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Home2Home: A Community-Driven App for Sustainable Living

Mrs . E . Aksha Pricilda Reena [1] , Mr. S . Muthukumarasamy[2] , Mr.N.Sriram[3] , Mr. K . Jayaveeran[4]

[1] Assistant Professor/Information Technology & Kongunadu College of Engineering and Technology
[2] Information Technology & Kongunadu College of Engineering and Technology
[3] Information Technology & Kongunadu College of Engineering and Technology
[4] Information Technology & Kongunadu College of Engineering and Technology

Email:drakshapricildareena@gmail.com[1] , muthumks3018@gmail.com[2] , sriram06125@gmail.com[3], kjayaveerankjayaveeran@gmail.com[4]

Abstract - Food waste is a significant global issue, with millions of tons of edible food discarded daily, much of it from households. This project presents a solution in the form of a community-driven app for sustainable living, designed to reduce household food waste by enabling individuals to share their surplus home-cooked food with others in their community. The application allows users to post available food, view listings nearby, and claim food items through a user-friendly interface. Unlike existing platforms that focus primarily on restaurants or businesses, this app targets local, home-based food surplus, promoting a grassroots approach to food redistribution. The system architecture includes a mobile frontend built with Flutter, a backend powered by Node.js, and cloud-based storage using MongoDB. Key modules include user authentication, food posting, search and claim functionality, and real-time notifications.

 Problem: A significant amount of edible, home-cooked food is discarded daily by households, contributing to the global food waste crisis.

 Solution: The app provides a platform for individuals to share their surplus food with others in their local community.

 How it Works: Users can easily post details of available food, and others nearby can view these listings and claim them through a simple interface.

 Technology Stack: The system is built with a **Flutter** frontend, a **Node.js** backend, and a **MongoDB** database for cloud storage.

 Unique Approach: Unlike other platforms that focus on commercial businesses, Home2Home targets surplus food at the household level, promoting a grassroots approach to sustainable living.

***Key Words*:** *food waste, food sharing, sustainable living, mobile application, community-driven, peer-to-peer*

1.INTRODUCTION

This project, titled "Home2Home: A Community-Driven App for Sustainable Living," introduces a platform designed to minimize household food waste through community-based food sharing. The core functionality of the system is to connect individuals within a local area to share surplus home-cooked food that might otherwise be discarded. Many current food donation platforms primarily focus on surplus from commercial entities like restaurants and supermarkets. Informal methods like social media groups lack structure, safety, and scalability. This application addresses the gap by providing an easy-to-use, structured, and safe platform specifically for sharing home-cooked meals, thereby fostering community responsibility and promoting sustainable food consumption.

2.RELATED WORK

The development of the "Home2Home" application is informed by an analysis of existing food sharing platforms and academic research in the domains of sustainability, peer-to-peer economies, and mobile technology. This review covers commercial applications, informal community efforts, and key findings from relevant literature to identify the research gap that this project addresses.

Existing Food Sharing Platforms

The digital food-sharing landscape is primarily composed of platforms that connect businesses to consumers (B2C).

- **Commercial Surplus Apps:** Popular applications such as **Olio** and **Too Good To**

Go have successfully created marketplaces for commercial entities like restaurants, cafes, and supermarkets to sell or give away surplus food that would otherwise be discarded. While effective at reducing commercial food waste, their model does not primarily facilitate the sharing of surplus food between individual households (peer-to-peer).

- **Informal Community Channels:** In many communities, food sharing occurs through informal, non-dedicated channels like

- **WhatsApp groups or social media pages**. These methods, while accessible, suffer from significant drawbacks. They are generally not scalable, lack a dedicated structure for posting and claiming items, and present several risks. Key limitations include:
- **Food Safety and Trust:** There is high uncertainty regarding the hygiene of food from unknown sources, and users are often hesitant to accept items from strangers due to a lack of trust-building mechanisms.
- **Coordination and Scalability:** These informal groups lack real-time update and claiming features, leading to confusion about food availability. They are also difficult to manage as the community grows.
- **Privacy Risks:** Sharing information in these groups can expose personal details to a large, unverified audience without proper privacy controls

2.1 Literature Review

Research highlights the need for digital platforms to facilitate hyper-local sharing of surplus home-cooked food to reduce household waste. Studies show that for such applications to be widely adopted, factors like trust, simplicity, and transparency are critical. A review of existing literature indicates a lack of scalable solutions specifically targeting leftover food sharing within local communities. Smith, J. (2021) found that mobile applications increase awareness and participation in food sharing but often focus on urban areas. Hernandez, M., & Singh, A. (2022) emphasized that trust-building mechanisms like user reviews are vital for the safety of food-sharing platforms. By enabling real-time information sharing, such apps can minimize waste and strengthen social bonds

