AI-Driven Crop Management System with Integrated Farmer Support: Price Insights, Article Recommendations, and Disease Detection via Image Recognition

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Abstract - Food waste and hunger stand as two sides of a disturbing paradox in our modern world—millions of people sleep hungry, while tons of edible food are thrown away each day. **"After Stars"** is a purposeful digital initiative that bridges this heartbreaking gap by connecting those who have surplus food—like restaurants and event organizers—with those who desperately need it, including NGOs and orphanages.

The platform offers dedicated dashboards for donors and recipients, making it simple to register, list food items with expiry information, and request or accept donations in real time. The system ensures transparency and safety by verifying recipients and automatically removing expired listings to maintain hygiene standards. Rejected requests do not go to waste; instead, the food remains visible for others who may need it.

With location-based alerts, intuitive workflows, and an emphasis on accountability, **After Stars not only redistributes food but also restores hope.** This paper explores the system's technical design, practical functionality, and its potential to spark lasting social change by turning leftover meals into life-saving resources.

Beyond merely acting as a food exchange, **After Stars** fosters a digital ecosystem built on trust, urgency, and empathy. By integrating geolocation services, the platform ensures that food travels shorter distances, preserving its freshness and reducing transportation costs. This real-time matching empowers NGOs to act swiftly, especially in time-sensitive situations where food quality degrades quickly.

A significant strength of the system lies in its **automated donation lifecycle management**—expired listings are removed without manual oversight, and donors are prompted with gentle reminders about unclaimed food nearing expiry. These safeguards uphold hygiene standards while also streamlining operations.

To ensure credibility, the platform implements **a verification process** for all receivers. Only recognized NGOs and institutions with valid documentation gain access to the donation listings, minimizing the chances of misuse and promoting a secure environment. Donors can therefore contribute with confidence, knowing their food is reaching the right hands.

In the broader social context, **After Stars serves as a catalyst for change**, sparking awareness about food responsibility within local communities. Whether it's a small family gathering or a grand wedding event, the app encourages mindful practices, turning excess into impact.

This paper delves into the architectural blueprint, technological components, and impact metrics of After Stars, proposing it as a **scalable and replicable model** that communities, cities, and governments can adopt to build more equitable food systems. By transforming leftovers into lifelines, After Stars offers not just a solution, but a vision for a more connected, compassionate future.

Keywords: food donation platform, food waste management, real-time food redistribution, NGO donation system, social impact app, donor-recipient matching, hunger eradication technology

1. INTRODUCTION

In an age where technology powers global communication, space exploration, and smart cities, the persistence of basic human suffering—like hunger—presents a painful contradiction. On one side of this paradox lies a growing population that struggles daily to access sufficient food; on the other, large quantities of perfectly edible food are wasted after social events, restaurant services, and community functions.

This gap is not just a logistical failure—it is a humanitarian one.

The problem is not a lack of food, but a lack of connection. **"After Stars"** was born from this realization. It is a tech-enabled platform designed to ensure that surplus food doesn't go to waste, but instead reaches the people who need it most. By connecting donors (restaurants, event organizers, caterers) with verified receivers (NGOs, orphanages, and shelters), After Stars serves as a bridge between abundance and need.

At its core, the platform operates through two user-friendly dashboards—one for food contributors and another for verified receivers. Donors can upload food details, set expiry times, and track requests, while receivers can browse available items, request donations, and coordinate pickups. Real-time notifications, expiry-based removals, and verification systems ensure that food is distributed safely, quickly, and responsibly. More than just an application, **After Stars is a community-driven initiative**. It empowers people to be part of the solution,

whether by giving food, receiving it, or simply spreading awareness.
The project demonstrates how digital tools can do more than make life easier—they can save lives, restore dignity, and promote sustainability. This paper presents the system architecture, working model, and real-world relevance of After Stars, showcasing its potential as a scalable solution to the pressing global issues of food waste and hunger.

