

Reliefchain

Overview:

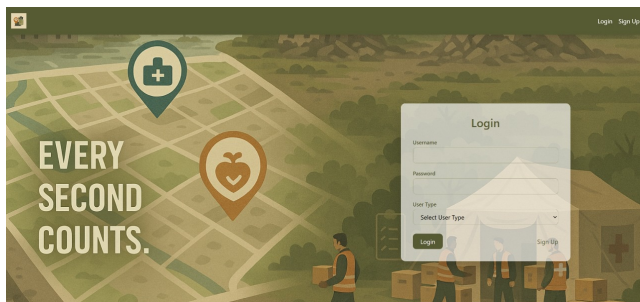
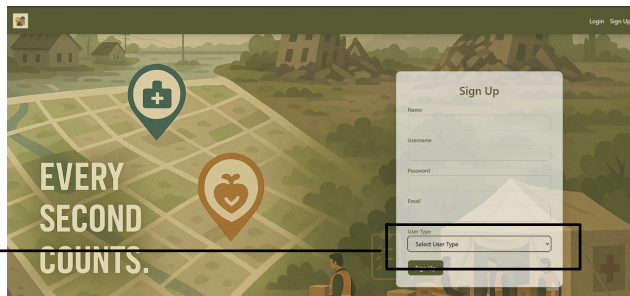
ReliefChain is a full-stack web application designed to streamline humanitarian aid logistics by intelligently allocating demands to NGOs and optimizing delivery routes. Built with the MERN stack (MongoDB, Express.js, React.js, Node.js), the platform features a real-time map interface, automated NGO assignment logic based on geospatial data, and delivery route optimization using greedy TSP algorithms.

By leveraging distance-based heuristics and real-time communication via Socket.IO, ReliefChain significantly reduces delivery delays and improves operational efficiency. The system achieves approximately 59% reduction in assignment distance and 37% improvement in delivery route efficiency compared to traditional, non-optimized methods. Designed for scalability and responsiveness, ReliefChain enables better decision-making and resource utilization in disaster response and aid distribution scenarios.

User Interface:

Signup and Login:

Role-based authentication ←

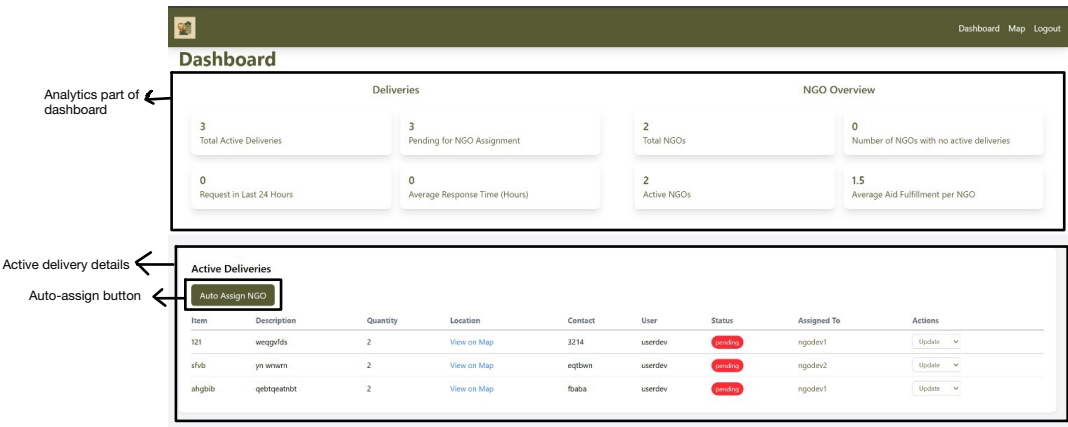


Admin Panel:


The Admin Dashboard serves as the central control panel for managing and overseeing all aid demands within the ReliefChain platform. It provides a comprehensive view of ongoing relief operations, combining real-time data monitoring with powerful decision-making tools.

- **Demand Management:** All aid requests submitted by users are displayed in a tabular format, including essential details such as location, item type, urgency level, and current assignment status.
- **Basic Analytics Overview:** At-a-glance metrics show the number of total, fulfilled, and pending demands, distribution by region, NGO activity, and demand urgency breakdown — giving the admin clear visibility into overall system performance.
- **Manual Allocation:** Admins have the flexibility to manually assign any listed demand to a specific NGO. This is useful for handling edge cases or ensuring special demands are routed appropriately.
- **Auto-Assignment Logic:** A dedicated function enables automatic mapping of unassigned demands to the nearest available NGO using the Haversine formula. This logic ensures efficient, unbiased, and scalable allocation, reducing manual workload and improving responsiveness.
- **Real-Time Syncing:** All actions and updates on the dashboard are synchronized in real-time using Socket.IO, ensuring the admin always sees the latest data without refreshing.

This dashboard empowers the admin to coordinate relief efforts with both strategic control and automation, bridging operational gaps and ensuring timely resource delivery.



User Dashboard:



DashboardMapLogout

Welcome, userdev

Submit Aid Request

Item Name

FirstAid

Quantity

2

Location

22.083774134812955, 82.15109848298277

Use My Location

Contact Number


1234567890

Description

Antiseptic first-aid needed

Submit Request

Demand generation form



DashboardMapLogout

Location

22.083774134812955, 82.15109848298277

Use My Location

Contact Number

1234567890

Description

Antiseptic first-aid needed

Submit Request

Your Submitted Requests

| Item | Quantity | Location | Contact | Description | Status |
|--------|----------|--------------------------------------|---------|-------------|---------|
| 121 | 2 | 22.083783551636078, 82.1511177490898 | 3214 | wegqvfd | pending |
| shvb | 2 | 21.083783551636078, 82.1511177490898 | eqtben | yn wnm | pending |
| ahgbib | 2 | 22.93779431549747, 82.15111518784316 | fbaba | qebtqeatrbt | pending |

Details of all the active requests along with live status

NGO Dashboard:

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Active status for NGO

NGO Dashboard

Active

Assigned Deliveries

| Item | Description | Quantity | Location | Contact | User | Status | Action |
|----------|------------------------------|----------|---------------------------------------|------------|---------|---------|--------|
| 121 | weegydds | 2 | 22.083782351636078, 82.1511177490898 | 3214 | userdev | pending | Update |
| shgblb | qrbtqeairhbt | 2 | 22.93779431549747, 82.15111518784316 | Ruba | userdev | pending | Update |
| FirstAid | Antiseptic first-aid needed. | 2 | 22.083774134812955, 82.15109848298277 | 1234567890 | userdev | pending | Update |

Optimize Route

DashboardMapLogout

Optimize Route

Optimal Route

1. Stop 1

Item: shgblb

Location: 22.93779431549747, 82.15111518784316

Description: qrbtqeairhbt

Contact: Ruba

2. Stop 2

Item: 121

Location: 22.083782351636078, 82.1511177490898

Description: weegydds

Contact: 3214

3. Stop 3

Item: FirstAid

Location: 22.083774134812955, 82.15109848298277

Description: Antiseptic first-aid needed.

Contact: 1234567890

Total Distance: 224.12 km

Map page:

Details and location of all the active demands