S.NO	Title and Authors	Technology Used	Key Findings	Limitations
1	Mobile Applications for Reducing Food Waste: A Community Approach *Smith, J. (2021)*	The technology highlighted in the study is mobile applications (apps).	The use of these apps demonstrated an increase in both awareness and participation in food sharing initiatives	Focuses mainly on urban populations, limiting applicability in rural settings. Does not address user trust or food safety concerns extensively.
2	Trust and Safety in Peer-to-Peer Food Sharing Platforms *Hernandez, M., & Singh, A (2022)*	Peer-to-Peer Food Sharing Platforms. The specific technological mechanisms investigated to build trust include:	Trust-building mechanisms like user reviews, verification, and moderation can be investigated to improve the safety of food-sharing platforms.	High cost and complexity to maintain moderation. Potential for misuse or food safety risks remain.
3	Digital Platforms for Food Redistribution: Challenges and Opportunities Lee, K., et al. (2020)	The technology discussed is digital platforms for food redistribution. The text does not specify the exact type of platforms (e.g., mobile apps, websites)	Digital platforms can streamline food redistribution, improve accessibility, and reduce waste.	Relies heavily on internet access and smartphone penetration, excluding underprivileged users. Limited discussion on handling perishable food items
4	User Experience and Adoption of Food Sharing Apps: A	The technology studied is Food Sharing Apps. The provided text does	The primary factors affecting user adoption of these apps are ease of use, trust, and social	Limited sample size; results may not generalize across cultures or

	Behavioral Study *Johnson, P., & Baker, R (2019)*	not specify which particular apps or platforms were analyzed	influence.The research provides specific design recommendations to help increase user engagement.	demographics.
5	Designing Inclusive Food Sharing Platforms for Vulnerable Populations *Alvarado, J., & Thomas, M. (2022)*	The research focuses on Food Sharing Platforms, specifically food sharing apps. Key technological considerations include	Food sharing apps can be designed with accessibility features and inclusive principles to better reach marginalized groups.	Implementation complexity increases with inclusivity features; requires additional resources

2.2 EXISTING SYSTEM AND DISADVANTAGES

Currently, popular food-sharing apps like Olio and Too Good To Go primarily connect businesses with consumers, not households with each other. Food sharing in communities often relies on informal channels such as WhatsApp groups or social media, which are not scalable and lack structure. These methods suffer from several disadvantages:

- **Food Safety Concerns:** There is uncertainty regarding the hygiene and preparation standards of home-cooked food from unknown sources.
- **Trust Issues:** Users may be hesitant to accept food from strangers due to fears of poor quality or contamination.
- **Lack of Real-Time Updates:** Informal methods often lack real-time claiming mechanisms, leading to confusion about food availability.
- **Privacy Risks:** Sharing information in informal groups can lead to privacy issues, as users may not want to share details with strangers without proper verification

3. PROPOSED SYSTEM

The proposed system is a mobile and web-based application that provides a structured, user-friendly platform for sharing surplus home-cooked food at the household level. The architecture is designed to be scalable and secure. The frontend is a cross-platform application built using Flutter. The backend is powered by Node.js, and the system utilizes MongoDB for data storage. Users can post details of leftover food, including type, quantity, and pickup time, while others nearby can browse and claim these listings easily. The system includes key modules for user authentication, food posting, notifications, and claim management to ensure trust and safety.

System Architecture:

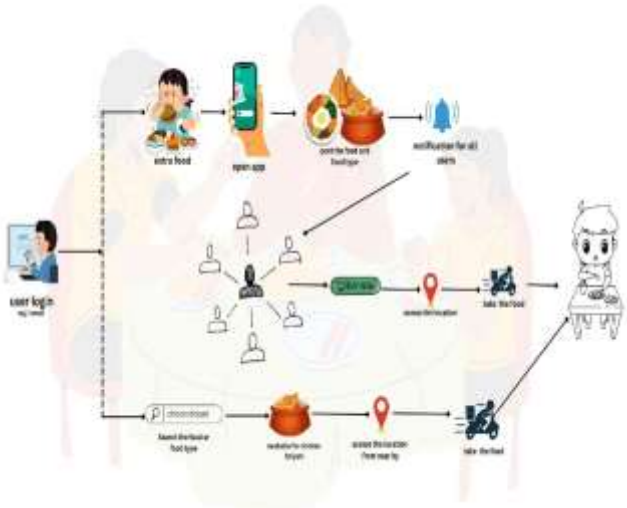

Fig No:01

User Flow Explained:

- **The Giver:** A user with extra food opens the app, posts the food details (type, photo, quantity), and notifies other users in the area.
- **The Taker:** A user in need can either search for a specific food type or browse available listings nearby. They can then access the giver's location to pick up the food

4. SYSTEM MODULES

The application is comprised of several key modules to ensure smooth functionality:

- **Authentication & Authorization:** Handles secure user login and sign-up with options like email, phone, or Google. It uses JWT tokens and OTP for security.
- **Food Posting Module:** Allows users to quickly upload food details with a description, photo, quantity, and a geo-tagged location for easy discovery by others.
- **Search & Claim Module:** Displays nearby food listings based on the user's GPS location. Users can filter results and claim available food with a simple one-click system.
- **Notifications & Messaging:** Sends real-time alerts for new food listings, claim confirmations, and pickup reminders. It also includes a chat feature for users to coordinate pickups.
- **Admin Module:** Provides oversight for platform activity, allowing administrators to manage user accounts and moderate content to ensure community safety.