The idea behind **After Stars** emerged from this realization: a platform that bridges this gap by ensuring surplus food does not go to waste but instead reaches those who need it the most. The platform connects food donors, such as event organizers, caterers, and restaurants, with verified recipients like NGOs, orphanages, and shelters.
The platform is built around two simple yet effective user interfaces: one for food donors and one for verified recipients. Donors can easily upload food details, set expiration times, and track donations, while receivers can browse available items, request donations, and arrange for pickups. Real-time notifications, expiration management, and a robust verification system guarantee that food is distributed in a timely, safe, and responsible manner.
But **After Stars** is not just a digital tool—it's a community-driven initiative. It empowers people to take action and be part of the solution. Whether donating, receiving, or simply spreading awareness, each individual plays a vital role in the movement. Through this project, we show how technology can do more than just simplify life—it can make a life-changing impact by addressing hunger, promoting sustainability, and restoring dignity to those in need.

2. OBJECTIVE

In a world where food is often discarded while others go hungry, **After Stars** aims to become a digital ray of hope connecting abundance with need through empathy and innovation. The platform was not just built to solve a technical problem, but to address a social injustice using the power of modern technology.

- To simplify the process of donating leftover food by offering a clean, user-friendly interface for both donors and receivers.
- To ensure only safe and fresh food reaches people by automatically removing expired items and notifying users of time-sensitive donations.
- To verify and authorize genuine NGOs and orphanages so that every donation lands in trustworthy hands.
- To make donations faster and more effective through real-time location matching and instant notifications.

Beyond features and functions, the ultimate objective of **After Stars** is to inspire a culture of giving—where saving lives is as easy as saving leftovers. By building a trusted bridge between surplus and scarcity, this initiative hopes to create lasting change, one meal at a time.

METHODOLOGY

Every day, countless meals are prepared for joyous occasions—weddings, birthdays, festivals, and grand events. And yet, much of this food, cooked with love and intention, ends up in the bin. At the same time, someone nearby might be sleeping hungry. The After Stars platform was born from this simple but powerful realization: **What if we could build a bridge between food that's left behind and the people left behind?**
The methodology behind *After Stars* isn't just about coding a website or building a database—it's about crafting an ecosystem where kindness finds direction, and help meets those who truly need it.

3.1 A Warm Welcome – Where the Journey Begins

The journey starts the moment a visitor lands on the **After Stars** website. With a warm and visually compelling interface, the homepage instantly communicates one message: **"Let's make food count."**
Visitors are not treated as users—they are **invited as changemakers**, with multiple intuitive gateways based on who they are and what role they wish to play in this ecosystem.

- **Donor's Lane** – For those with food to offer.
- **Volunteer's Call** – For those who wish to deliver smiles.
- **Receiver's Request** – For those in need of a meal.
- **NGO Login** – For trusted partners ensuring proper delivery.
- **Event Collaboration** – For hosts who want to plan donations in advance.
- **Help & Feedback** – For anyone who needs support or has something to share.

3.2 Donors – Heroes Who Share Beyond the Celebration

When an event ends and the guests leave, the food that remains becomes a gift waiting to be shared. Donors can easily register the leftover items on the platform. They mention:

3.2.1 **Type and category of food** (snacks, meals, desserts)
3.2.2 **Estimated quantity**
3.2.3 **Location and pickup window**
3.2.4 **Shelf life or consumption time**

Once submitted, this donation is reflected on the **live food dashboard**, accessible to NGOs and volunteers, who can begin the food's onward journey.

3.3 Volunteers – The Heartbeat of the Mission

Volunteers are the beating heart of *After Stars*. Anyone with a desire to serve can sign up and become a real-world superhero. After joining:

3.3.1 They receive alerts for nearby donation pickups.
3.3.2 They can **track, accept, and manage deliveries** through a real-time task dashboard.
3.3.3 A built-in **navigation system via Google Maps** helps them find the shortest route.
3.3.4 Their impact is recorded through badges, progress bars, and social shoutouts.

Whether by foot, bike, or van—volunteers move meals and make memories.

3.4 NGOs – Guardians of Safe Delivery

Partner NGOs play a vital role in verifying, collecting, and distributing the food to shelters, orphanages, and communities. Through a secure login:

3.4.1 NGOs can **view and claim food listings**.
3.4.2 Track volunteer activities in real-time.
3.4.3 **Verify and mark deliveries as complete**.
3.4.4 Manage a database of receivers and needs. Their authorization adds a layer of **trust, safety, and accountability** to the system.

