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Volunteer Management Systems and Digital Platforms for Community Event Coordination: A Minor Project Review Paper

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Abstract
The coordination of volunteers for community activities cannot be termed as an easy task. There are various issues involved like the registration of the volunteers, distribution of duties and tasks to the volunteers, good communication among the volunteers, and constant monitoring of their performances and presence. Organizational entities that depend on volunteer forces like nonprofit organizations, schools, and other community bodies find it difficult to ensure that this process is smooth as the activities become larger and larger. They usually resort to manual methods of managing these processes, and it leads to various issues in terms of inaccuracies, miscommunications, scheduling problems, and inefficiencies.
This paper aims at exploring ways in which this problem may be solved through the development of specific software that would be useful both for coordinators and volunteers. In order to do this, it is important to look at the current situation, namely, the tools and technologies used in managing volunteers and their drawbacks and advantages. Once this has been done, we will need to identify the software tools that can best serve our purposes of development. As a result of the research, we propose an application named VolunteerHub, which represents a complete set of functions aimed at assisting volunteers in participating in activities. In particular, it allows coordinators to create, manage events, check out applicants' resumes, and change their status, whereas volunteers can apply for events or check out their own participation in such activities.

Keywords: volunteer management, web application, React, Node.js, PostgreSQL, community events.

1. Introduction

All such community events, ranging from fundraising campaigns to college fairs and health camps, need an organized volunteer crew to make sure they run smoothly. It would not be right to say that coordinating the efforts of volunteers is an easy task for organizers. Such mundane tasks like registering volunteers, allocating duties, issuing reminders, and tracking attendance become prone to errors as well as take up a lot of time in manual mode.

In today's world, where most individuals carry out their activities using their smartphones and web applications, it is expected that they will be offered the same convenience while seeking opportunities to volunteer. Individuals must be allowed to locate events, apply for positions,

and monitor their progress with just a few taps from anywhere. Simultaneously, developments within the domain of web application development have created an environment wherein sophisticated applications can be developed without any substantial costs or specific team members.

In order to overcome such difficulties, we are proposing VolunteerHub, which is an online volunteer management system that is created as part of our minor project. The development of VolunteerHub utilizes contemporary technological approaches such as the use of React, Node.js, and PostgreSQL among others. With all of these components combined, VolunteerHub is able to do everything starting from scheduling events and signing up volunteers to managing applications and their statuses.

2. Why Volunteer Management Systems Are Needed

There are some specific issues that arise when it comes to coordinating volunteers. Unlike employees, who are hired for a fixed period of time and work regularly, volunteers tend to enter and leave at will. They may decide to participate at the last moment, cancel their participation, or stop doing so altogether. Thus, a system capable of working effectively with such a dynamic workforce is required.

Research on non-profit organization management indicates that volunteers are more likely to return when they experience a well-organized and well-informed procedure [1]. Anything from a complicated sign-up procedure to lack of feedback will discourage volunteers. In turn, coordinating such an irregular number of people by managing dozens of emails in Excel sheets is tedious and ineffective for volunteers coordinators.

A specialized system will allow volunteers to easily find an application form, monitor their progress, and cancel their participation if necessary. For volunteers coordinators, it will make the process of tracking applications, approving them, and storing them easier.

3. Traditional Methods and Their Problems

Prior to digital technology, all processes were conducted via paper or phone. Coordinators would create signup sheets, write down schedules manually, and make calls to distribute tasks. It worked well for small events but proved difficult at scale.

The majority of institutions turned to spreadsheets, which improved coordination but created additional issues. Many users working simultaneously creates conflicts. There is no efficient way to log the entire history of a particular volunteer's experience participating in various events. Lastly, spreadsheets lack any form of notification system to reach out to volunteers in case of schedule changes.

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Email is yet another option that can be used, but it cannot serve as a tracking tool. Emails get buried in one's inbox, messages lose track, and there is no record of the communication process. Coordinators spend most of their time sorting through their emails rather than organizing the volunteer process [2].

To sum up: the paper-based process is inefficient, spreadsheets are too complex, and email lacks structure.

4. Existing Digital Platforms

Currently, there are some digital platforms available for volunteer coordination. Among them are SignUpGenius, InitLive, CiviCRM, and Galaxy Digital, for example.

