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Civic Issue Reporting and Tracking System Using Geolocation and Web Technologies

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***Abstract*—Urban civic infrastructure problems such as potholes, broken streetlights, overflowing garbage bins, water leakage, and damaged public property are persistent issues in cities and towns. However, existing mechanisms for reporting such problems are often fragmented and may rely on phone calls, visits to municipal offices, or scattered social media posts. The absence of a unified reporting channel can result in poor visibility of recurring problems, delayed resolution, and limited transparency between citizens and local authorities.**

This paper proposes a Civic Issue Reporting Website, a web-based platform that provides citizens with a centralized mechanism for reporting civic issues using photographic evidence and precise geolocation information. The platform supports complaint tracking through defined stages such as Reported, In Progress, and Resolved. Citizens can also upvote existing complaints, which can help identify recurring or high-impact issues and support administrative prioritization. On the administrative side, the system provides a centralized dashboard for categorizing, assigning, monitoring, and resolving complaints.

The proposed system also provides map-based visualization and analytics to help identify geographical patterns of reported issues. The system is designed using a modern web technology stack consisting of React.js for the frontend, Node.js and Express.js for the backend, and MongoDB for data storage. The proposed platform aims to improve complaint visibility, support transparent complaint tracking, reduce manual coordination, and encourage greater citizen participation in local governance.

***Index Terms*—Civic Engagement, Complaint Management System, geolocation, MERN Stack, Smart Governance, Municipal Dashboard.**

I. INTRODUCTION

Urban and semi-urban areas face various civic infrastructure problems such as potholes, damaged roads, broken streetlights, overflowing garbage bins, water leakage, damaged

footpaths, and malfunctioning public utilities. Although these problems may appear small individually, their cumulative impact can affect public safety, convenience, and quality of life.

Traditionally, citizens report such problems through municipal helplines, physical visits to government offices, or social media platforms. These approaches may not provide a standardized mechanism for recording, tracking, assigning, and resolving complaints. As a result, complaints can be duplicated, delayed, or difficult to monitor.

Digital platforms provide an opportunity to improve this process by providing a centralized complaint management system. Existing civic reporting research has explored web and mobile-based reporting, location-based complaint management, complaint tracking, and intelligent analysis of civic issue images. For example, Kumar et al. investigated the use of scene graph models for understanding civic issue images, while Walwadkar et al. proposed a smart civic issue reporting system using an Android-based approach.

The proposed Civic Issue Reporting Website focuses on integrating citizen reporting, image evidence, geolocation, complaint tracking, administrative management, and map-based visualization into a unified web platform.

Citizens can submit complaints by selecting an issue category, providing a description, uploading an image, and sharing the location of the issue. Administrators can review complaints, assign them to appropriate departments, update their status, and monitor overall complaint trends.

The proposed system therefore aims to provide a structured and transparent workflow from complaint submission to resolution while encouraging citizen participation in local governance.

II. PROBLEM STATEMENT

Civic infrastructure issues such as potholes, broken streetlights, overflowing garbage bins, water leakage, and damaged public property are common in cities and towns. However, citizens may not have a standardized and transparent mechanism through which they can report these problems and track their resolution.

Traditional reporting mechanisms such as phone calls, physical visits, and social media posts are often difficult to integrate into a centralized administrative workflow. This can create the following problems:

1. No centralized record:
2. Complaints received through different channels may not be maintained in a single database.
3. Limited transparency:
4. Citizens may not have a convenient way to check the current status of their complaints.
5. Delayed resolution:
6. Complaints may require manual identification, categorization, and assignment to the appropriate department.
7. Duplicate complaints:
8. Multiple citizens may report the same civic issue independently.
9. Limited accountability:

10. Without a structured complaint history, it may be difficult to track actions taken by responsible authorities.
11. Limited geographical analysis:
12. Without location-based data, authorities may find it difficult to identify areas with a high concentration of civic problems.

