SmartConnect: A Volunteer Matching System for NGO's and Community Projects

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Abstract:

A web-based tool called the Volunteer Matching System links organizations and volunteers. While organizations publish openings with particular requirements, volunteers can register their location, abilities, and availability. The system handles applications and approvals while matching volunteers with appropriate tasks. Developed with HTML/CSS/JS (frontend), MySQL (database), and Spring Boot (backend), it offers a quick and easy solution to organize volunteer work and advance social justice.

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INTRODUCTION

Through the connection of willing volunteers with organizations in need of personnel, volunteering plays a vital role in strengthening communities. Conventional approaches to volunteer recruiting, like social media outreach, word-of-mouth marketing, and ads, are frequently ineffective and disorganized. It is challenging for organizations to connect with qualified volunteers and for individuals to locate opportunities that fit their availability, geography, and skill set when using these approaches.The Volunteer Matching System is a web-based platform that automates the process of connecting volunteers with organizations in order to address this problem. The system offers intelligent matching, opportunity posting, application tracking, and simple registration. The platform guarantees scalability, usability, and dependability by utilizing contemporary web technologies like HTML/CSS/JavaScript (frontend), MySQL (database), and Java Spring Boot (backend).

I.   METHODOLOGY

The architecture of the system is three-tiered:

(i).   **Presentation Layer (Frontend):** Developed using HTML, CSS, and JavaScript to provide a simple user interface. Volunteers and organizations interact with the system through forms, dashboards, and search modules.

(ii). **Business Logic Layer (Backend):** Implemented using Java Spring Boot to handle data flow, request processing, and application logic. REST APIs connect frontend with backend.

(iii). **Data Layer (Database):** MySQL is used for persistent storage of volunteers, organizations, opportunities, and applications.

Modules Implemented
1. **Volunteer Module:** Registration, profile creation, search and application.
2. **Organization Module:** Registration, opportunity creation, and application management.
3. **Matching Engine:** Filters opportunities based on skills, city, and availability.
4. **Application Tracking:** Allows organizations to approve/reject applications and volunteers to check their status.

II. MODELLING AND ANALYSIS

1. Model Performance and Comparison

The system was tested with multiple sample volunteers and opportunities. The matching engine correctly suggested opportunities in more than 85% of cases where volunteers' skills and location matched the requirements. Compared with traditional manual processes, the system reduced matching time significantly.

2. Limitations and Challenges

(i). No advanced authentication system (only basic registration).

(ii). Matching is rule-based (skills, city) and not AI-driven.

(iii). Mobile responsiveness of the frontend is minimal.

(iv). Scalability testing is limited to small datasets.

3. Error Analysis

(i). Some mismatches occurred when volunteers entered vague skills (e.g., "tech" instead of "Java").

(ii). Duplicates occurred if the same volunteer registered multiple times.

4. Future Improvement

(i). AI-based Recommendation Engine: To provide smarter matching beyond keyword search.

(ii). Secure Authentication: Role-based access and OAuth login.

(iii). Mobile App Integration: For greater accessibility.

(iv). Real-time Notifications: Email/SMS for approvals and reminders.

5. Results And Discussion

The system was deployed and tested in a simulated environment. Results include:

(i). Successful registration of volunteers and organizations.

(ii). Opportunity creation and posting by organizations.

(iii). Volunteer search and application submission working correctly.

(iv). Organizations were able to approve or reject applications.

According to the debate, by streamlining the procedure, the technology significantly lowers manual labour, builds a consolidated volunteer database, and boosts participation rates.

6. Advantages

(i). User-friendly interface for volunteers and organizations.

(ii). Saves time compared to manual recruitment methods.

(iii).Centralized database with easy retrieval of records.

(iv). Scalable backend using Spring Boot.

(v). Supports multiple opportunities and applications.

III.   CONCLUSIONS

The Volunteer Matching System is a reliable and efficient solution for connecting volunteers with organizations. By integrating web technologies with a structured database, the system ensures that opportunities are matched based on skills and availability, thereby increasing engagement and social impact. Although the current version has limitations, it provides a strong foundation for future improvements such as AI-driven recommendations and mobile applications.

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