SignUpGenius offers coordinators to create slots and provide a link to get participants signed up. It is rather user-friendly; yet, this tool doesn't have a profile creation or application submission and withdrawal options [3].

InitLive is another tool that is designed for large events; its key features include mobile check-ins and realtime scheduling. Despite being powerful, it is quite complicated and expensive – thus, unrealistic for any student or grassroots activity.

CiviCRM is another free tool which can be extensively configured to suit individual needs. Yet, in order to work, it requires professional installation, server hosting, and regular maintenance.

Galaxy Digital is one more software aimed at nonprofits, with such advanced features as reporting options and community engagement functions. It also costs money and requires professional support.

From the examples mentioned above, it can be concluded that current tools are either too simple or too complicated; there seems to be room for development for a lightweight solution.

5. How Web Technologies Help

The development of modern websites has allowed us to develop fast and stable software programs using fewer people. Some tools are ideal when used for volunteer coordination.

React is a JavaScript library designed for constructing user interfaces. It breaks the UI into small, reusable components — which makes it easy to build things like an application form, a status dashboard, or a coordinator panel, each as its own piece [4]. Combined with Vite as a build tool, React apps start fast and are easy to develop.

Node.js with Express handles the server side. It can process many requests at the same time without slowing down, which matters when many volunteers are submitting applications at once [5]. The Express framework makes the syntax very simple – you describe the action that takes place when a certain URL is accessed, and nothing else needs to be done.

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PostgreSQL is a relational database which stores data safely. All data about volunteers, events, and applications are related to each other in a consistent way. Prisma, used on top of PostgreSQL, lets developers write database queries in plain JavaScript instead of raw SQL, which reduces mistakes and speeds up development [6].

For authentication — verifying who is logged in — Clerk handles the heavy lifting. It provides sign-up and login screens out of the box, manages sessions securely, and supports social logins without any extra code on our end [7].

6. Technology Stack of VolunteerHub

The table below summarizes the technologies used in VolunteerHub and what each one does.

Table 1. VolunteerHub Technology Stack

Layer	Technology	What It Does
Frontend	React + Vite	Builds the user interface; fast loading and easy to update
Backend	Node.js + Express	Handles API requests between the app and the database
Database	PostgreSQL (Neon)	Stores all volunteer, event, and application data reliably
ORM	Prisma	Lets us query the database using JavaScript instead of raw SQL
Authentication	Clerk	Manages user sign-up, login, and session security
Frontend Host	Vercel	Deploys the React app with automatic updates on code changes
Backend Host	Render	Runs the Node.js server in the cloud
DB Host	Neon	Serverless PostgreSQL — scales automatically, low cost

7. Research Gap

Looking at what already exists, a few gaps stand out.

First, most research and most products focus on large nonprofits with full-time staff and IT support. The needs of smaller, student-led, or community-level organizations — where one person might be coordinating everything — are rarely addressed.

Second, existing platforms tend to be built around the coordinator's needs. The volunteer's experience is often an afterthought. Simple things like seeing your application status or withdrawing from an event without sending an email are missing from many tools.

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Third, there is a lack of well-documented, simple open-source projects that students can learn from or build on. Most open-source volunteer tools are large and under documented. A clean, small project that demonstrates good practices would be valuable both practically and educationally.

8. Proposed System: VolunteerHub

VolunteerHub is a web application built to address these gaps. It focuses on doing a small set of things well, rather than trying to be everything at once.

8.1 What It Does

The system has five core features:

- Volunteer profiles — users create a profile with their skills and availability.
- Event browsing — volunteers can see upcoming events and what roles are available.
- Apply for events — volunteers submit an application for a specific role.
- Application tracking — both sides can see the current status (pending, accepted, rejected).
- Withdraw — volunteers can cancel their application before the event starts.

