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LeftOver Link: A Smart Web-Based System for Geo-Tagged Food Redistribution in Local Communities

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Abstract- Food wastage and hunger are two major social problems that coexist in today's world. Large amounts of edible food from households, restaurants, and social events are discarded daily, while many individuals lack access to basic meals. LeftOver Link – Smart Food Redistribution in Locality is a web-based platform designed to bridge this gap by connecting food donors with nearby NGOs or individuals in need. The system enables users to list leftover food by providing details such as food type, quantity, and preparation time. Geo-tagging using Google Maps API allows the platform to identify the donor's location and notify nearby receivers in real time. Registered receivers can instantly view, claim, and collect available food before it gets spoiled. The platform also includes user authentication, notifications, and a feedback mechanism to ensure transparency and trust among users. By digitizing and automating the food donation process, LeftOver Link minimizes delays caused by manual coordination and improves redistribution efficiency. The proposed system promotes community participation, supports hunger relief efforts, and encourages responsible food management. Overall, the project demonstrates how web technologies can be used effectively to address real-world social challenges and create a sustainable, socially impactful food-sharing ecosystem.

Keywords: (Food wastage, food redistribution, geo-tagging, web application, sustainability)

I. INTRODUCTION

Food Wastage Is A Serious Global Issue Affecting Economic Stability, Environmental Sustainability, And Social Equality. In Urban Localities, Surplus Food From Homes, Restaurants, And Events Is Often Wasted Due To The Absence Of A Quick And Organized Redistribution Mechanism. At The Same Time, Many People Depend On Food Donations For Survival. The Lack Of Coordination Between Food Donors And Receivers Results In Food Spoilage And Missed Opportunities To Reduce Hunger. Leftover Link Aims To Solve This Problem By Providing A Centralized, Technology-Driven Platform For Real-Time Food Sharing.

The Website Enables Donors To Post Details Of Leftover Food Along With Their Location, Making The Information Instantly Accessible To Nearby Receivers. By Using Geo-Location And Notification Features, The System Ensures Faster Communication, Reduced Wastage, And Effective Food Utilization. The Project Highlights The Role Of Web Applications In Addressing Social Challenges Through Smart And Scalable Solutions.

II. LITERATURE REVIEW

Several studies have addressed the problem of food wastage using digital platforms and mobile applications. In [1], the authors analyze strategies to combat food waste in the digital era, emphasizing usability, incentive mechanisms, and scalability as key success factors for food-sharing platforms. However, the study focuses more on conceptual frameworks and lacks real-time implementation details.

Mathisen et al. [2] evaluate smartphone applications designed to reduce food waste in households and retail environments. Their findings indicate measurable reductions in waste and improved meal planning through mobile interventions. Despite promising results, the study highlights limited integration of location-based food redistribution.

Research by Almeida, da Silva, and Monteiro [3] explores multiple food-waste-reduction platforms and identifies cloud computing and IoT as enabling technologies. While the work demonstrates the potential of digital tools, it also reports challenges

related to adoption complexity and infrastructure dependency.

Fracascia and Nastasi [4] investigate consumer willingness to use mobile applications for food waste reduction using acceptance models. Their results show that perceived usefulness and ease of use significantly affect adoption. However, the study does not address real-time donor–receiver coordination.

Dhore [5] presents a web-based food donation portal that enables individuals and NGOs to donate and collect leftover food. The platform uses standard web technologies but lacks advanced geo-location-based matching and notification mechanisms.

Yadav et al. [6] propose a mobile application connecting NGOs and donors using Firebase-based architecture. The system demonstrates improved communication efficiency but is limited to organizational-level coordination rather than locality-based redistribution.

Nair et al. [7] focus on food rescue and delivery optimization using routing algorithms to improve pickup and delivery operations. Although the approach improves logistical efficiency, it assumes structured organizations and does not support spontaneous local food sharing.

Ranibari et al. [8] examine digitally enabled food-sharing algorithms and their role in reducing food waste through web-based systems. The study highlights the importance of technology adoption and system design but does not provide a complete end-to-end redistribution framework.

1. User Registration and Authentication

Users register on the platform by providing basic details such as name, email, and role (donor or receiver).

Authentication mechanisms ensure secure access to the system. Role-based access control is implemented so that donors and receivers interact only with relevant functionalities.

2. Food Listing Process

Donors can create a food listing by entering details including food type, quantity, preparation time, and expiry time. Upon submission, the system captures the donor's geographical location using a geo-tagging API. Each listing is stored in the database with a status indicator (available, claimed, or expired).

3. Geo-Tagged Matching Mechanism

The system retrieves all active food listings and filters them based on proximity to the receiver's location.
Distance-based filtering ensures that only nearby food donations are displayed to receivers, reducing response time and minimizing food spoilage.

4. Claim and Notification Workflow

Receivers can view available food listings and claim a donation in real time. Once a claim is made, the system updates the food status and sends notifications to both donor and receiver. This prevents multiple claims for the same food item and ensures coordinated pickup.

III. METHODOLOGY/EXPERIMENTAL

System Design and Methodology

The methodology of the proposed LeftOver Link system focuses on designing a web-based food redistribution platform that enables efficient, location-based coordination between food donors and receivers. The system follows a modular, service-oriented approach to ensure scalability, reliability, and ease of use.

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5. Feedback and Status Update

After successful food collection, the receiver confirms completion through the system. Feedback is recorded to validate successful redistribution and improve trust among users. Listings that exceed expiry time are automatically marked as expired.

6. Data Storage and Management

All user data, food listings, and transaction records are stored in a centralized database. Proper data validation and time-based checks are implemented to maintain data integrity and system reliability.

IV. RESULTS AND DISCUSSIONS

The Developed Website Successfully Demonstrates Real-Time Food Listing And Location-Based Matching Between Donors And Receivers. Notifications Reduce Response Time, Ensuring Food Is Collected Before Spoilage. The Feedback System Improves Reliability And User Trust. The Interface Is Simple, Responsive, And Easy To Use, Making The Platform Suitable For Community Adoption.

The System Can Be Enhanced By Developing A Dedicated Mobile Application For Faster Access. Integration With Ngos, Municipal Corporations, And Food Banks Can Enable Large-Scale Deployment. Additional Features Such As Analytics Dashboards, Food Expiry Prediction, And Multilingual Support Can Further Improve Usability And Impact.

V. FUTURE SCOPE

The proposed system can be further enhanced by developing a dedicated mobile application to improve accessibility and enable real-time food listing, notifications, and location-based navigation. Data analytics and machine learning techniques can be incorporated to analyze user behavior and predict food demand, thereby optimizing redistribution and reducing food spoilage. Food safety can be improved through expiry-time tracking and basic quality verification mechanisms. Additionally, integration with registered NGOs and municipal authorities can facilitate large-scale and organized food redistribution. Cloud-based deployment can be adopted to improve scalability, reliability, and system performance across multiple localities.

VI. CONCLUSION

LeftOver Link provides a smart, reliable, and socially responsible solution to reduce food wastage and fight hunger. By leveraging web technologies and geo-location services, the platform enables efficient, real-time food redistribution within local communities. The project demonstrates how technology can be used not only for convenience but also for creating meaningful social change.

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