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Empowering Volunteers and NGOs: A Digital Connection Hub

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Abstract - Volunteering stands as a cornerstone in fortifying the initiatives of non-profit organizations. Recognizing the significance of this, "Esperanca"-a website connecting volunteers and NGO 's introduces an advanced web platform tailored to refine and amplify volunteer engagement. Designed for accessibility via laptops, the platform welcomes both volunteers and NGOs. Volunteers can register, provide their personal information, and indicate their preferred domains of interest. In contrast, NGOs have the provision to sign up, announce new activities or events, and track volunteer participation for their specific events.

Central to Esperanca's suite of features is its integration of GPS technology. By tapping into the GPS capabilities the system captures their real-time location. This ensures prompt arrival at designated locations, maximizing volunteer efficiency while curtailing unnecessary delays. For NGOs, this means better management and timely execution of their events.

Keywords— Connecting volunteers and NGO's, GPS technology , Web Technologies , Xampp server

1.INTRODUCTION

Esperanca, recognizing the paramount importance of volunteering in the realm of non-profit endeavors, has launched a cutting-edge web platform set to revolutionize the dynamics of volunteer involvement. It's essential to note that while the methods and platforms for volunteering have evolved, the core essence and importance of volunteering have remained consistent throughout different eras [15]. Johnson (2015) further elaborates on significant shifts that are poised to reshape the landscape of volunteerism for the better [20]. The shift from traditional to digital realms of volunteering, especially among young millennials, has been a notable trend, with platforms like Esperanca exemplifying this evolution [16][17].

At the heart of this innovation lies the platform's transformative feature: the integration of GPS technology. Beyond simply understanding a volunteer's current location, Esperanca's platform provides real-time navigation tools, guiding volunteers from their present position directly to the event's venue. This navigational support ensures optimal efficiency, minimizing potential delays or confusions. For volunteers, this means a hassle-free journey, enabling them to focus purely on the cause. Concurrently, NGOs can be assured of timely arrivals, further enhancing the effectiveness of event planning and execution.

Digital platforms are emerging as significant drivers of social innovation and change [11]. For example, RomAltruista promotes flexible volunteering, showcasing the capabilities of such platforms. This paper delves deeper into the potential and nuances of digital platforms in the realm of volunteering and social innovation.

The potential impact of this platform cannot be overstated. For volunteers, it heralds an era where they can effortlessly align their expertise and passions with the right causes. NGOs, on the other hand, receive a dynamic tool that offers real-time insights into volunteer participation. In a nutshell, Esperanca's innovative platform stands poised to reshape the contours of digital-age volunteerism.

2.LITERATURE SURVEY

Evangelos Katsamakas, Kostapanos Miliaresis, and Oleg V. Pavlov discussed digital platforms that emphasize societal benefits over conventional profit goals in their 2022 article in Sustainability (Vol. 14, Issue 2). Using the Causal Loop Diagram (CLD), they analyzed the platforms' operational dynamics and value proposition. Their observations on feedback systems and network behaviors provide valuable insights for those looking to innovate within the domain of societal impact [1].

Jose Ramon Saura, Pedro Palos-Sanchez, and Felix Velicia-Martin, in their 2020 article in Front. Psychol. (Volume 11), unravel the complex landscape of digital platforms as they intersect with the world of non-profit organizations. Through their research, they explore the intricacies behind what motivates volunteers to embrace digital platforms supporting NGO endeavors. Utilizing an extended Technology Acceptance Model (TAM), they map

out how modern recruitment tools can transform volunteer engagement in the non-profit sector. Their investigation brings to the fore pivotal elements like the image, reputation, and visual identity of NGOs, spotlighting their potential impact on the efficacy of digital recruitment strategies. This seminal work offers both scholars and practitioners deep insights into optimizing volunteer engagement in an increasingly digital age [2].