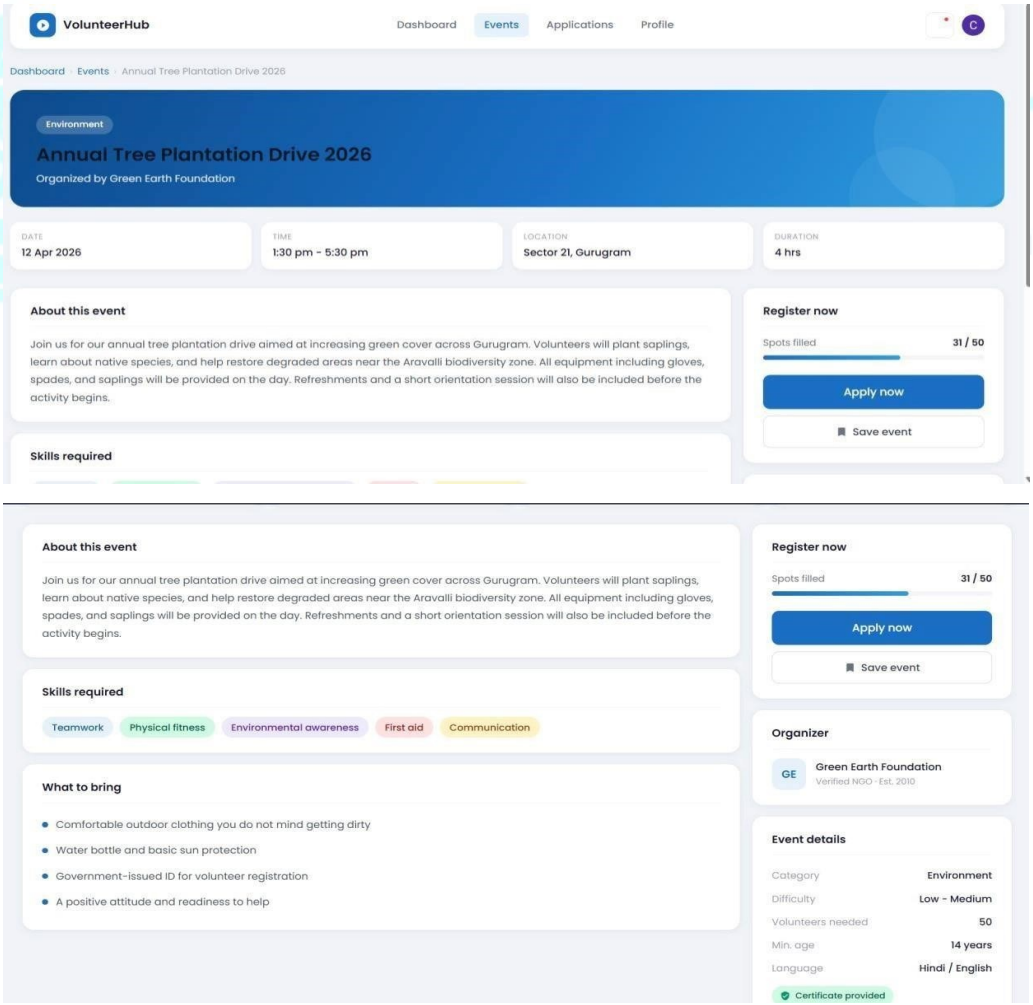

Fig. 8.1 — Event Browsing Page

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8.2 How It Is Built

The frontend is built with React and hosted using Vercel. The backend is developed in Node.js & Express, and hosted on Render. The database used for storing information is PostgreSQL on Neon and connected with Prisma. For authentication, Clerk is utilized; login once, and you don't need to worry about who you are anymore on any screen of the application.

This is a very simple data model – consisting of four tables, Users, Events, VolunteerProfiles, and Applications. Applications have their statuses and refer users to events. That's how simple it is.