4.1. Advantages

The proposed system offers several advantages:

- **Reduces Food Waste:** The primary benefit is preventing surplus home-cooked meals from being discarded, which promotes efficient resource use and supports environmental sustainability.
- **Helps the Needy:** It creates a community-driven food distribution system, giving vulnerable groups like low-income families, students, and the elderly access to free meals in their neighborhood.
- **Builds Community Bonding:** The act of sharing meals encourages neighbors to interact and support one another, which fosters trust and strengthens social relationships

5. USER INTREFACE

Fig No:02 – login page

The user interface of the "Home2Home" application was designed to be intuitive, welcoming, and focused on the core mission of food sharing. The following sections detail the functionality and design of two key interfaces: the user authentication screen and the main user dashboard.

➢ **Next page**

Fig No:02 Welcome page

Personalization and Confirmation: The dashboard provides immediate positive feedback. A personalized welcome message (**"Welcome back, dhinesh!"**) makes the user feel recognized. A success notification ("Successfully Logged In!") confirms that the authentication process was completed correctly, assuring the user that the app is functioning as expected.

Focused Call to Action: The most prominent feature on this screen is the **"+ Share Food"** button.

This action is also duplicated as a Floating Action Button (+) in the bottom-right corner. This deliberate redundancy ensures that the app's main purpose is clear and accessible from the moment the user logs in.

 Minimalist Design: The interface is intentionally uncluttered. By removing distracting elements, the design directs the user's entire focus to the central task of sharing food. This minimalist approach supports the project's goal of creating a simple, efficient, and purpose-driven user experience.

- **Post on extra food**

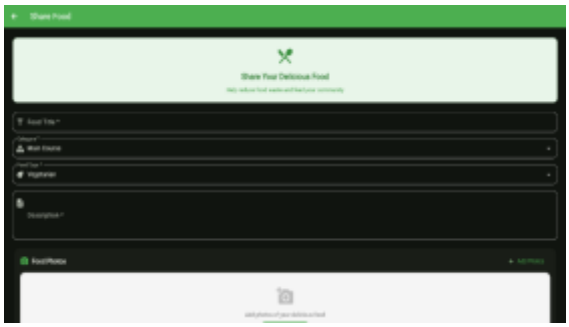

Fig No:03 – Post page

The core functionality of the "Home2Home" application is enabling users to easily share their surplus food. The Food Posting Interface, shown in Figure 3, provides a structured and intuitive form for users to list items, ensuring that all necessary information is captured clearly and efficiently.

6. CONCLUSIONS

The Footstep Energy Generator is a practical and eco-friendly project that converts wasted mechanical energy from footsteps into usable electricity. It is cost-effective, portable, and scalable, making it suitable for smart cities and sustainable energy applications. By using piezoelectric sensors, the project shows how small actions like walking can help save energy and promote a cleaner environment.

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BIOGRAPHIES (Optional not mandatory)

E. Aksha Pricilda Reena is working as an Assistant Professor at Kongunadu College of Engineering and Technology, with six months of teaching experience. She pursued her Bachelor of Technology – Information Technology at JJ College of Engineering and Technology in 2012. Subsequently, She pursued her Master of Engineering with a Specialization in VLSI Design at Asan Memorial College of Engineering and Technology in 2014.

Muthukumarasamy S is a dedicated student in the Department of Information Technology. As a key contributor to the "Home2Home: A Community-Driven App for Sustainable Living" His expertise lies in database management, particularly with NoSQL databases like MongoDB, and server-side development using Node.js. He is focused on ensuring data security and privacy in community-driven platforms.

Sriram N is currently pursuing a Bachelor of Technology in Information Technology. His primary interests include mobile application development with Flutter and building scalable backend systems. "Home2Home: A Community-Driven App for Sustainable Living" He is passionate about using technology to create solutions for social and environmental problems, with a focus on sustainable living

Jayaveeran K is an undergraduate student specializing in Information Technology. "Home2Home: A Community-Driven App for Sustainable Living" .He has a keen interest in user interface (UI) and user experience (UX) design, aiming to create intuitive and accessible applications. His contribution to this project focused on designing a user-friendly frontend to encourage community participation