

Civilink: Community Help and Volunteer Coordination Platform

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ABSTRACT

support activities and local help requests are often shared through scattered channels, making it difficult for Community people to discover nearby opportunities or for organizations to reach suitable volunteers. CiviLink is proposed as a community help and volunteer coordination platform that connects citizens, volunteers, NGOs and other organizations through a common digital environment. The platform supports two major functions: community activity management and help request management. Users can create or discover activities such as blood donation camps, tree plantation drives, food distribution and clothing drives, while people or organizations requiring assistance can create help requests that can be responded to by nearby citizens, volunteers or organizations. Location-based information helps users discover relevant activities and requests in their area. Verification, moderation, authentication and role-based authorization are included to improve reliability and controlled access. The proposed implementation uses HTML, CSS, JavaScript and Bootstrap for the frontend, Spring Boot with Java for the backend, MYSQL for structured data management, and REST APIs for communication. OpenStreetMap and Nominatim can support location-related functionality, while Cloudinary may be used for controlled image storage. An optional AI layer can assist with request classification and duplicate-request detection, while final verification remains under authorized human control. The platform is intended to provide a practical software-based approach for improving community coordination, information sharing and participation.

Keywords: Community Coordination, Volunteer Management, NGO, Help Requests, Community Activities, Location-Based Services, REST API, Spring Boot, MYSQL, Role-Based Access Control.

1. INTRODUCTION

1.1 Background

Many community-service activities depend on people being able to find the right information at the right time. Blood donation camps, food distribution, clothing drives, tree plantation activities and local assistance requests may be communicated through different social media groups, messaging applications, personal contacts or notices. As a result, people who are willing to help may not know where their support is required, while organizations may find it difficult to reach suitable volunteers in their locality.

1.2 Need for Digital Community Coordination

A centralized digital platform can provide a common place for discovering community activities and coordinating help requests. Instead of keeping activity and assistance information in separate channels, a platform can connect the people who need help with citizens, volunteers and organizations willing to provide it. Location-based discovery can further reduce irrelevant information by showing opportunities and requests that are relevant to the user's area.

1.3 Existing Challenges

Current community coordination practices may involve scattered information, limited visibility of nearby activities, difficulty in finding suitable volunteers, repeated or duplicate requests, unverified information and weak coordination between organizations and citizens. Fake requests and misleading information can also reduce trust. These challenges indicate the need for controlled registration, verification, moderation, status tracking and secure access.

1.4 Proposed CiviLink Platform

CiviLink is proposed as a community help and volunteer coordination platform connecting citizens, volunteers, NGOs and organizations. It provides activity discovery and participation as well as help-request creation and response. A typical flow is: User/Organization □ Activity or Help Request □ Location-Based Discovery □ Verification/Moderation □ Volunteer/NGO Response □ Status Update. The platform is designed as a practical software solution rather than a replacement for official government or emergency-response agencies.

2. PROBLEM STATEMENT

Citizens, volunteers, NGOs and community organizations often use separate communication channels to announce activities and request assistance. This can make nearby opportunities difficult to discover and can create gaps between people needing help and those willing to provide it. Organizations may also face difficulty in reaching suitable volunteers, while users may receive information that is not relevant to their location. Unverified or duplicate requests can further affect the reliability of community information.

There is therefore a need for a common platform that organizes community activities and help requests, provides location-based discovery, connects request creators with potential helpers, and supports verification, moderation and secure role-based access. CiviLink addresses this need by providing a structured digital environment for community participation and help coordination.

3. OBJECTIVES

- 1 To develop a centralized platform for discovering and coordinating local community activities and help requests.
- 2 To enable citizens, volunteers, NGOs and organizations to create, view and participate in relevant activities.
- 3 To provide a structured Help Request Module for recording assistance requirements and receiving responses.
- 4 To support location-based discovery so that users can find activities and requests relevant to their area.
- 5 To implement authentication, role-based authorization, verification and moderation for safer platform usage.

6 To maintain activity and help-request status so that users can track whether a requirement is pending, accepted, in progress or completed.

7 To provide a practical backend and database implementation using REST APIs and structured relational data management.

4. LITERATURE REVIEW

Research related to digital platforms, volunteer coordination and disaster/community support indicates the usefulness of centralized information sharing and structured coordination. Studies on project and information management systems show that integrating related information can reduce fragmentation and improve continuity of workflows. Research on digital community and volunteer platforms also highlights the value of connecting people who need assistance with people who can provide support. These findings provide a basis for designing CiviLink around organized requests, participation and coordination rather than relying only on informal communication channels.

For the disaster-oriented extension of the platform, research on artificial intelligence and disaster management can inform future hazard reporting, risk analysis and alert functionality. Such advanced functions require suitable datasets and validated models; therefore, they should be presented separately from the core community coordination functionality unless they are actually implemented and evaluated.

Ref No.	Author & Year	Method Technique	Dataset Application	Key Findings	Limitations	Research Gap
[1]	S. Muthukumar et al. (2026)	AI Framework for Holistic Disaster Management	Multi-hazard Disaster Management	Integrates AI across mitigation, preparedness, response, and recovery phases for a holistic approach.	Mostly conceptual framework with limited real-world validation.	Need a unified real-time AI platform with practical implementation.
[2]	Z. Chen et al. (2026)	Large Vision Language Model (LVLM)	Post-disaster Damage Assessment	Achieves high-accuracy damage assessment by combining image and text understanding.	High computational cost and requires large datasets.	Need lightweight models for real-time field deployment.
[3]	A. Whyte (2026)	Human-AI (Centaur) Decision Support	Emergency Management	Human-AI collaboration improves situation understanding and decision-making in emergencies.	Ethical, trust, and adoption challenges among responders.	Need explainable AI systems for emergency responders.
[4]	F. Xu et al. (2025)	Large Language Model Review	Disaster Management (Various Phases)	LLMs enhance communication, planning, and information retrieval across disaster phases.	Few real-world deployments and lack of domain-specific data.	Need domain-specific LLMs for disaster operations.
[5]	Z. Lei et al. (2025)	LLM Survey	Disaster Prediction and Response	Provides comprehensive overview of LLM applications in disaster prediction and response.	Security risks and hallucination issues in LLMs.	Need secure, reliable, and explainable LLM frameworks.