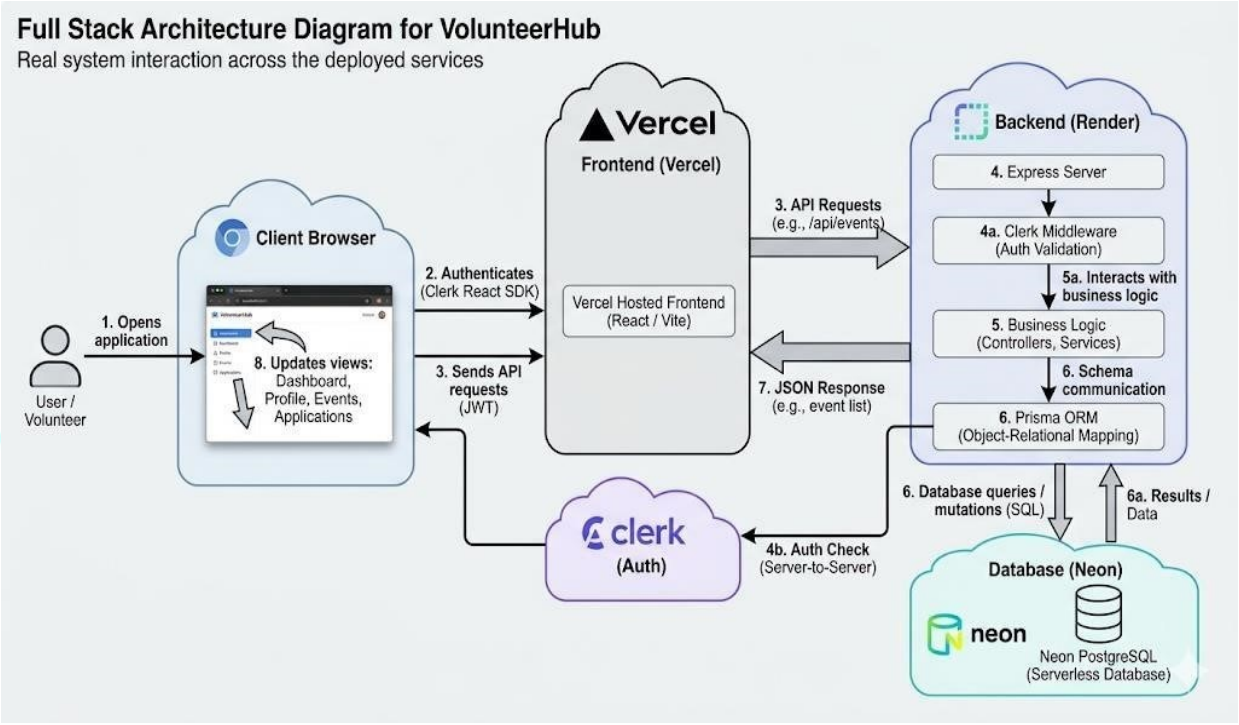

Fig. 8.2: Full Stack Architecture Diagram

8.3 Deployment

The entire application, including frontend, backend, and database, is deployed on cloud servers that offer a free plan or are very inexpensive. Therefore, the system can be made functional for real-world use without having to worry about setting up the server infrastructure or paying any monthly costs while developing the system.

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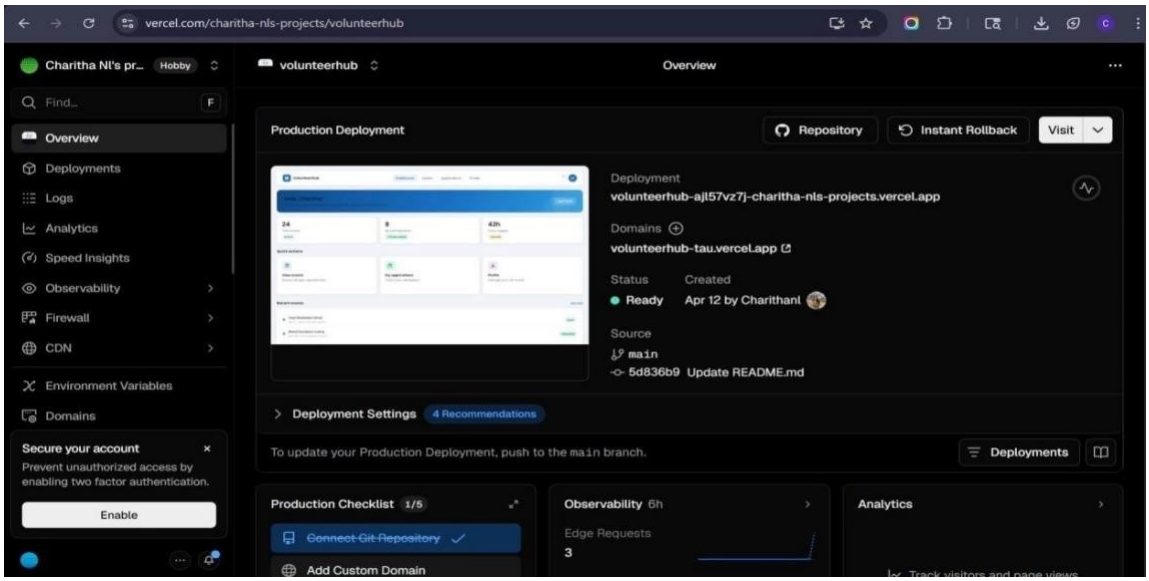