Therefore, there is a need for a centralized digital platform that supports complaint submission, location tagging, image evidence, status tracking, administrative management, and geographical analysis.

III. LITERATURE SURVEY

Existing research has investigated several aspects of digital civic issue reporting and management.

1. Walwadkar et al. (2022)

Walwadkar et al. proposed a Smart Civic Issue Reporting System using an Android-based application for reporting infrastructure problems. The work discussed geolocation and intelligent analysis of civic issues, including image processing and NLP-based severity detection.

Limitation: The proposed work in this paper focuses primarily on an Android application, whereas the present project focuses on a centralized web-based complaint management platform.

2. Kumar et al. (2019)

Kumar et al. proposed an approach for understanding civic issue images using scene graph models. Their work generated Civic Issue Graphs from images and investigated multimodal datasets for civic issue analysis.

Limitation: The work primarily focuses on image understanding rather than complete end-to-end complaint management.

3. Jadhav et al. (2025)

Jadhav et al. proposed a web-based Citizen Complaint Redressal and Infrastructure Management System for the Pune Metropolitan Region and Development Authority. The system includes centralized complaint reporting, GIS-based mapping, real-time tracking, administrative assignment, and analytics.

Limitation: The present project focuses on a lightweight web architecture with citizen upvoting and an integrated complaint lifecycle suitable for a college-level implementation.

4. Maskar et al. (2026)

Maskar et al. presented a Civic Issue Reporting and Tracking system with complaint categorization, real-time status updates, automated notifications, and administrative monitoring. The paper also reports an empirical evaluation of the system.

Limitation: The present work emphasizes integration of citizen reporting, geolocation, image evidence, upvoting, map visualization, and administrative management within the proposed platform.

IV. RESEARCH GAP

Existing studies have explored different aspects of civic issue management, including mobile reporting, web-based complaint systems, geolocation, image-based civic issue analysis, complaint tracking, and administrative management. However, there is an opportunity to integrate these capabilities into a unified and lightweight civic complaint workflow.

The proposed system combines citizen complaint submission, photographic evidence, geolocation, complaint tracking, upvoting, administrative assignment, map-based visualization, and complaint analytics within a single web platform. The system is designed to provide a structured workflow from complaint submission to resolution and can be extended with intelligent classification and priority prediction in future work.

V. METHODOLOGY

The proposed system follows a structured development methodology consisting of requirement analysis, system design, frontend development, backend development, database integration, testing, and evaluation.

Initially, the functional requirements of citizens and administrators are identified. The system architecture is then designed using React.js, Node.js, Express.js, and MongoDB. The citizen interface provides registration, login, complaint submission, image upload, geolocation, and complaint tracking. The administrator interface provides complaint verification, categorization, assignment, status management, and analytics.

Complaint data including category, description, image, location, status, and timestamps are stored in the database. Location information is visualized using a maps service. The developed system is tested for complaint submission, authentication, image upload, location capture, database operations, and complaint status updates

VI. CONCLUSION

The proposed Civic Issue Reporting Website provides a centralized and structured approach for reporting and managing common urban civic problems. The system enables citizens to submit complaints with descriptions, photographic evidence, and geographical information while providing a transparent mechanism for monitoring complaint status.

The administrative dashboard allows authorized personnel to categorize, assign, monitor, and resolve complaints through a defined workflow. The inclusion of upvoting, map-based

visualization, and analytics can further support the identification of recurring and high-impact civic issues.

Unlike fragmented reporting methods, the proposed platform brings citizen reporting and administrative complaint management into a unified digital workflow. The system is implemented using React.js, Node.js, Express.js, and MongoDB, providing a suitable foundation for further development.

The proposed platform does not claim that individual features such as geolocation, complaint tracking, or AI-based civic issue analysis are completely new, since these areas have already been explored in previous research. Instead, its contribution lies in integrating important civic reporting functions into a unified and extensible platform. Future work can extend the system with AI-based classification, priority prediction, duplicate detection, multilingual support, and predictive civic analytics

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