5. PROPOSED METHODOLOGY

5.1 Proposed System Overview

CiviLink follows a role-based community coordination approach. A citizen or volunteer can discover nearby activities and help requests and can participate or respond where appropriate. An NGO or organization can publish activities and assistance requirements and manage responses. An administrator can perform moderation and verification tasks. The system stores users, organizations, activities, help requests, responses, reports and related status information in a centralized PostgreSQL database.

Overall Workflow

User/Organization □ Create Activity or Help Request □ Location & Details □
Verification/Moderation □ Nearby Users □ Join/Respond □ Status Update □ Completion



5.2 System Architecture

The proposed architecture follows a layered structure. The presentation layer contains HTML, CSS, JavaScript and Bootstrap interfaces. The application layer uses Spring Boot and Java to implement controllers, business services and REST APIs for communication between the frontend and backend. The data layer uses MySQL for persistent storage and management of application data. Authentication and authorization are handled using JWT and BCrypt. External services such as OpenStreetMap/Nominatim can support location-related operations, while an image-storage service such as Cloudinary can be used to store uploaded profile or activity images when required.

System Modules

- **User Authentication and Profile:** Registration, login, password hashing, JWT-based authentication, role-based access and profile information.
- **Organization/NGO Module:** Organization profile, activity creation and management, and participation/response monitoring. **Activity Module:** Creation and discovery of community activities such as blood donation, tree plantation, food distribution and clothing drives.
- **Help Request Module:** Creation of assistance requests with type, description, location, quantity and urgency, followed by responses and status tracking.
- **Volunteer/Citizen Participation:** Users can discover relevant activities or requests and choose to participate or offer help.
- **Location-Based Module:** Uses location information to present nearby activities and requests and reduce irrelevant results.
- **Verification and Moderation:** Supports pending verification, reporting, duplicate checking and administrative review.
- **Notification Module:** Provides relevant updates about requests, activities, responses and status changes.
- **Admin Module:** Manages reported content, organization verification and moderation-related actions.

5.3 Database Design

MySQL is used as the relational database for the CiviLink platform. The database stores and manages structured information related to users, organizations, community activities, help requests, responses, notifications and reports. Relationships between these entities are maintained using primary keys and foreign keys to ensure data consistency. The database supports operations such as retrieving activities created by an organization, finding responses associated with a help request, managing user participation and tracking the status of activities and requests. Passwords are stored using BCrypt rather than plain text. JWT can be used to authenticate API requests, while role-based authorization restricts operations according to the user's role. Input validation, file type and size validation, controlled image storage, rate limiting, duplicate checking and moderation can reduce common application risks. The platform should minimize unnecessary personal data and use HTTPS in deployment. These measures improve security but do not guarantee complete protection against every possible attack.

5.4 Optional AI Support

An optional AI component can assist with classifying help requests, identifying potentially similar or duplicate requests, and organizing unstructured descriptions into useful categories. For example, a request describing a need for food for a group of people can be classified into a food-assistance category. AI output should be treated as decision support; final verification, approval and moderation should remain with authorized users.

6. RESULTS AND DISCUSSION

6.1 Expected/Implemented Results

The proposed implementation establishes a structured environment for community activities and help coordination. The authentication module can provide controlled access, while the activity and help-request modules organize community information into searchable records. Location-based discovery can help users identify relevant local opportunities. The relational database provides a consistent structure for users, activities, requests and responses. Verification and moderation mechanisms are intended to improve information reliability.

6.2 Discussion

The main contribution of CiviLink is the integration of community activity discovery and help coordination within one platform. Instead of treating volunteering and assistance requests as separate communication problems, the proposed workflow connects them through users, organizations, locations and status updates. The design also allows the platform to be extended later with notifications, richer GIS functionality and AI-assisted classification without making those advanced components a dependency for the core system.

7. LIMITATIONS

The platform depends on the accuracy of information submitted by users and organizations. Fake, misleading or duplicate requests cannot be eliminated completely and therefore require moderation and reporting mechanisms. Location accuracy may vary depending on the device and user input. External services used for maps, image storage or notifications may introduce service or network dependency. Large-scale performance and concurrent-user behavior would require dedicated load and scalability testing. Advanced disaster-risk prediction would additionally require reliable historical and real-time datasets and a properly validated machine-learning model.

8. CONCLUSION

CiviLink presents a practical approach to community help and volunteer coordination by bringing citizens, volunteers, NGOs and organizations into a common digital platform. The proposed Activity Module helps users discover and participate in community activities, while the Help Request Module connects assistance requirements with people willing to respond. Location-based discovery, authentication, verification, moderation and status tracking provide the supporting structure required for reliable coordination. The system can be implemented using a conventional web architecture with HTML, CSS, JavaScript, Bootstrap, Spring Boot, Java and PostgreSQL. Future development can extend the platform with stronger GIS features, notifications and AI-assisted analysis, while keeping human verification and community participation at the center of the workflow.

9. REFERENCES

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