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CROWDSOURCED CIVIC ISSUE REPORTING AND RESOLUTION SYSTEM

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Abstract: The rapid growth of urban areas has led to an increase in civic issues such as potholes, garbage overflow, drainage blockages, and malfunctioning streetlights. Traditional complaint handling systems are often inefficient, time-consuming, and lack transparency, resulting in delayed responses and poor communication between citizens and municipal authorities. The proposed system introduces a Crowdsourced Civic Issue Reporting and Resolution System, which enables citizens to report civic problems using images, descriptions, and GPS-based location details. The system stores the collected data in a centralized database and displays it on an interactive dashboard for authorities. It automatically categorizes issues and assigns them to the appropriate departments for faster resolution. Additionally, the system provides real-time status tracking and notifications to users, ensuring transparency and accountability. By integrating modern web technologies and location-based services, the system enhances communication, improves efficiency, and supports smart city development.

I. INTRODUCTION

The rapid growth of urban population and infrastructure development has significantly increased the demand for efficient civic management systems. Cities today face a wide range of public issues such as potholes, garbage accumulation, drainage blockages, water leakage, and malfunctioning streetlights. These problems not only affect the daily life of citizens but also pose serious risks to public health, safety, and environmental sustainability. Effective and timely resolution of such issues is essential for maintaining a clean, safe, and well-functioning urban environment. However, in many regions, the existing systems for reporting and resolving civic issues are still based on traditional methods such as phone calls, written complaints, or physical visits to municipal offices. These approaches are often inefficient, time-consuming, and lack proper coordination among departments. Complaints may get delayed, misplaced, or ignored due to the absence of a centralized monitoring system. Additionally, citizens are usually not provided with any mechanism to track the status of their complaints, resulting in a lack of transparency and reduced public trust in governance systems.

Another major challenge in the existing system is the lack of proper prioritization and resource allocation. Critical issues that require immediate attention are often treated the same as minor problems, leading to inefficient use of municipal resources. Moreover, the absence of accurate location data makes it difficult for authorities to identify and resolve issues quickly. This results in repeated complaints for the same problem and increased workload for municipal staff. With the advancement of information and communication technologies, there is a growing need to modernize civic issue management through digital solutions. Smart

city initiatives emphasize the use of technology to improve urban services, enhance citizen participation, and ensure sustainable development. Technologies such as web applications, mobile platforms, cloud computing, and Geographic Information Systems (GIS) enable real-time data collection, centralized monitoring, and efficient communication between stakeholders.

The proposed **Crowdsourced Civic Issue Reporting and Resolution System** aims to address these challenges by providing a user-friendly digital platform for reporting civic problems. The system allows citizens to submit complaints by uploading images, providing descriptions, and sharing location details using GPS technology. The reported data is stored in a centralized database and displayed on an administrative dashboard, where authorities can review, categorize, and assign issues to the appropriate departments. This automated workflow reduces manual effort, minimizes errors, and improves response time. In addition, the system supports real-time tracking and notification features, allowing citizens to monitor the progress of their complaints at every stage of resolution. Authorities can update the status of issues, and users receive instant notifications, ensuring transparency and accountability. The system also enables data analysis, helping authorities identify frequently occurring problems and take preventive measure

RELATED WORKS

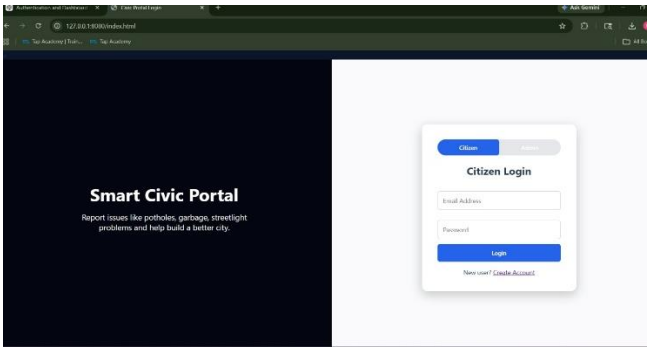
Various research efforts have been made to improve civic issue reporting and management using digital technologies. Early systems mainly focused on web-based grievance portals where citizens could submit complaints online instead of visiting municipal offices. These platforms reduced manual effort but lacked advanced features such as real-time tracking and efficient issue management. With the advancement of mobile technologies, several mobile applications were developed to enable citizens to report civic issues using smartphones. These applications allowed users to upload images and provide basic descriptions of problems. Although they improved accessibility, many of these systems did not include proper backend integration for effective resolution. Some research works have incorporated Geographic Information Systems (GIS) to improve the accuracy of issue reporting. By using location-based services, these systems allow users to mark the exact location of the problem on a map.