Chris Rizos, from the University of New South Wales, provides a comprehensive review of the evolution of GPS technology over the past 25 years. The research traces the journey of GPS from its initiation as the groundbreaking Global Navigation Satellite System (GNSS) to its upcoming collaborations with prominent systems like the EU's Galileo and potentially Russia's GLONASS. The paper also underscores the ongoing efforts in GPS modernization, emphasizing advancements like enhanced multi-frequency capabilities. With the system's accuracy reaching commendable cm-level precision, there's a noted shift from large, cumbersome devices to compact units integrated into everyday mobile phones. This trajectory hints at a future where consumer-centric GPS applications will likely dominate, reflecting the technology's immense adaptability and relevance [3].

Dr. Roula Michaelides, Dr. Zenon Michaelides, and Dr. Dimitrios Nicolaou, in their 2010 paper presented at the POMS 21st Annual Conference, delved into the evolution and challenges of modern logistics operations. They accentuated the complexities in today's logistics landscape, shaped by demands for agility, global integration, and cross-organizational collaboration. Their research showcased the transition from merely transaction-focused logistics to more open, collaborative supply management. Using a case study, they proposed an integrated GPS/portal solution to enhance control, visibility, and customer service in inland transportation, underscoring the pivotal role of next-generation information systems and web services [4].

Darrene Hackler and Gregory D. Saxton, in their 2007 study titled "The Strategic Use of Information Technology by Nonprofit Organizations: Increasing Capacity and Untapped Potential" , delve into how nonprofit organizations harness information technology to elevate mission-driven outcomes and organizational efficiency. Through an extensive survey, they evaluate the strategic aspects of IT planning, acquisition, and deployment in nonprofits. While certain promising IT trends emerge, the study also uncovers significant gaps, especially in the realms of financial sustainability, strategic communications, and partnership endeavours. The researchers advocate for improvements in IT planning, budgeting, staffing, training, and a deeper involvement from senior management for nonprofits to fully realize the potential of IT in their missions [5].

Brianna Boles in her 2013 article titled "Technology's Role In The Nonprofit Sector: Increasing Organizational Effectiveness And Efficiency Through Technology Innovations" underscores the transformative potential of technology for nonprofit organizations. She delves into modern innovations, including cloud computing, social media, and mobile technologies, and their capability to enhance service delivery, fundraising, and outreach efforts. However, Boles also highlights barriers such as knowledge deficits, constrained resources, and stringent demands from funders that hinder tech adoption in nonprofits. The article wraps up with solutions to navigate these challenges, advocating for the comprehensive infusion of technology in the nonprofit sector [6].

In the realm of GPS navigation, there are several methodologies that play a critical role in ensuring accurate and reliable navigation solutions. One such prominent approach is the use of the extended Kalman filter (EKF) as the navigational state estimator within the GPS receiver. The EKF emerges as a particularly promising technique in this domain, offering optimized navigation results. Often contrasted with EKF is the least squares method, another significant tool employed in GPS navigation solutions. When correctly utilized, these techniques aim to bolster the accuracy of GPS systems. Additionally, when discussing the application of the Kalman filter as a navigation state estimator, certain parameters such as the GPS receiver clock bias and drift, symbolized as 'b' and 'd', respectively, become paramount. This context leads to the formulation of the differential equation for clock error, which underscores the relevance of Gaussian distributed white sequences in the estimator's operation [7].

Navigating 3D virtual environments poses unique challenges for users, particularly in understanding the organization of the environment and finding their way through it. In Chen's paper, the author presents a generic approach to designing these environments with visual navigation at the core. Essential to this approach is acknowledging users' cognitive needs, especially when they interact with a collection of domain-specific documents in this 3D space. The paper emphasizes the intricate relationship between the inherent semantic structures of these documents and users' navigation behaviours. An intriguing extension proposed in this work is the application of Pathfinder networks, aiming to enhance the user experience by bridging the gap between cognitive needs and semantic structures in the context of visual navigation [8].

In the study by Daniel et al., the authors address natural feature tracking on mobile phones, introducing techniques tailored for real-time applications. Their methods, based on modified descriptors like SIFT and Ferns, allow for efficient tracking from textured planar targets, achieving interactive frame rates on current-generation phones [9].