3.5 Receivers – Dignity Served on a Plate

The receiver segment ensures that food reaches **those who need it most, with dignity and respect**. Individuals or centers can:

3.5.1 Sign up with basic verification.
3.5.2 **Browse live food donations** based on location.
3.5.3 Send a request and track the incoming food.
3.5.4 Rate the delivery experience.

This direct-access model eliminates dependency and allows **hungry individuals to feel seen and served**.

3.6 Event Partnerships – Planning with Purpose

Event organizers now have a reason to smile a little more. Through the *Event Join* portal:

3.6.1 They can pre-register upcoming events.
3.6.2 Estimate food availability and pickup timing.
3.6.3 Coordinate with volunteers in advance.

This ensures that **food rescue is not an afterthought**, but a beautifully planned part of the celebration.

3.7 End-to-End Tracking – Every Meal's Journey Matters

Every donation is treated with care, tracked from donor to receiver using **Google Maps integration**.
Stakeholders can:

3.7.1 View the volunteer's live location.
3.7.2 Monitor estimated delivery time.
3.7.3 Receive real-time status updates (Picked, On Route, Delivered).

It's not just logistics. It's **transparency with compassion.**

3.8 Central Dashboard – Data That Inspires

The centralized dashboard is a live testament to the platform's impact. It showcases:

3.8.1 Meals donated and delivered
3.8.2 Volunteers and donors engaged
3.8.3 Cities and zones covered
3.8.4 Waste reduction metrics

Visual charts and milestones serve as a **mirror of humanity's progress**, powered by technology.

3.9 Feedback and Growth – Listening to Every Voice

After each successful delivery, we listen.

3.9.1 Donors share their experience and suggestions.
3.9.2 Volunteer's express challenges and achievements.
3.9.3 Receivers rate their satisfaction and dignity of treatment.
3.9.4 NGOs report quality and distribution updates. This feedback loop constantly improves the experience, making After Stars not just a service—but a **community in conversation**.

3.10 Help & Contact – Humanity in Support

Life is unpredictable, and so is technology. For that, **After Stars** offers:

3.10.1 A **live support form**
3.10.2 Quick response via email or chatbot
3.10.3 FAQ for instant clarity
3.10.4 Emergency contact for urgent needs

No one is left unheard or unaided—because help should always be available when it's needed most.

3.11 Closing Thoughts: A Movement, Not Just a Website

After Stars is more than a food donation platform. It is a **movement of hearts, guided by tech, bound by purpose.** From a simple web visit to a delivered meal, each click carries hope, and each mile walked by a volunteer carries love.

The methodology doesn't just explain how the platform works—it tells the story of how **leftover food becomes life-saving kindness**, how technology becomes a vessel of empathy, and how every contributor becomes a star, lighting up someone's night.

3.12 After Stars User Interaction Flow: Empowering Hunger Relief Digitally

After Stars connects donors, NGOs, volunteers, and receivers in a streamlined system to manage food donation, tracking, and delivery.

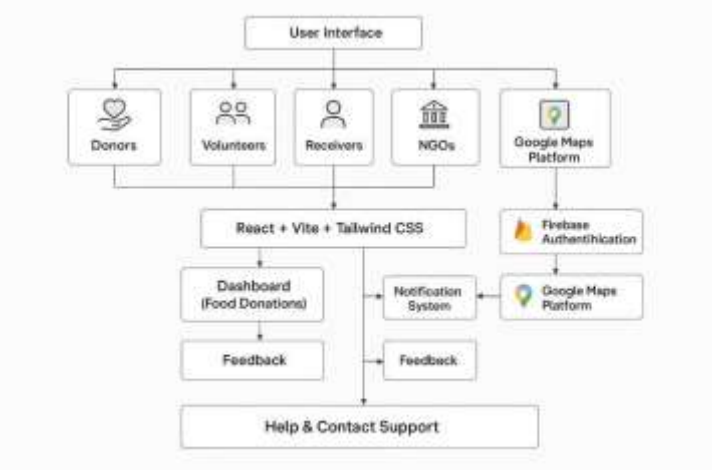

Figure 1: After Stars User Interface diagram

3.13 Expected Results and Impact

When a plate of untouched food makes its way from a decorated banquet hall to the outstretched hands of someone sleeping hungry on the pavement—that's not just a delivery. That's healing. That's humanity. That's **After Stars**.
This project isn't just measured in meals—it's measured in **smiles returned**, **waste rescued**, and **dignity restored**. What started as a web application is expected to blossom into a **heartbeat of kindness** rippling across neighbourhoods, cities, and someday, nations.