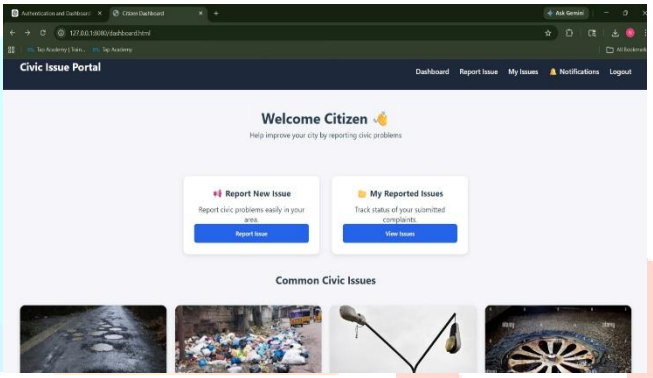
This helps authorities identify the issue more precisely; however, many such systems lack automated workflows for assigning and resolving complaints. In recent years, smart city initiatives have introduced centralized dashboards for monitoring and managing civic issues. These dashboards provide a unified platform for authorities to view complaints and track their progress. While these systems improve administrative efficiency, they often lack direct interaction and feedback mechanisms for citizens. Several studies have explored the use of cloud computing in civic management systems. Cloud-based platforms enable storage and processing of large volumes of complaint data, allowing better scalability and accessibility. However, many of these systems focus only on data storage and do not provide intelligent decision-making features. Some systems have implemented notification services to keep users informed about the status of their complaints. These systems use SMS or email alerts to update users, improving transparency. Despite this, many solutions still do not offer real-time updates or interactive communication between users and authorities.

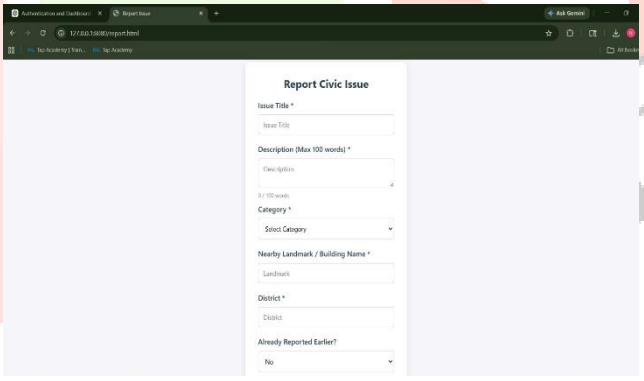
Research has also been conducted on automated issue classification systems, where complaints are categorized based on keywords or predefined rules. This reduces manual effort in sorting complaints but may not always be accurate, especially when dealing with complex or unclear inputs. A few advanced systems integrate IoT and sensor-based technologies for real-time monitoring of civic infrastructure. For example, sensors can detect garbage levels or water leakage automatically. While these systems enhance data collection, they require high implementation costs and are not widely adopted in all regions. Although these existing systems provide useful features such as online reporting, location tracking, and centralized

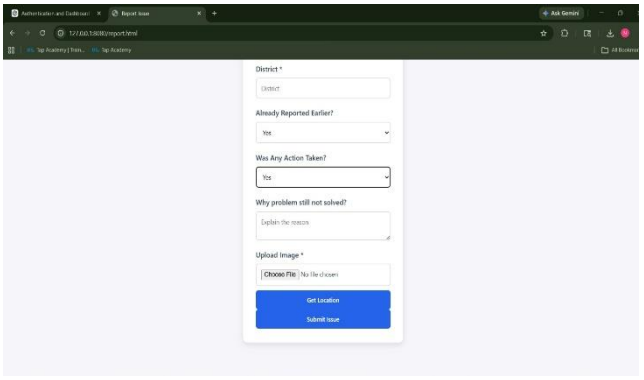
monitoring, most of them operate as separate solutions and lack full integration. The proposed system addresses these limitations by combining real-time reporting, automated categorization, department assignment, and transparent tracking into a single, efficient platform for civic issue management.

