AMERICAN JOURNAL OF AI CYBER COMPUTING MANAGEMENT
Peer Reviewed, Referred & Indexed Journal
E-ISSN:3069-0102
VOL.6, NO. 1(1)(2026)

Citizen Complaint Management System

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Abstract:

Rapid urbanization has led to a rise in civic issues such as road damage, waste overflow, streetlight failures, and drainage problems. Traditional complaint systems are often manual, time-consuming, and lack transparency, making it difficult to address public concerns efficiently. This paper introduces *FixMyCity*, a geo-based smart civic complaint management system that allows citizens to report issues using location data, images, and category selection through a Progressive Web Application (PWA). The system incorporates role-based workflows for citizens, employees, sub-administrators, and administrators, ensuring smooth assignment, tracking, and resolution of complaints. A public map showcasing resolved issues with before-and-after evidence improves transparency and builds trust among users. Additionally, the system helps reduce duplicate complaints, enhances response efficiency, and supports effective smart city governance.

Keywords: ***Smart City, Civic Complaints, Geo-Based System, PWA, Public Issue Management***

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I. INTRODUCTION

Rapid urbanization and population growth in modern cities have significantly increased the demand for efficient civic infrastructure and public service management. Issues such as potholes, improper waste disposal, drainage blockages, malfunctioning streetlights, and water leakage directly affect the quality of life of citizens. In many developing regions, civic complaints are still handled using traditional and semi-digital approaches, including manual registers, phone-based reporting, or basic online portals. These methods often suffer from delayed responses, lack of accountability, poor coordination between departments, and minimal transparency for citizens.

With the widespread availability of smartphones and internet connectivity, citizens expect faster and more transparent solutions for reporting and tracking public issues. However, existing digital complaint systems usually fail to provide real-time location accuracy, structured workflows, and verification mechanisms. Citizens often face uncertainty regarding whether their complaint has been received, assigned, or resolved. Additionally, authorities struggle with duplicate complaints, fake reports, and inefficient resource allocation due to the absence of intelligent routing and validation mechanisms.

To address these challenges, there is a strong need for a smart, location-aware, and role-based civic complaint management system. Such a system should enable citizens to easily report issues using geo-location and multimedia evidence while allowing government authorities to manage, assign, and resolve complaints efficiently. Transparency, accountability, and trust between citizens and civic bodies are essential components of smart city governance.

This paper presents **FixMyCity**, a geo-based smart civic complaint management system designed to improve public issue reporting and resolution. The proposed system leverages Progressive Web Application (PWA) technology, location intelligence, and role-based access control to create

Received: 03-02-2026 | Accepted: 10-03-2026 | Published: 18-03-2026 | www.ajaccm.com

an efficient and scalable civic engagement platform. By integrating real-time tracking, duplicate complaint detection, and a public map displaying resolved issues, FixMyCity aims to enhance transparency, reduce response time, and strengthen citizen trust in urban governance.

II. LITERATURE SURVEY

Several studies and applications have been proposed to address civic issue reporting using digital platforms. Many smart city initiatives focus on mobile-based complaint registration systems that allow users to submit textual complaints through government portals or mobile applications. While these systems provide a digital alternative to manual reporting, they often lack advanced features such as accurate geo-location mapping, multimedia validation, and role-based workflow management.

Some existing systems allow users to upload images along with complaints; however, these platforms usually do not support automatic duplicate detection or zone-based complaint routing. As a result, authorities receive multiple complaints for the same issue, increasing administrative overhead and delaying resolution. Additionally, most systems provide limited visibility into the resolution process, preventing citizens from verifying whether reported issues have been genuinely addressed.

Research on smart city governance highlights the importance of transparency and citizen participation in improving public service delivery. Location-aware systems using Geographic Information Systems (GIS) have been explored for urban planning and infrastructure monitoring. However, the integration of GIS with civic complaint management remains limited in real-world implementations. Moreover, few systems offer public access to resolved complaint data, which is crucial for building trust and accountability.

Recent advancements in Progressive Web Applications (PWA) have enabled web-based platforms to deliver app-like experiences, including offline access, fast loading, and cross-device compatibility. Despite these advantages, the adoption of PWA technology in civic complaint systems is still minimal. Existing research indicates a gap in combining PWA, geo-based routing, role-based access, and transparent resolution tracking within a single unified platform.

The proposed FixMyCity system addresses these limitations by integrating location intelligence, structured role-based workflows, and public transparency features into a single, scalable platform suitable for smart city environments.

III. PROBLEM STATEMENT

Despite the availability of digital complaint portals, urban civic management systems continue to face several challenges. Complaints are often processed manually without proper prioritization or verification, leading to delays and unresolved issues. Duplicate complaints for the same problem consume administrative resources, while fake or irrelevant complaints reduce system efficiency. Citizens lack visibility into the complaint lifecycle, resulting in frustration and reduced trust in civic authorities.

