



CitizenConnect: A Crowdsourcing Solution for Real-Time Reporting of Public Service Failures in Water, Roads, and Waste Management

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Abstract— Access to clean and reliable public services, such as water supply, road infrastructure, and waste management, is a fundamental right for all communities. Unfortunately, many regions face persistent issues in these areas, hindering the quality of life for residents. In this research paper, we introduce an innovative mobile application designed to tackle a broad spectrum of civil problems that communities encounter daily. This mobile application leverages the principles of crowd-sourcing, enabling citizens to report a wide array of issues, including water quality, damaged roads, unattended waste, and various other concerns affecting their daily lives. The data collected is openly accessible, empowering both local residents and authorities with real-time information. The application's primary objective is to foster community awareness and promote effective solutions to these problems.

Index Terms—Block Chain, Mobile Application,

Data Privacy, Transparency

I. INTRODUCTION

Residing within a vibrant and thriving community presents the assurance of well-kept roads, dependable water supplies, and uninterrupted access to electricity. Yet, the reality often reflects a different scenario, wherein issues related to these fundamental services frequently disrupt our daily routines. Traditionally, the process of reporting and resolving these problems has been intricate and time-consuming. To bridge this divide between citizens and government authorities, we advocate the development of a mobile application meticulously designed to empower communities, offering an efficient channel for reporting and monitoring civic



concerns. This mobile app is poised to serve as a consolidated platform, enabling residents to express their grievances and voice concerns related not only to roads, water, and electricity but also encompassing a comprehensive spectrum of government-related issues. It is tailored to empower individuals within the community, ensuring their voices are heard, and their issues are swiftly addressed.

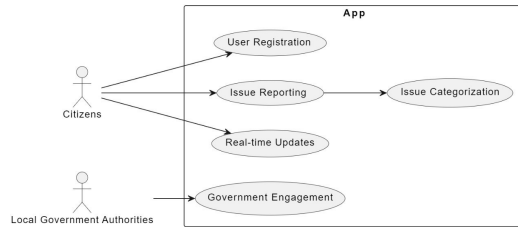


Fig. 1: Use Case Diagram

II. METHODOLOGY

This section outlines the methodology employed in the design, development, and implementation of the mobile application aimed at crowd-sourcing Civil problems and opensourcing the collected data in our community. Design and Development of the Mobile Application: The design and development of the mobile application involved several key steps: Needs Assessment, the process began with a thorough assessment of the specific needs of our community. This included gathering input from community members, local authorities, and relevant organizations to understand Figure 1: UML Diagram the most pressing Civil issues. User-Centered Design, The app's design prioritized user-friendliness. An intuitive user interface was developed to ensure that community members, regardless of their technological proficiency, could easily report and access information.

Development Team, A multidisciplinary team of developers, designers, and subject matter experts collaborated in the creation of the mobile app.

Prototyping, The app underwent several prototyping phases to gather user feedback, iteratively improve features, and ensure it met community requirements. Data Collection Process, The process of data collection through the app is a crucial

component of this initiative: Users are required to register within the app, providing basic information to create an account. This registration process helps in maintaining accountability and allows users to track the status of their submissions. Registered users can report Civil problems through the app. This reporting functionality includes the ability to: Users can mark the location of the issue on a map, allowing for precise identification of the problem's location. Image Uploads, Users can include photos or videos of the issue, providing visual evidence to support their reports.

Problem Categorization, Users select from predefined categories (e.g., water drainage, infrastructure damage, Garbage) to specify the nature of the issue. Description, Users can provide detailed descriptions of the problem, including its severity and any potential health risks. Data Validation, To ensure data accuracy and reliability, the collected reports go through a validation process. This involves cross-referencing user submissions with authoritative sources, on-site inspections, and community feedback.

Technology Stack and Platforms, The choice of technology stack and platforms was made with consideration of community preferences, accessibility, and scalability: Mobile Platform, The mobile application was developed for Android platforms [1][3], making it accessible to the widest range of community members.

Backend Development, The app's backend is built using a combination of cloud-based solutions and web servers, ensuring scalability and data security. Database, Data is stored in a secure database [2], with backups to prevent data loss. Security Measures, Strong encryption and authentication measures are in place to safeguard user data and maintain privacy.

III. FEATURES OF THE APP

The mobile application boasts a range of features designed to streamline the process of crowd-sourcing Civil problems: Geotagging, Users can pinpoint the location of the issue on a map, allowing for precise problem identification and geospatial