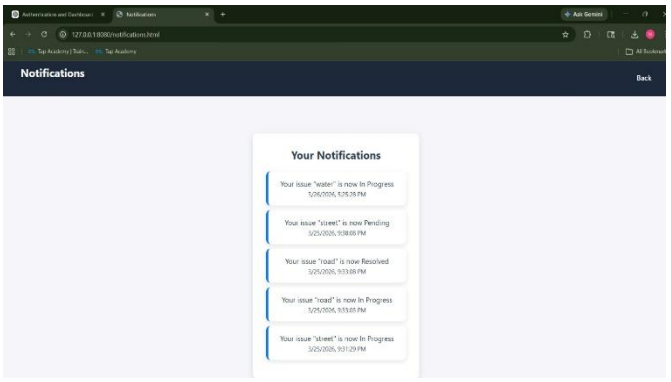
SAMPLE OUTPUT IMAGE

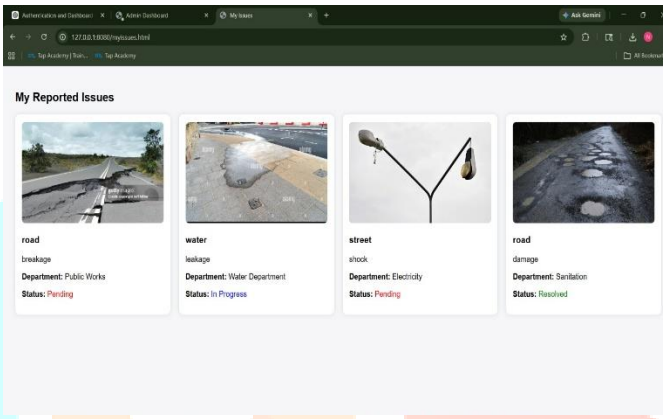












II. METHODOLOGY

The methodology of the proposed Crowdsourced Civic Issue Reporting and Resolution System focuses on designing a web-based platform that enables efficient reporting, processing, and resolution of civic issues. The system follows a structured workflow that begins with user interaction and ends with issue resolution and feedback. It integrates frontend interfaces, backend processing, and database management to ensure smooth communication between citizens and municipal authorities. the methodology ensures a streamlined process for civic issue management, reducing manual effort, improving response time, and enhancing communication between citizens and authorities.

3.1 User Authentication Module

This module manages user registration and login processes. New users can create an account by providing basic details such as name, email, and password. Existing users can log in using their credentials or third-party authentication (e.g., Google login). The module ensures secure access using authentication techniques such as JWT tokens. It maintains user data and controls access to system features.

3.2 Citizen Dashboard Module

The citizen dashboard provides a user-friendly interface where users can access all functionalities of the system. It includes options such as reporting a new issue, viewing previously reported issues, checking notifications, and managing user profiles. The dashboard acts as the main interaction point for users and enhances usability.

3.3 Issue Reporting Module

This module allows citizens to report civic issues easily. Users can enter details such as issue title, description, and category, upload images as proof, and share location details using GPS or map services. The system validates and stores the information in the database. This module ensures accurate and complete data collection for effective issue resolution.

3.4 Issue Tracking Module

The issue tracking module enables users to monitor the status of their complaints in real time. Each complaint is assigned a unique ID, and users can view updates such as pending, in progress, or resolved. This module ensures transparency and allows users to stay informed about the progress of their issues.

3.5 Admin Module

The admin module provides a centralized platform for authorities to manage and resolve reported issues. Administrators can view all complaints in a structured format, filter them based on category, priority, or status, and assign them to the appropriate departments. This module supports efficient decision-making and resource allocation. Additionally, admins can update the status of issues, add remarks, and monitor overall system performance through dashboards and reports. The module may also include priority handling features to address critical issues faster, improving overall system efficiency.

3.6 Notification Module :

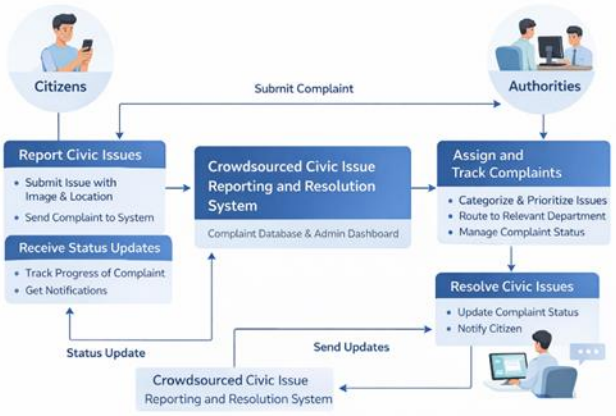
The notification module ensures effective communication between the system and users. It sends real-time updates whenever there is a change in the status of a complaint, such as assignment, progress, or resolution. Notifications can be displayed within the application or sent through email or SMS. This module also helps in reminding authorities about pending tasks and ensures timely action. By keeping both citizens and administrators informed, it improves transparency, user engagement, and overall system reliability.