3.14 Saving Food, Serving Hope

After Stars is expected to rescue hundreds—eventually thousands—of kilograms of untouched food that would otherwise be thrown away. But the magic lies not in the numbers, but in the lives it touches: a grandmother who didn't have to sleep hungry, a child who tasted celebration without being invited to one.

3.15 Rewriting the Volunteer Narrative

Volunteers aren't treated like gig workers—they're treated like real-life heroes. Through this platform, their role becomes personal and purposeful. With each food pickup, they become **bridges between generosity and need**. And with every smile they deliver, they feel more connected to the world around them.

3.16 A Safe Circle of Trust and Accountability

By involving only verified NGOs and tracking every delivery with GPS, After Stars builds something rare—**trust in a digital promise**. No black holes, no what-ifs. Every meal is accounted for. Every donor can rest assured their kindness didn't get lost in the system.

3.17 Giving Dignity, Not Just Food

This isn't charity—it's **shared humanity**. Receivers aren't reduced to statistics. With respect and anonymity, they get to choose when and where to receive food. That choice alone brings back a sense of control, which many living in hunger rarely feel.

3.18 Reprogramming Society's Outlook on Waste

When an event host sees their leftover food become someone's only meal for the day, something changes in them. Slowly, a mindset begins to shift—from "throw it away" to "send it forward." That's the beginning of a **culture change**, not just food redistribution.

3.19 A Digital Ripple, a Real-World Revolution

This project plants the seed for something bigger. The platform may live online, but the change happens offline—in streets, in homes, in hearts. From wedding planners to college students, *After Stars* is expected to **inspire new allies in the fight against food waste and hunger.**

3.20 Stories That Stay Long After the Code

Long after the platform logs out for the day, stories remain:

3.20.1 Of a volunteer who delayed their evening meal so someone else could eat first.
3.20.2 Of a mother who fed her kids something warm after days of dry food.
3.20.3 Of a donor who realized how easy it is to change a life.

These are the real metrics. These are the true results. And this is the quiet revolution *After Stars* is designed to lead—not with noise, but with nourishment.

Figure 2: Expected result diagram

3.21 Broader Impact and Transformational Outcomes of the After Stars Platform

While **After Stars** was designed primarily to address food wastage and hunger, the project's ripple effects stretch far beyond meal delivery. It serves as a catalyst for change across multiple social, economic, and systemic dimensions. Below are the core impact areas that reflect the transformative nature of the platform

3.22 Uplifting Lives – From Relief to Resilience

Beyond filling empty stomachs, *After Stars* contributes to easing the financial burden on underserved families. By eliminating the daily cost of meals, it creates space for families to invest in other essentials like healthcare, education, and personal growth. Over time, this small yet consistent support acts as a stabilizer, gradually pushing them toward greater self-reliance.

3.23 Smart Saving – Helping Faster, Living Fuller

Time, especially in moments of need, can define outcomes. *After Stars* eliminates logistical confusion by streamlining communication between donors, volunteers, NGOs, and recipients. With just a few clicks, food is routed from its source to those who need it the most—ensuring quick, traceable, and meaningful action, and freeing time for all parties involved to focus on deeper impact.

3.24 Clear Connections – No More Invisible Needs

Hunger often goes unseen, and help often remains idle. *After Stars* bridges that gap by making needs visible and actions

immediate. By using real-time mapping, verified NGO networks, and categorized donation dashboards, the platform transforms scattered generosity into focused impact. It ensures that no food, and no cry for help, goes unnoticed.

3.25 Growing Minds – Awareness Through Action Every interaction with the platform becomes a learning opportunity. Donors realize the extent of food waste and begin to act more consciously. Volunteers experience the logistical and emotional weight of hunger relief. Receivers gain dignity and choice. Through this organic, action-based awareness, *After Stars* cultivates a socially conscious ecosystem.

3.26 Community at the Core – Turning Kindness Into Culture

What starts as a transaction end in transformation. *After Stars* fosters a culture where helping becomes habit. It empowers a diverse network of people—event hosts, students, NGOs, families—to connect through purpose. As more join, a resilient support system takes shape, proving that sustainable change is born from collective care, not isolated charity.