Fig.8.3.1: Render Deployment Dashboard

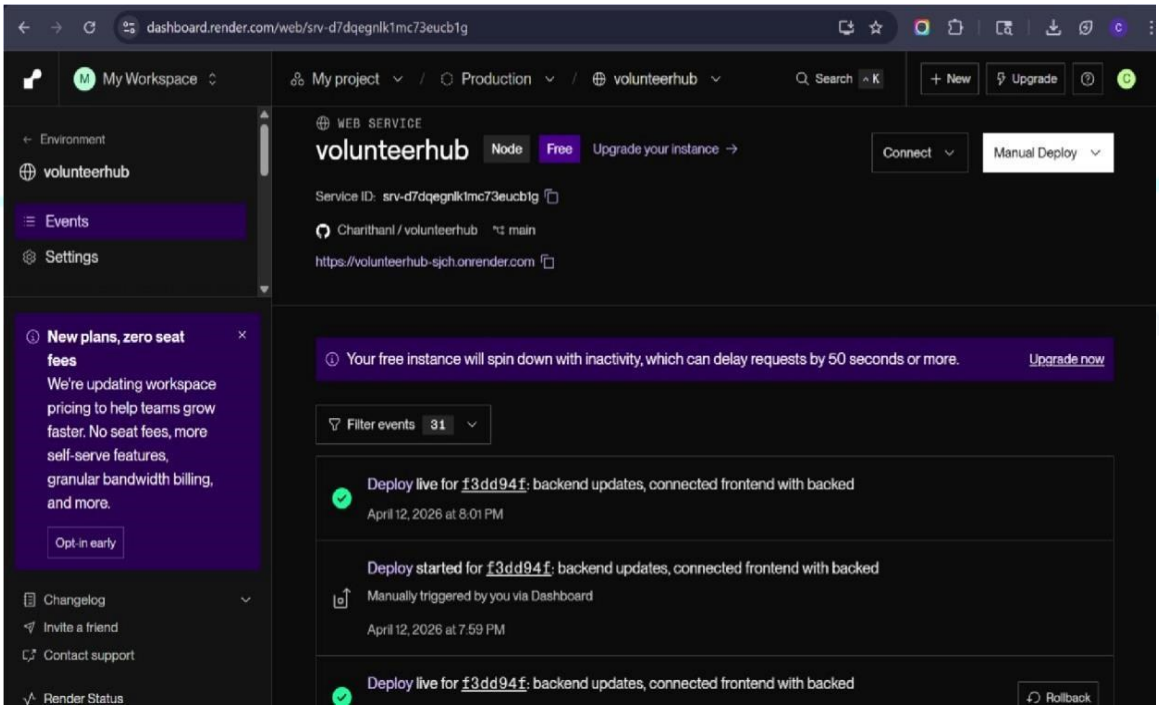

Fig.8.3.2: Render Deployment Dashboard

9. Conclusion

Effective management of volunteers is quite challenging, and unfortunately, many organizations are still operating in the old way. There have been significant advances in this area through digital platforms. However, many current solutions have proven to be either too primitive or too sophisticated for community needs.

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The literature review analyzed the existing solutions, defined the issues with current management practices, and discussed how modern web technologies might solve them. Moreover, we found a clear niche for lightweight, well-designed, and efficient systems targeted at smaller organizations.

Our proposed solution is VolunteerHub. The application was built using React, Node.js, PostgreSQL, Clerk, and deployed on Vercel/Render/Neon. VolunteerHub implements the basic management workflow in a neat and efficient manner. Possible future upgrades would involve push notifications, advanced dashboards for coordinators, as well as integration with calendars.

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