III. SYSTEM ARCHITECTURE

The proposed system architecture is designed to establish an efficient communication bridge between citizens and municipal authorities through a centralized digital platform. The architecture follows a modular and scalable design where users, system components, and administrative authorities interact seamlessly. Citizens act as the primary data providers by reporting civic issues such as potholes, waste overflow, and drainage problems using a user-friendly interface. The system captures essential details including images, location information, and descriptions, which are then transmitted to a centralized server for processing. This structured flow ensures that complaints are recorded accurately and made available for further action.

The core component of the architecture is the centralized civic issue management system, which functions as the backbone of the entire platform. It is responsible for storing complaint data, processing user inputs, and maintaining a real-time database of all reported issues. The system integrates features such as categorization, prioritization, and status tracking to ensure efficient management of complaints. By leveraging database management systems and server-side processing, the platform ensures data consistency, scalability, and reliability. This centralized approach eliminates redundancy and enables better coordination among different municipal departments.

Once a complaint is submitted, the system automatically forwards it to the relevant authorities through the administrative module. The authority side of the architecture includes functionalities such as complaint assignment, issue categorization, and progress monitoring. Officials can analyze the reported issues, prioritize them based on severity, and assign tasks to appropriate departments for resolution. This structured workflow reduces delays and ensures accountability in handling civic problems. Additionally, the system provides tools for administrators to update complaint statuses and manage overall operations efficiently.



A key feature of the architecture is the real-time issue tracking and notification mechanism. Citizens receive continuous updates regarding the status of their complaints, such as "Submitted," "In Progress," and "Resolved." This is achieved through an integrated notification system that enhances transparency and user engagement.

Finally, the architecture emphasizes scalability, flexibility, and future integration capabilities. The system is designed to support a growing number of users and complaints without performance degradation. It can be extended with advanced technologies such as mobile applications, cloud computing, and data analytics for predictive maintenance and smart city development. Overall, the proposed architecture provides a robust, efficient, and user-centric solution for managing civic issues, contributing to improved urban governance and sustainable city development.

V RESULTS AND DISCUSSION

The results of the Crowdsourced Civic Issue Reporting and Resolution System demonstrate a significant improvement in the efficiency of reporting civic problems. The system enables users to submit complaints instantly, reducing the time required compared to traditional methods. The integration of location-based services ensures accurate identification of issue areas, allowing authorities to respond quickly and effectively. The ability to upload images further enhances the clarity of reported issues, making it easier for officials to understand the problem without physical inspection.

The performance of the system under different conditions is summarized in Table 1.

Table 1: System Performance Analysis

S.No	Parameter Monitored	Normal Range	Observed Condition	System Response	Result
1	Issue Reporting Time	Within few minutes	Immediate Submission	Instant data capture	Faster compliant registration
2	Location Accuracy	High precision	Accurate GPS detection	Automatic location mapping	Improved issue tracking
3	Image upload	Clear images	High quality images uploaded	Image stored & validated	Better issue identification
4	Complaint Tracking	Real-time update	Continuous updates	Notification sent to users	Increased transparency
5	Admin Response time	Within 24-28 hours	Faster response	Issue assigned to department	Reduced delays in action
6	Notification system	Timely alerts	Instant notifications	Alert via dashboard	Improved user awareness

VI CONCLUSION

There The proposed Crowdsourced Civic Issue Reporting and Resolution System provides an effective and modern approach to managing civic problems in urban areas. By leveraging digital technologies, the system simplifies the process of reporting and resolving issues, making it more accessible and efficient for both citizens and authorities. One of the key advantages of the system is its ability to enable real-time reporting of civic issues. Citizens can easily submit complaints with images, descriptions, and location details, ensuring that the reported information is accurate and complete. This reduces ambiguity and helps authorities understand the problem more clearly.

