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Fix My City

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Abstract

Fix My City is a smart mobile-based application designed to empower citizens to report and track civic infrastructure issues in a fast, organized, and user-friendly manner. The system addresses the communication gap between residents and municipal authorities by providing a centralized platform for reporting real-world problems such as potholes, garbage dumping, broken streetlights, and public infrastructure damage.

The application enables users to capture images, provide textual descriptions, and automatically attach geographical location data (latitude and longitude) for accurate issue identification. It uses rule-based algorithms for issue classification, structured data storage for efficient retrieval, and map-based visualization for better decision-making.By adopting an iterative development model and lightweight algorithms, FixMyCity ensures scalability, reliability, and real-time responsiveness. The platform enhances civic participation, transparency, and government efficiency in resolving urban issues.

Keywords; *Smart City, Civic Issue Reporting, GIS Mapping, Complaint Management System, Iterative Model, Urban Governance, Citizen Engagement, Geolocation*

I. INTRODUCTION

Rapid urbanization has led to a significant increase in civic infrastructure challenges such as potholes, improper waste disposal, broken streetlights, water leakage, and damaged public facilities. These issues directly affect the quality of life of citizens and require timely identification and resolution. However, in many cities, the process of reporting such problems remains inefficient due to the lack of accessible communication channels between citizens and municipal authorities.

Traditional complaint systems are often manual, time-consuming, and lack transparency, resulting in delayed responses and unresolved issues. Citizens frequently do not know where or how to report problems, and even when complaints are registered, there is limited visibility into their progress or resolution status.

To address these challenges, **FixMyCity** is proposed as a smart, technology-driven platform that enables citizens to report civic issues quickly and efficiently. The system allows users to capture images of the problem, provide descriptive details, and automatically attach precise geographical location data using geolocation services. This ensures accurate identification and easy tracking of reported issues.

The platform incorporates structured data handling and rule-based classification techniques to categorize complaints and streamline their management. Additionally, the integration of map-based visualization enables authorities to analyze issue distribution geographically, helping in better resource allocation and prioritization.

By providing a centralized and user-friendly reporting mechanism, FixMyCity enhances transparency, improves communication between citizens and government bodies, and encourages active civic participation. The system aligns with the vision of smart cities by leveraging digital technologies to create more responsive, efficient, and accountable urban governance systems.

II. LITERATURE SURVEY

The concept of digital civic issue reporting has been explored through various smart city platforms and complaint management systems. These systems aim to improve communication between citizens and municipal authorities by enabling users to report issues such as potholes, waste management problems, and infrastructure damage through online platforms.

Existing solutions highlight the importance of integrating features like image upload, text descriptions, and geolocation data to ensure accurate identification of problems. Geographic Information Systems (GIS) have been widely used to map and visualize reported issues, helping authorities analyze problem areas and prioritize resource allocation.

Research also emphasizes the role of centralized complaint tracking systems in improving transparency and accountability. These systems allow users to monitor the status of their complaints, thereby enhancing trust and user engagement.

However, many existing platforms suffer from limitations such as complex interfaces, lack of proper categorization, and inefficient data handling. Some advanced systems use machine learning

techniques for issue classification, but they increase system complexity and cost.

The FixMyCity system addresses these challenges by combining simple user interaction, rule-based classification, efficient data management, and map-based visualization into a unified and scalable platform.

III. PROPOSED METHODOLOGY

The FixMyCity system is designed using a client-server architecture, where the mobile app acts as the client and the backend server processes and manages user requests efficiently.

A. Front-End Technologies

The front-end of the application is developed using **React Native with Expo**, which enables cross-platform mobile application development. It provides a responsive and user-friendly interface for reporting civic issues, uploading images, and interacting with map-based features.

B. Back-End Technologies

The backend is developed using **Java**, which ensures robust application logic, scalability, and efficient handling of user requests. It manages data processing, issue classification, and communication between the frontend and database.

C. API Integration

The system integrates the **Google Maps API** to enable geolocation services. This allows the application to capture real-time latitude and longitude, display issue locations on maps, and assist in accurate visualization and tracking of reported problems.