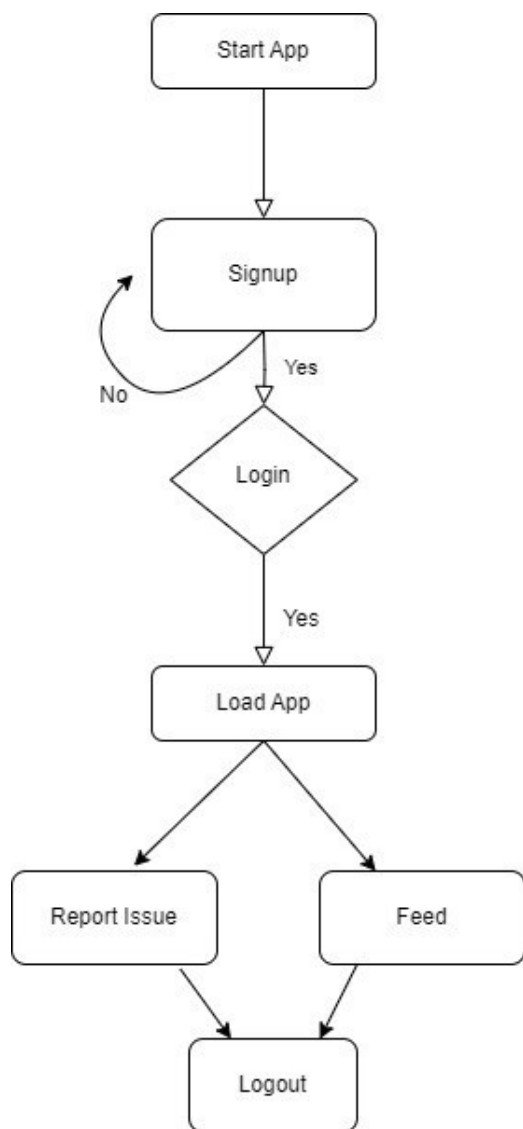


Fig. 2: Flow Chart of Proposed Method

analysis. Image Uploads, Users can provide visual evidence by attaching photos or videos to their reports. User Feedback, An integrated feedback system allows users to communicate with the app administrators and receive updates on the status of their reported issues.

IV. DISCUSSION AND IMPLICATIONS

The findings from the mobile application for crowd-sourcing civil problems in our community have profound implications for addressing civil challenges, fostering community engagement, and promoting transparency. In this section, we analyze the implications of the findings, explore how open-sourcing data can empower local residents and authorities, address limitations, and consider ethical considerations related to data privacy and security.

A. Implications of the Findings

The identified civil problems, their geographical distribution, and the patterns observed hold significant implications for our community.

- **Resource Allocation:** The data collected can inform local authorities on the most pressing issues, allowing for more efficient resource allocation to address these problems promptly.
- **Public Awareness:** The mobile app has the potential to increase public awareness of civil issues in our community, empowering residents to be vigilant and proactive in reporting problems.
- **Preventative Measures:** Early detection of problems, such as infrastructure damage or contamination, can lead to timely maintenance and remediation, preventing more significant issues down the line.
- **Environmental Impact:** Understanding the distribution of civil problems enables us to assess the environmental impact and plan conservation measures accordingly.

B. Empowering Local Residents and Authorities

Open-sourcing data collected through the mobile app has the potential to empower local residents and authorities:

- **Transparency:** Open data fosters transparency by making information about civil issues accessible to the public, promoting accountability among authorities.
- **Community Involvement:** The availability of data empowers community members to actively participate in addressing civil problems.

It provides a platform for collective action and allows residents to monitor progress.

- **Data-Driven Decision-Making:** Local authorities can utilize real-time data for informed decision-making. They can prioritize resource allocation, plan infrastructure improvements, and implement policies based on the data.
- **Advocacy and Awareness:** Open data encourages advocacy efforts and awareness campaigns, further engaging the community in civil-related matters.

C. Addressing Limitations

It is essential to acknowledge and address limitations of the mobile application and the data collected, including potential biases in user contributions:

- **Underreporting:** The app may suffer from underreporting, as not all community members may use it. Efforts should be made to raise awareness and promote its usage.
- **Bias in Reporting:** User contributions may reflect certain biases, such as reporting issues that personally affect them more or reporting from specific areas of the community. Data validation is crucial to mitigate biases.
- **Digital Divide:** Access to smartphones and the internet may be uneven in the community, potentially excluding certain demographics. Steps should be taken to ensure inclusivity.

D. Ethical Considerations

Ethical considerations are paramount when dealing with data privacy and security:

- **Data Privacy:** The mobile app must ensure the privacy of user data. It should adhere to strict data protection and privacy regulations, and personal information should be anonymized.
- **Security Measures:** Robust security measures should be in place to protect data from breaches and unauthorized access. The community must trust that their data is secure [4][5].

V. CONCLUSION

The culmination of this research paper offers a summary of the main findings and contribu-

tions, reaffirms the mobile application's potential in addressing civil problems within our community, and concludes with a call to action for continued community involvement and data sharing.

A. Summary of Findings and Contributions

This research paper has presented an innovative mobile application designed to tackle civil challenges in our community. Through the diligent use of this app, community members have collectively reported and addressed a spectrum of civil issues, including road damages, infrastructure damage, water scarcity, and more. The data collected through the app has provided invaluable insights into the most common civil problems, their spatial distribution, and trends over time. This application serves as an exemplary model for community engagement and grassroots problem-solving.

B. Reiteration of the App's Potential

The mobile application stands as a beacon of hope for addressing civil-related challenges in our community. Its potential for real impact cannot be overstated. By providing a user-friendly platform for reporting issues, increasing transparency, and facilitating data-driven decision-making, it empowers community members and local authorities alike to work together in addressing civil problems more efficiently. The app has the potential to revolutionize how we manage our civil resources, ensuring clean, safe, reliable public services.

C. A Call to Action

As we conclude this research paper, we issue a call to action for continued community involvement and data sharing. The mobile application is not just a tool; it is a testament to the power of collective action and engagement. To maximize its potential, we encourage the following:

- **Active Participation:** We urge all community members to actively use the mobile app to report civil issues and engage in community-driven problem-solving. Your contributions make a difference.
- **Transparency and Accountability:** We call on local authorities to embrace open data,



transparency, and accountability. The data collected through the app must inform policies and resource allocation to address civil issues effectively.

- **Community Solidarity:** Let us continue to foster a sense of community solidarity, supporting one another in the pursuit of clean and safe reliable public services. This endeavor is not one for a few but for all.
- **Continuous Improvement:** We must remain committed to improving the mobile application, adding new features, and expanding its reach to ensure its ongoing relevance and effectiveness.
- **Inspiration for Others:** We hope that our community's experience serves as an inspiration for other regions and communities facing similar civil-related challenges. Together, we can drive positive change on a broader scale.

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