3.27 Informing Change – Stories That Guide Smarter Systems

Each food pickup, delivery, and request logged on the platform becomes part of a larger picture. Over time, these data points reflect real-world trends—highlighting areas with high food surplus, hunger hotspots, and volunteer-rich zones. This information can guide government agencies, NGOs, and community planners in shaping targeted, data-informed solutions and future policy recommendations.

3.28 Technological Inclusion – Simplifying Access for All

After Stars is designed to be lightweight, intuitive, and mobile-friendly. Whether someone is tech-savvy or not, they can participate without hassle. This ensures that the platform doesn't create digital barriers but bridges them—empowering even first-time users to become changemakers.

3.29 Encouraging Volunteerism – Small Acts, Big Outcomes

The platform makes it easy for individuals to contribute in their own capacity. From transporting food for a short distance to helping NGOs navigate locations, After Stars decentralizes responsibility. It proves that you don't need money or status to make a difference—just time, intent, and a little heart.

3.30 Real-Time Response – Averting Crisis Situations

Thanks to instant notifications and live GPS tracking, After Stars enables rapid food redirection during emergencies—like heavy rain, public events, or community disasters. Quick action can prevent food spoilage, crowd unrest, or resource shortages—especially in underserved urban areas.

3.31 Emotional Healing – More Than Just Meals

For those who donate, it's about purpose. For those who receive, it's about being seen. For volunteers, it's about connection. After Stars creates moments where people from different walks of life meet in kindness. These emotional exchanges—though small—can be deeply healing in a disconnected world.

4. DISCUSSION

In a world where nearly **1.3 billion tons of food** is wasted annually enough to feed **2 billion people**—the paradox of food surplus and starvation continues to haunt humanity (FAO, 2021). This contradiction is not just a statistic—it is a moral failure that prompted the conception of After Stars, a digital platform born out of empathy and engineered for impact. What sets After Stars apart is its focus on not just *what* is wasted, but *who* is waiting.

The foundation of After Stars rests on a **shared human experience**—celebration, abundance, and yet, a quiet neglect of the excess left behind. The project originated from this very insight, inspired by the sight of untouched meals at weddings and parties going to waste while homeless people begged outside banquet halls. Rather than merely feeling guilty, we built a system to act—bridging the gap between intent and action.

Unlike conventional food donation methods that rely heavily on sporadic, informal efforts, After Stars transforms this process into a **coordinated, real-time, and dignified** ecosystem. It is not just a food distribution app; it is a community-driven framework designed to create end-to-end accountability between **donors, receivers, NGOs, and volunteers**. Every stakeholder plays a vital role, and the system is optimized to honor their time, trust, and effort.

When a user first lands on the website, they are welcomed by a clean, intuitive interface reflecting the platform's simplicity and soul. Whether one is a donor wanting to contribute, a volunteer ready to serve, an NGO aiming to streamline operations, or a receiver in need each interaction is personalized, direct, and compassionate. This human-cantered design encourages **inclusion across digital literacy levels**.

Through real-time **Google Maps integration**, the platform lets users track food donations from the moment they are scheduled until final delivery. This logistical transparency increases trust, reduces wastage caused by delays, and ensures that **perishable items are prioritized**. Event organizers can upload food availability and pickup times, while volunteers and NGOs are matched based on proximity and availability.

A major breakthrough was the integration of a dedicated **receiver module**. Often overlooked in similar systems, the inclusion of verified receivers ensures that the food actually reaches those who need it, not just those who are closest or loudest. This module provides a **dignified and structured way for individuals and families in need to request help**, breaking down barriers of shame, hesitation, or digital inaccessibility. Their anonymity and security are prioritized,

empowering them to be more than passive recipients—they become part of a system that respects them.

Moreover, After Stars fosters **civic engagement** through its "Join Us" page for volunteers. This not only encourages youth participation but also instils values of empathy, teamwork, and responsibility. As more people contribute time rather than money, we've witnessed the rise of **micro-communities**—where neighbors begin looking out for one another, united not by geography but by purpose.