The centralized database plays a vital role in organizing and managing all complaints efficiently. It eliminates the need for manual record-keeping and ensures that no complaint is lost or overlooked. This structured data management improves the overall reliability of the system. The implementation of an admin dashboard enhances the ability of authorities to monitor and manage issues effectively. By providing features such as filtering, categorization, and status updates, the system allows administrators to prioritize tasks and allocate resources efficiently. Another important contribution of the system is the automation of issue categorization and department assignment. This reduces manual effort and speeds up the complaint handling process. As a result, issues are directed to the appropriate departments without unnecessary delays. The inclusion of a real-time tracking system significantly improves transparency. Citizens can monitor the progress of their complaints at every stage, which builds trust in the system and encourages active participation in civic governance.

The notification mechanism further strengthens communication by providing timely updates to users. This ensures that citizens remain informed about the status of their complaints, reducing uncertainty and enhancing user satisfaction. The system also contributes to better decision-making by enabling data analysis. Authorities can identify frequently occurring issues, analyze trends, and take preventive measures to improve urban infrastructure and services. In addition, the system reduces administrative workload by

digitizing the entire complaint lifecycle, from submission to resolution. This leads to improved operational efficiency and better utilization of municipal resources. The platform also promotes accountability by maintaining records of actions taken on each complaint. This ensures that responsible departments are answerable for delays or unresolved issues.

In the future, the system can be enhanced by integrating Artificial Intelligence (AI) and Machine Learning (ML) techniques for automatic issue detection and classification. Image recognition algorithms can analyze uploaded photos to identify the type and severity of issues such as potholes or garbage overflow. This would improve accuracy, reduce manual effort, and enable faster processing of complaints. Another potential improvement is the development of a dedicated mobile application with advanced features such as push notifications, real-time GPS tracking, voice-based reporting, and offline data submission. This would make the system more accessible and user-friendly, especially for people in remote or low-connectivity areas.

REFERENCES

[1] Hashem, I. A. T., et al., "The Role of Big Data in Smart City," *International Journal of Information Management*, 2018.

[2] Ismagilova, E., et al., "Smart Cities: Advances in Research—An Information Systems Perspective," *International Journal of Information Management*, 2019.

[3] Sharma, A., & Gupta, P., "Online Grievance Redressal System," *International Journal of Computer Applications*, 2021.

[4] Patel, D., & Doshi, N., "Civic Issue Reporting System Using Mobile Application," *IEEE Xplore*, 2022.

[5] Singh, R., et al., "Crowdsourced Smart City Applications," *Springer*, 2023.

[6] Kumar, S., & Verma, A., "Smart City Solutions for Urban Management," *IEEE Access*, 2021.

[7] Reddy, K., & Kumar, P., "Web-Based Complaint Management System," *IJERT*, 2020.

[8] Gupta, R., & Singh, M., "Real-Time Civic Issue Tracking System," *International Journal of Engineering Research*, 2022.

[9] Mehta, S., et al., "Mobile-Based Public Complaint System," *IJARCS*, 2021.

[10] Zhang, Y., & Wang, X., "Smart City Infrastructure Using IoT," *IEEE Internet of Things Journal*, 2020.

[11] Khan, F., et al., "IoT-Based Urban Monitoring Systems," *Elsevier Journal of Smart Cities*, 2021.

[12] Joshi, N., & Patil, S., "Online Complaint Management System Using Web Technologies," *IJITEE*, 2020.

[13] Lee, J., & Lee, H., "Data-Driven Smart Governance Systems," *IEEE Transactions*, 2022.

[14] Ahmed, S., et al., "Digital Platforms for Civic Engagement," *Springer*, 2023.

[15] Verma, R., & Jain, A., "Smart Waste Management Using IoT," *IEEE Conference*, 2022.

[16] Bansal, P., et al., "GIS-Based Civic Issue Reporting System," *International Journal of GIS Applications*, 2021.

[17] Das, S., & Roy, T., "Cloud-Based Complaint Management System," *IJCSIT*, 2020.

[18] Brown, M., & Wilson, J., "Urban Issue Reporting Using Mobile Apps," *IEEE Smart Cities Conference*, 2023.

[19] Chatterjee, S., et al., "E-Governance and Citizen Participation," *Elsevier*, 2021.

[20] Ali, M., et al., "AI-Based Smart City Management Systems," *IEEE Access*, 2023