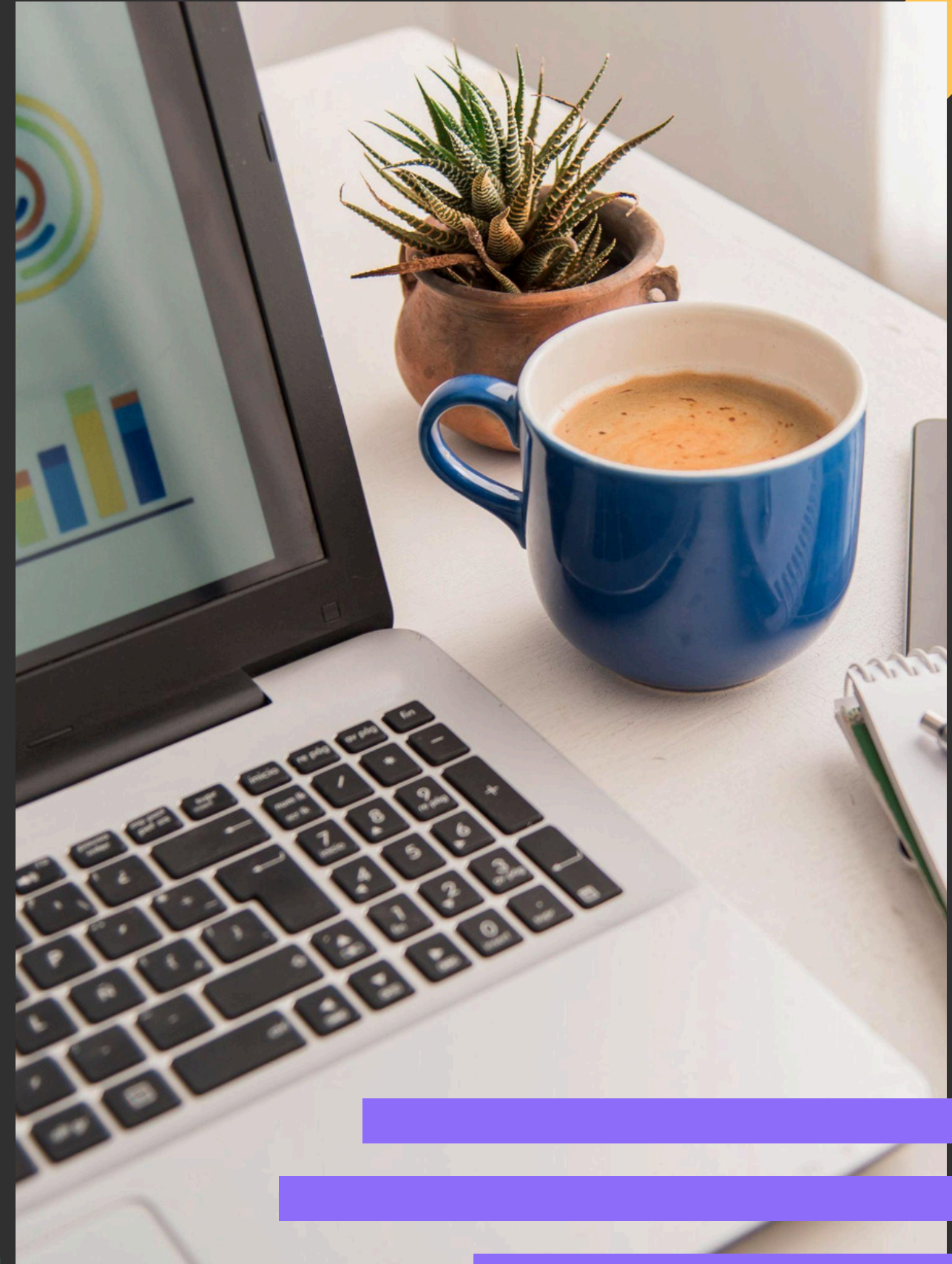
Why this topic

I'm interested in sustainability and reducing environmental impact. Tackling food waste through software not only supports sustainability but also aligns with growing trends in smart homes and machine learning.

02
Findings

Existing App Solutions

Too Good To Go

Connects users to restaurants and stores with surplus food.

Olio

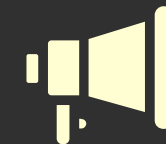Allows users to give away or share unwanted food with neighbors.

NoWaste

Tracks food inventory and expiration dates.

Limitations

Apps not Focued Correctly

Many apps focus on business-to-consumer (B2C) waste, not household prevention.

Not User Friendly

Existing solutions often require a high level of user initiative (e.g., manual input of food items).

No System Connection

Lack of integration with smart home technologies or AI for predictive usage.

03
Real World Benefits

Households

can reduce their food waste

Families

are able to save their money

Enviromental

sustainability can be achieved

04
Design Proposal

Sharp Spence

Description: A mobile and smart home-integrated app that automatically tracks food items, offers recipe suggestions based on what you have, sends reminders about expiration dates, and learns consumption habits over time.

How it Improves Existing Solutions:

- Focuses on proactive household waste prevention.
- Uses machine learning to adapt to user habits.
- Reduces manual effort through automation and integrations.

Features:

1 Barcode scanning and receipt import for food inventory.

2 Integration with smart fridges or voice assistants (Alexa/Google Home).

3 AI-based recipe and shopping suggestions to reduce waste.

4 Food donation map for nearby donation points when surplus is detected.

Possible Pseudocode

```
WHEN user scans receipt OR barcodes:
    FOR each food item:
        Add to inventory with estimated expiration date

EVERY day:
    FOR each item in inventory:
        IF days_to_expire < 3:
            Notify user: "Use this item soon"
        IF user has not logged consumption:
            Predict likely usage based on history
            Suggest recipe using expiring items

IF user confirms surplus:
    Display nearby donation centers on map
```

05
Open
Questions

Questions

1. Are there particular demographics or groups that are being overlooked in the design of these apps?

2. How do cultural attitudes toward food waste influence how people use (or ignore) these kinds of technologies?

3. What role should businesses, local governments, and policymakers play in promoting or supporting these apps?

Sources

- Haas, Rainer, et al. "Designing and Implementing the MySusCof App—A Mobile App to Support Food Waste Reduction." Foods, vol. 11, no. 15, 26 July 2022. Gale Academic OneFile, dx.doi.org/10.3390/foods11152222. Accessed 20 May 2025.

- Mathisen, Therese Fostervold, and Ramstad Johansen Frode. "The Impact of Smartphone Apps Designed to Reduce Food Waste on Improving Healthy Eating, Financial Expenses and Personal Food Waste: Crossover Pilot Intervention Trial Studying Students' User Experiences." JMIR Formative Research 6.9 (2022)ProQuest. Web. 19 May 2025.

THANKS