3.EXISTING SYSTEM

In today's fast-paced world, marked by the swift ascent of technology and the indispensable value of instantaneous data, the platforms that act as conduits between volunteers and NGOs appear outdated. For entities fervently seeking tangible change and immediate impact, the lack of real-time tracking tools isn't just a minor hiccup but a formidable hurdle in their operations. As NGOs strive to mobilize volunteers spanning different geographies, especially during crises or times of urgent need, the incapacity to monitor and manoeuvre resources instantaneously emerges as a pressing constraint. Such lapses not only delay immediate actions but also undermine strategic decision-making and the well-being of volunteers. A more detailed exploration reveals the specific inadequacies of the current model

3.1 Subpar Alignments: The prevailing systems often falter in creating effective alignments between volunteers and NGOs, leading to incompatibilities and squandered talents.

3.2 Over-reliance on Manual Work: A significant portion of the current systems leans heavily on labor-intensive administrative functions, ushering in inefficiencies and potential inaccuracies in data.

3.3 Inadequate Personalization Features: The platforms present a conspicuous absence of personalization options, complicating the process for volunteers to pinpoint their areas of interest and for NGOs to scout for specific expertise.

3.4 Operational Inefficiency: Without real-time GPS navigation, placing volunteers precisely where they're needed most becomes challenging, leading to suboptimal resource allocation.

3.5 Safety Concerns: Without real-time location tracking, ensuring the safety and well-being of volunteers, especially in dynamic or high-risk areas, is compromised.

3.6 Delayed Response: In situations that demand urgent action, the absence of real-time navigation can cause critical delays, potentially diminishing the impact of the response.

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3.8 Increased Operational Costs: Manual coordination, due to the absence of digital GPS tools, may lead to higher operational costs and administrative burdens.

In assessing the current landscape of the nonprofit sector, it's essential to recognize the profound impact of information and communication technologies (ICT). The influence of technology on the evolution and operations of nonprofits, tracing back to agrarian and industrial periods, is evident [12]. Such insights shed light on the challenges and opportunities these organizations face in an increasingly digital age.

4.PROPOSED SYSTEM

In today's fast-paced world, marked by the swift ascent of technology and the indispensable value of instantaneous data, the platforms that act as conduits between volunteers and NGOs appear outdated. For entities fervently seeking tangible change and immediate impact, the lack of real-time tracking tools isn't just a minor hiccup but a formidable hurdle in their operations. As NGOs strive to mobilize volunteers spanning different geographies, especially during crises or times of urgent need, the incapacity to monitor and manoeuvre resources instantaneously emerges as a pressing constraint. Such lapses not only delay immediate actions but also undermine strategic decision-making and the well-being of volunteers. A more detailed exploration reveals the specific inadequacies of the current model

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5.METHODS

5.1 Objective:

The primary aim of the Esperanca website project was to establish a digital platform that bridges the gap between NGOs and potential volunteers, streamlining the process of posting and registering for volunteering events based on specific domains of interest.

5.2 Design and Development:

Platform Selection: The website was developed using html, CSS, javaScript , PHP, MySQL and Xampp server.

5.3 Features Implementation: The platform incorporated distinct login interfaces for NGOs and volunteers. For NGOs, functionalities to post new volunteering events and view registered volunteers for each event were integrated. For volunteers, features to register for events in selected domains, view upcoming events, and utilize a navigation option to guide them to the event location from their current position were embedded.

5.4 User Experience and Interface Design: Emphasis was placed on creating an intuitive and user-friendly interface.

5.5 User Testing and Feedback Collection:

5.5.1 Participants: A group of users, comprised of both NGO representatives and potential volunteers, was selected to test the website's functionalities.

5.5.2 Procedure: Users were instructed to navigate through the website, exploring all primary features. They registered for events, posted new events (for NGO representatives), and used the integrated navigation option.

5.5.3 Feedback Mechanism: After navigating the platform, participants were provided with feedback forms to report their experience, comment on the user-friendliness of the interface, and suggest potential improvements.