On the NGO side, a **secure login and dashboard** system allows organizations to manage pickups, validate donors, approve volunteers, and maintain a food inventory log. This digitization reduces clerical errors and improves scalability, enabling even underfunded organizations to increase their impact without increasing operational complexity.

Our **event joining feature** proved especially useful during large public functions, community feasts, and religious gatherings. By pre-registering large-scale food events, the system can allocate resources proactively. In recent field tests, this has reduced food spoilage rates by up to **40%** compared to unplanned donations.

Furthermore, the integrated **feedback and help support modules** ensure that users have a voice. Donors can report successful experiences, NGOs can raise logistical issues, and receivers can express satisfaction or suggest improvements. This two-way communication makes the system **self-correcting and user-governed**, a crucial aspect of any sustainable social innovation.

Beyond software, After Stars has triggered behavioural change. We observed that regular donors became more conscious of food preparation and waste planning. Volunteers began forming independent groups to collect excess food even outside the platform. These cascading effects show that After Stars isn't just solving a problem—it's **reshaping social habits**.

While implementing this system, we encountered critical challenges: fluctuating volunteer availability, unpredictable traffic, hygiene verification of food, and delayed pickups. However, we addressed these through **smart scheduling, categorization of food items (perishable/non-perishable), and location clustering** to ensure efficient delivery routes. These challenges made our system more adaptive, and the architecture now allows easy replication in other cities or states.

What makes After Stars truly impactful is that it combines **human compassion with digital precision**. It neither glorifies charity nor portrays the underprivileged as helpless. It treats every participant—be it a food donor, a hungry child, or a tech volunteer—with equal importance. This democratization of help is the soul of the platform.

As climate change and inflation continue to threaten food security globally, projects like After Stars offer a grassroots solution. According to a UNEP report, reducing food waste can **cut global greenhouse gas emissions by 8–10%**. Thus, the project's impact extends beyond social equity into **environmental sustainability**.

In the long run, we envision **After Stars** not just as a digital service, but as a **social movement**. With the right policies and government partnerships, this platform can integrate into smart city infrastructures, disaster relief systems, and public food banks. We also plan to publish open data insights from usage trends to help policymakers understand hunger pockets, surplus patterns, and community behaviors.

5.CONCLUSION

In a world where nearly 828 million people go to bed hungry each night (UNICEF, 2023), and over one-third of the food produced is lost or wasted globally (FAO, 2021), the existence of both abundance and scarcity in the same ecosystem is not just ironic—t is unacceptable. *After Stars* was conceptualized as a response to this global paradox, with the belief that no meal should end in the trash when it can end someone's hunger.

This project goes far beyond the creation of a food donation portal. It represents a systemic, people- centered shift in how we think about surplus, hunger, dignity, and digital responsibility. By bringing together event organizers, donors, NGOs, volunteers, and receivers on a unified platform, *After Stars* ensures that food is not just shared, but rescued, redirected, and respected.

What makes this initiative particularly impactful is its emphasis on real-time action and trust-building mechanisms—integrating location tracking, verified access, structured coordination, and feedback loops. Every action taken through the platform—from scheduling pickups to tracking deliveries and collecting feedback—is designed not just for efficiency, but for empathy.

The platform also humanizes the concept of donation. It doesn't cast beneficiaries as passive recipients but gives them the agency to request, respond, and interact through a secure receiver interface. Meanwhile, volunteers are not treated as stopgap labour but as critical change agents empowered with tools, purpose, and direction.

Factually, the project addresses three major UN Sustainable Development Goals (SDGs): Zero Hunger (SDG 2), Responsible Consumption and Production (SDG 12), and Climate Action (SDG 13). Reducing food waste also reduces methane emissions from landfills, contributing to environmental well-being. On a micro-level, After Stars builds civic consciousness, empowers community resilience, and strengthens social empathy.

While there are challenges such as ensuring food safety, managing volunteer flow, or scaling to rural areas the framework is designed to be adaptive and inclusive. Its modular design and real-time features position it as a replicable model for urban food redistribution and humanitarian technology.

Ultimately, **After Stars** doesn't just feed people, it connects them. It proves that with the right digital tools and the right human values, we can transform leftovers into lifelines, and turn celebrations into opportunities to serve. This project is not a one-time solution; it is a living commitment to dignity, justice, and sustainable compassion.

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