



Food Donation and Redistribution Platform

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Abstract:

This project presents the design and implementation of a web-based Food Donation and Redistribution Platform that connects food donors (restaurants, cafes, households) with receivers (NGOs, shelters, animal-feeding groups). Donors can post available food listings (type, quantity, best-before time, pickup address — provided at signup) and receivers browse and filter listings based on proximity, food type, quantity and urgency. A smart matching system suggests suitable donors using geographic proximity (Google Distance Matrix API), food preferences and listing urgency. The backend is implemented in Python using Flask and Flask-SQLAlchemy with minimal necessary tables; the frontend is a clean, lightweight React (or vanilla Node.js/HTML/JS) UI. The platform aims to reduce food waste and quickly route surplus food to organizations that can use it.

Index Terms - Food donation, redistribution, Flask, SQLAlchemy, Google Distance Matrix API, React, matching system

I. INTRODUCTION

Food waste and food insecurity coexist in many urban environments. Restaurants, events, and households often have surplus food that needs redistribution. This project proposes a straightforward web platform that makes donation posting, discovery, and pickup coordination simple and efficient for both donors and receivers. The platform bridges the gap between food donors and organizations in need by enabling transparent communication and timely pickups. It also creates a sustainable ecosystem that encourages community participation and reduces the burden on landfills.

II. RESEARCH METHODOLOGY

This study adopts a design-based research approach to develop a Food Donation and Redistribution Platform. The system follows agile development with iterative planning, development, testing, and refinement. The backend uses Flask with SQLAlchemy, while the frontend is implemented using HTML, CSS, and JavaScript (React). SQLite or PostgreSQL stores user and listing data. Distance Matrix API integration enables calculation of donor-to-receiver proximity.

III. KEYWORDS

Food donation, Redistribution, Flask, SQLAlchemy, Google Distance Matrix API, React

IV. RESULTS AND DISCUSSION

The Food Donation and Redistribution Platform was tested with donor and receiver accounts. Donors successfully created listings with food details and receivers browsed listings with distance calculations from their location. Requests were placed and accepted through dashboards. The system achieved smooth navigation and fast response times.