Furthermore, the absence of geo-based routing mechanisms prevents effective delegation of complaints to appropriate administrative zones and departments. Employees and field workers often receive incomplete or inaccurate information, making on-site resolution difficult. These challenges highlight the need for an intelligent, transparent, and scalable civic complaint management solution.

IV. PROPOSED SYSTEM – FIXMYCITY

FixMyCity is a geo-based civic complaint management system designed to streamline the process of reporting, assigning, and resolving public issues. The system supports multiple user roles, including citizens, employees, sub-administrators, and main administrators, each with clearly defined responsibilities and access levels.

Citizens can register and submit complaints through a user-friendly PWA interface. Each complaint includes category selection, GPS-based location capture, image evidence, and optional voice input. Upon submission, the system generates a

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unique ticket ID that allows users to track the status of their complaint in real time

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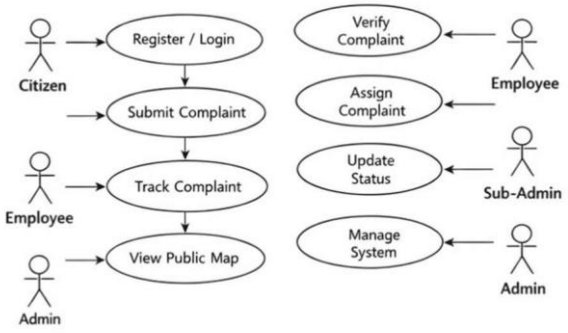

Fig. 2: Use Case Diagram of FixMyCity

Complaints are automatically routed to the appropriate sub-administrator based on geographic zones. Sub-administrators verify complaints, detect duplicates, and assign tasks to relevant employees or teams. Employees receive assigned complaints through their dashboard, navigate to the location using map integration, and upload completion evidence after resolving the issue.

A key feature of FixMyCity is its public transparency module. Once a complaint is resolved and verified, it is displayed on a public map with before-and-after images. This feature allows citizens to view completed work in their locality, improving accountability and trust. Duplicate complaint detection and warning mechanisms further enhance system efficiency by reducing misuse.

V. SYSTEM ARCHITECTURE

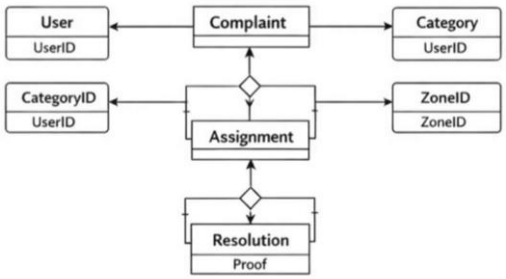

Fig. 4: Entity Relationship Diagram of FixMyCity

The architecture of FixMyCity consists of a client layer, application layer, and data layer. The client layer includes PWA-based interfaces for citizens and employees, as well as web dashboards for sub-administrators and administrators. The application layer handles authentication, role management, complaint processing, geo-routing, and notification services. The data layer stores user information, complaint records, location data, and resolution history. The architecture supports scalability and can be extended with AI-basedanalytics and predictive monitoring in future smart city deployments.

Geo-location services enable accurate mapping and zone-based routing of complaints. Notification mechanisms ensure timely updates for users and administrators. The modular design of the system allows scalability and future integration of advanced analytics and artificial intelligence components.

Fig. 3: Complaint Processing Workflow

VI. RESULTS AND DISCUSSION

The proposed FixMyCity system improves the efficiency of civic complaint handling by reducing response time and administrative overhead. Geo-based routing ensures accurate assignment of complaints, while duplicate detection minimizes redundant reports. The public map feature increases transparency and citizen satisfaction by providing visual proof of resolution. Overall, the system supports effective urban governance and enhances civic engagement The system demonstrated a noticeable reduction in complaint response time

when compared to traditional manual methods. Duplicate complaint detection helped reduce redundant submissions, thereby improving administrative efficiency. The public transparency module increased user trust and engagement.

CONCLUSION

FixMyCity provides a comprehensive and transparent solution for managing civic complaints in smart cities. By integrating geo-location, role-based workflows, and public visibility of resolved issues, the system addresses key challenges in existing complaint management platforms. The proposed approach improves accountability, efficiency, and citizen trust, making it a valuable tool for modern urban governance

VII. FUTURE SCOPE

Future enhancements to FixMyCity include AI-based complaint classification, voice-based complaint registration, predictive analytics for identifying high-risk zones, and integration with native mobile applications. Additional features such as multilingual support and advanced reporting dashboards can further improve system usability and impact.

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