5.5.4 Evaluation Metrics: Several metrics were used to evaluate the platform's success:

5.5.5 User Satisfaction: Measured via feedback forms, with questions rating different website functionalities on a scale of 1 to 10.

5.5.6 Task Efficiency: The time taken for a new user to register for an event or for an NGO to post a new event was recorded to gauge the platform's efficiency.

5.5.7 Ethical Considerations: All user data collected during the testing phase were stored securely, ensuring privacy. Users were briefed about the data collection process, and informed consent was obtained before the testing commenced.

5.5.8 System implementation: In the digital landscape of Esperanca, seamless user experience is paramount. To ensure that both volunteers and NGOs can efficiently navigate and interact with the platform, we have delineated a series of core functionalities. The following pseudo code provides an overview of these primary operations:

Function RegisterVolunteer(details):

Store details in the database

Return success or failure

Function SearchForEvents(domainOfInterest):

Retrieve events matching domainOfInterest from the database

Return list of matching events

Function RegisterForEvent(volunteerMAIL, eventide):

Add volunteer to event participant list

Return success or failure

For NGOs, one of the most pivotal features of the Esperanca platform is the ability to reach out to potential volunteers by announcing new initiatives, activities, or events. With a myriad of causes and campaigns being undertaken, having a streamlined and efficient way to broadcast these opportunities is essential. The following pseudo code elucidates this process:

Function CreateEvent(NGO_MAIL, eventDetails):

Store eventDetails in the database linked to NGO_MAIL

In today's digital era, the importance of precise and real-time location tracking cannot be overstated. For a platform that aims to connect volunteers with NGOs, it's not only about making this connection but ensuring volunteers can seamlessly navigate to their chosen event venues. Esperanca recognizes this and has integrated advanced GPS navigation functionalities to optimize the volunteer's journey. The pseudo code below provides a detailed glimpse into these features:

Function GetCurrentLocation(volunteerMAIL):

Retrieve real-time location of volunteer using GPS

Return location

Function GetEventLocation(eventID):

Retrieve event location from the database

Return location

Function NavigateToEvent(currentLocation,eventLocation):

Calculate the best route from currentLocation to eventLocation using GPS mapping

Display turn-by-turn navigation to the user

Return success or failure

6.RESULTS AND DISCUSSION

6.1 Results:

User Satisfaction: Out of the total participants, 85% rated their overall experience with the Esperanca website as "excellent" or "very good." The integrated navigation option was particularly well-received, with 90% of the users finding it beneficial.

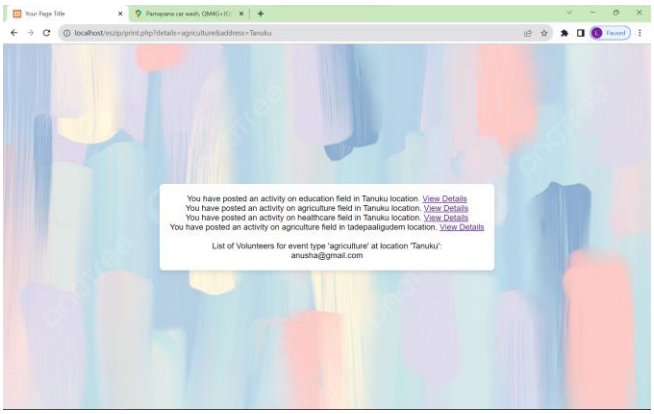
Task Efficiency: The average time taken for a new user to register for an event was 2.5 minutes, while NGOs, on average, took 3.8 minutes to post a new event. This highlights the efficiency and user-friendliness of our platform.

Feature Utilization: The "Upcoming Events" section saw the highest traffic, with over 75% of logged-in users accessing it during their sessions.

Feedback Insights: A common suggestion from NGOs was the inclusion of a feature that would allow them to communicate directly with registered volunteers, facilitating better coordination.