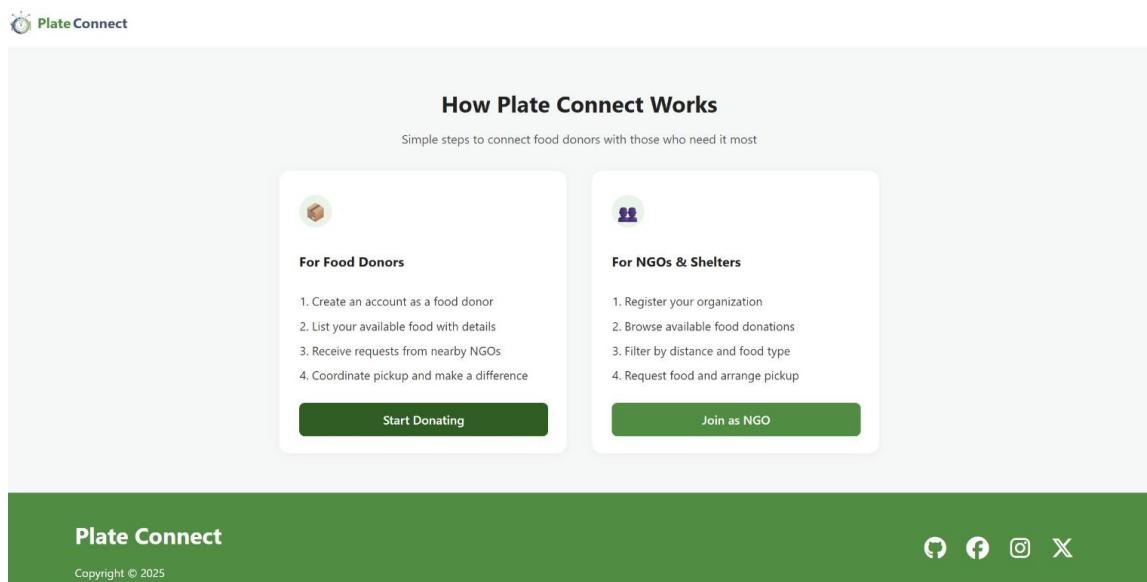


Fig 4.1:Overview of Website

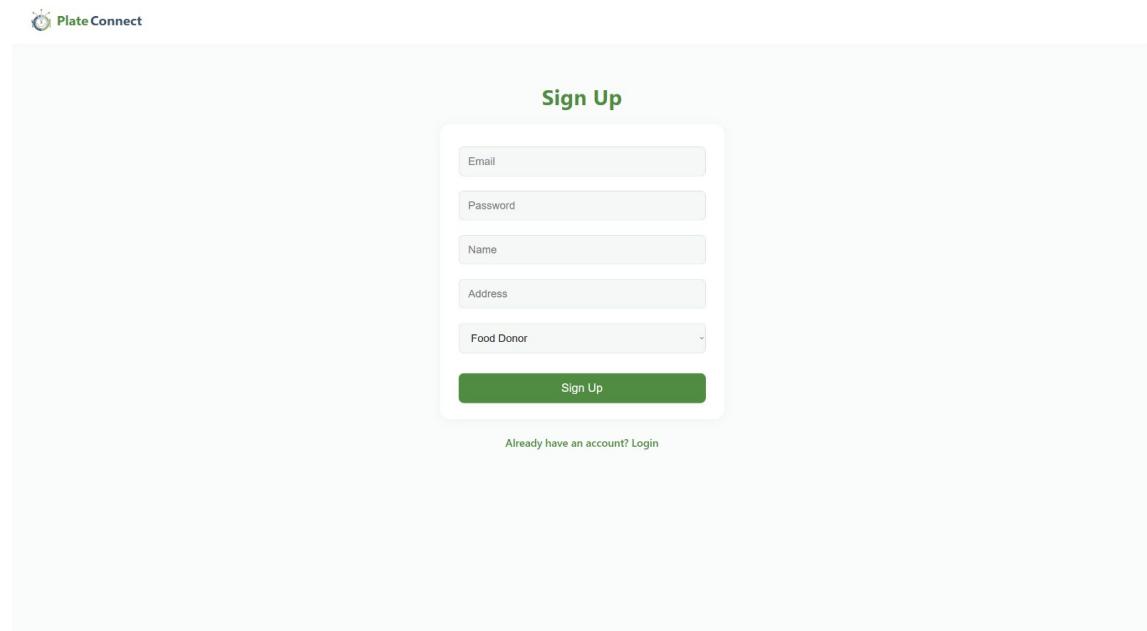


Fig 4.2:Sign Up Page

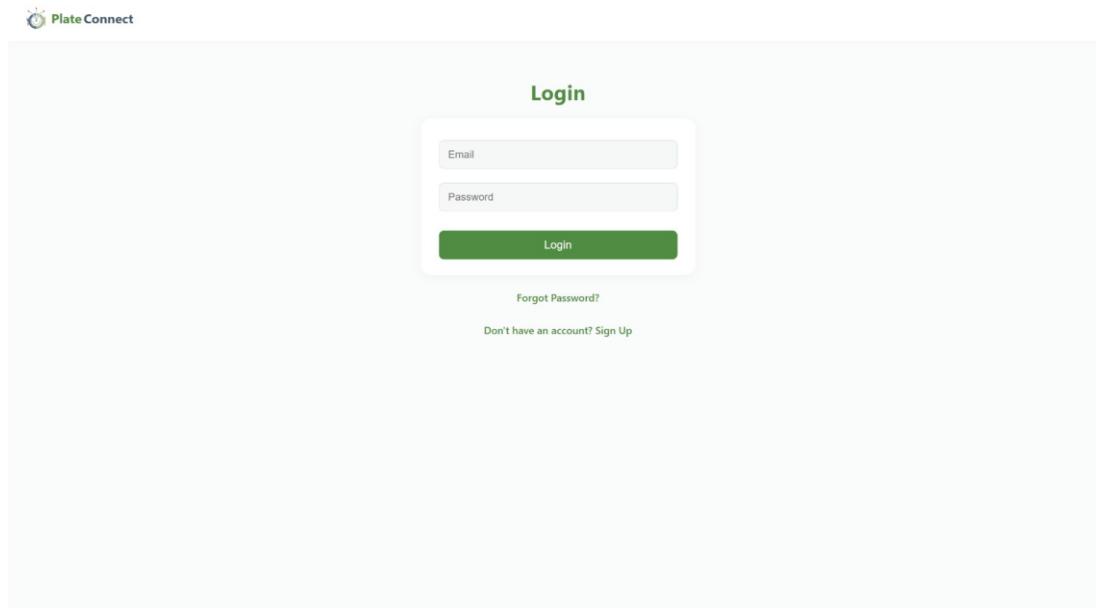


Fig 4.3:Login Page

A screenshot of the Plate Connect Donor Dashboard. At the top left is the Plate Connect logo, and at the top right is a "Logout" link. The main title "Donor Dashboard" is centered above a sub-header "Manage your food donations and help reduce waste". Below this are three navigation links: "My Listings", "Create Listing" (which is underlined), and "Pickup Requests". A large central form is titled "+ Create Food Listing" and contains four input fields: "Food Type" (example: Fresh vegetables, Prepared meals), "Quantity" (example: 5kg, 20 portions), "Description" (example: Describe the food items, cooking date, ingredients, etc.), and "Best Before (Hours from now)" (example: 6). A green "Create Listing" button is at the bottom of the form. At the bottom of the dashboard is a green footer bar with the "Plate Connect" logo and social media icons for Facebook, Instagram, and Twitter.

Fig 4.4:Donor Dashboard


[Logout](#)

The screenshot shows the 'NGO Dashboard' interface. At the top, there's a header with the Plate Connect logo and a 'Logout' link. Below the header, the title 'NGO Dashboard' and a subtitle 'Browse available donations and track your pickup requests' are displayed. There are two tabs: 'Available Donations' (which is selected) and 'My Requests'. A dropdown menu for 'Sort by' is set to 'Default'. The main content area shows a single food item: 'Carrots'. The details for 'Carrots' include: weight '5 kg', condition 'Good', best before date '6/08/2025', and donor 'Adyan'. There are buttons for 'Request Pickup' and 'View Details'.



Fig 4.5 Donor Food Entry

V. CONCLUSION

The **Food Donation and Redistribution Platform** provides a practical and technology-driven solution for reducing food waste while promoting community welfare. It enables donors to easily list available food items and allows receivers, such as NGOs, shelters, or individuals, to be smartly filtered and matched based on location, food type, and urgency. The platform ensures efficient coordination between donors and recipients, minimizing delays and food spoilage. Additionally, it is highly scalable and can be further enhanced with features such as mobile applications, advanced analytics for impact tracking, automated notifications, and AI-powered recommendations, making it a comprehensive tool for sustainable food distribution.

VI. REFERENCES

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