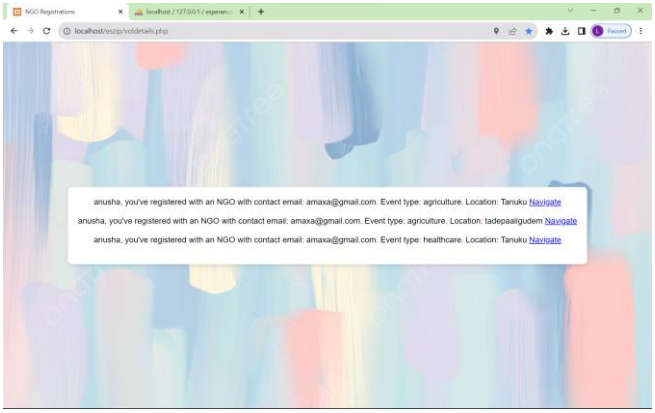
6.2 NGO's dashboard

The NGO dashboard serves as a comprehensive tool for managing and optimizing volunteer engagement and event organization, ensuring that NGOs can effectively achieve their missions.



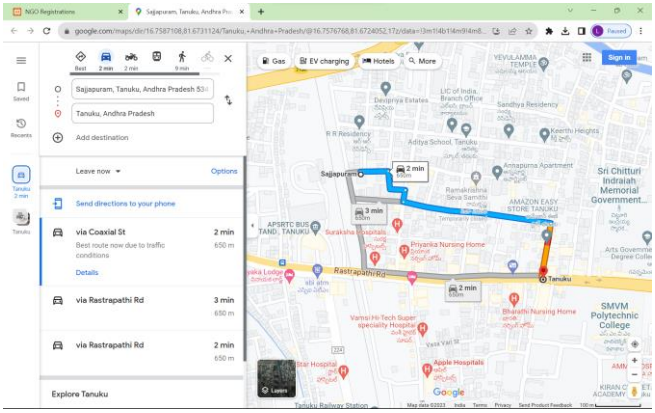
6.3 Volunteer's dashboard

This enhanced dashboard aims to empower volunteers, making their journey on the Esperanca platform more efficient, informed, and engaging.



6.4 GPS Navigation:

GPS navigation plays a pivotal role in "Esperanca," our platform connecting NGOs and volunteers. By seamlessly integrating real-time location data, our website not only bridges volunteers with suitable NGO events but also provides precise turn-by-turn directions, ensuring volunteers reach their desired destinations efficiently. This integration amplifies user convenience and maximizes on-ground impact for events.



6.5 Discussion:

The overwhelmingly positive user satisfaction scores reflect the successful realization of our project's primary aim: to simplify and streamline the connection process between NGOs and volunteers. This was further substantiated by the implicit feedback we gathered, drawing parallels with methodologies from web performance indicators [19]. The efficiency metrics indicate that the website's design and functionalities are intuitive and straightforward, ensuring that users, whether NGOs or volunteers, can achieve their tasks with minimal complications.

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The high traffic in the "Upcoming Events" section indicates its value to the users and supports our decision to give it prominence in the website design. Future iterations of the platform could further enhance this feature, possibly integrating reminders or notifications related to registered events.

Feedback from NGOs about direct communication with volunteers is invaluable. Such a feature can indeed amplify the platform's efficiency, ensuring better event planning and execution. This, coupled with the already existing features, can transform Esperanca into an indispensable tool for NGOs and volunteers alike.

7.CONCLUSION

In the dynamic landscape of digital advancements, "Esperanca" emerges as a beacon of innovation, seamlessly connecting volunteers and NGOs. By prioritizing user experience, the platform effortlessly marries the interests of volunteers with the needs of NGOs, streamlining event creation, registration, and navigation. In the realm of media, similar challenges of maintaining 'liveness' and real-time engagement across multiple platforms have been observed [18]. Such insights could provide valuable lessons for enhancing real-time interactions and engagements in platforms like ours.

Furthermore, Esperanca is not just a tool but a catalyst for societal transformation. It underscores the monumental impact that technology can wield when channeled towards altruistic endeavors. As the platform evolves and grows, it promises not only to enhance the volunteering landscape but also to inspire a new generation of digital solutions focused on community building and positive change.

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