D. Database

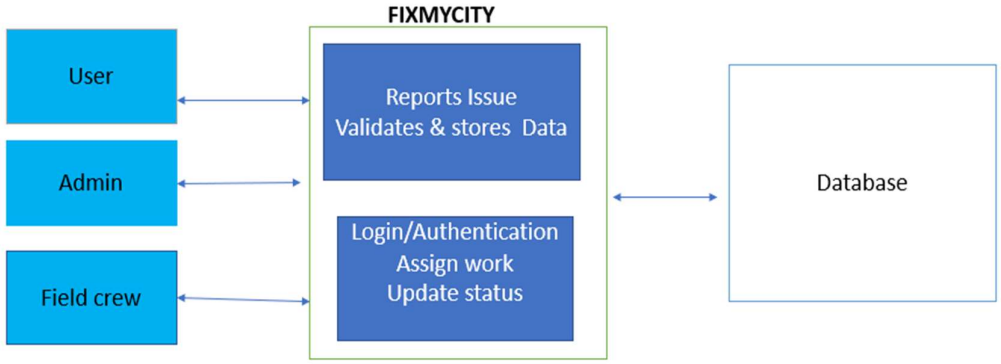
The application uses **PostgreSQL** as the database management system. It provides reliable and efficient storage of user data, complaint records, images, and location coordinates, ensuring data consistency and scalability.

E. Development Environment

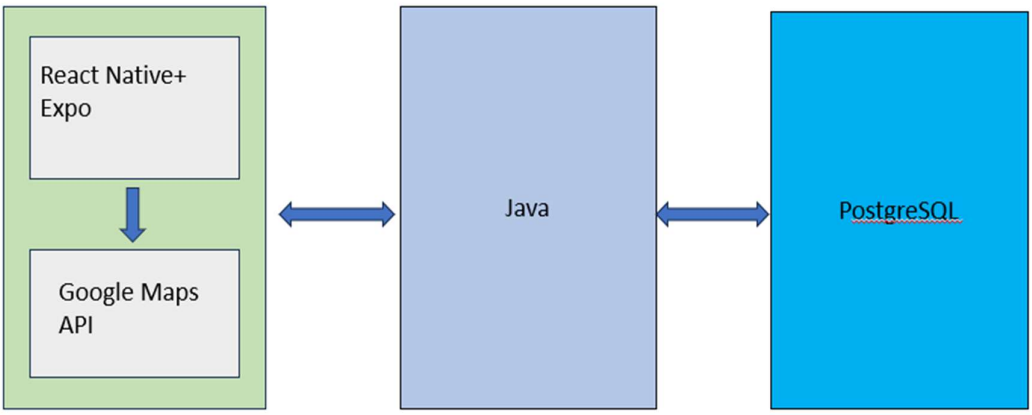
The development and testing of the FixMyCity system are carried out on **Windows 10 or above** operating system, which provides a stable environment for application development and deployment.

IV. Architecture

System Architecture



Technical Architecture



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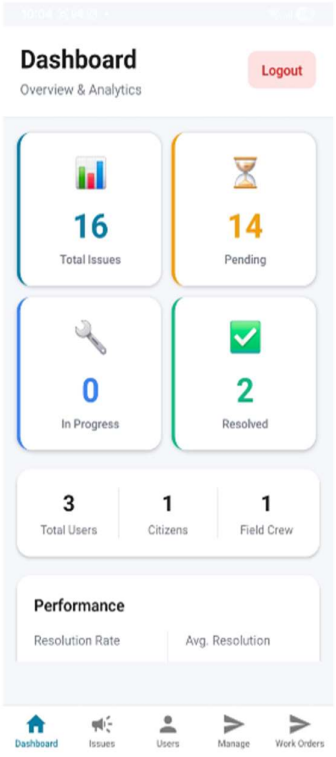
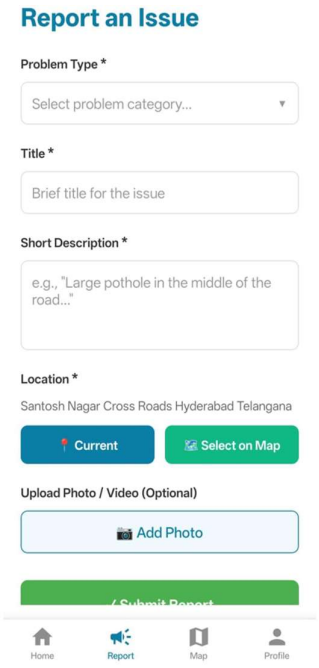
Screenshots

Start screen

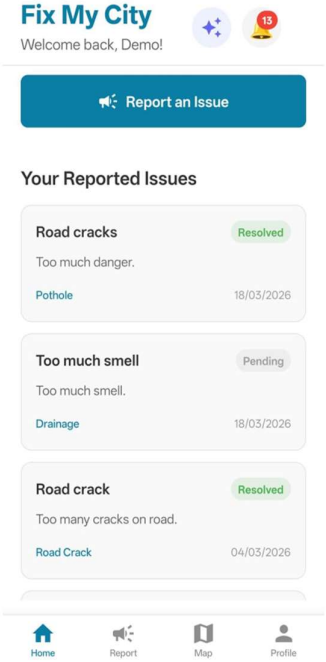
Admin signup screen



Admin Dashboard



User Reports an Issue



Report an issue

Google Maps

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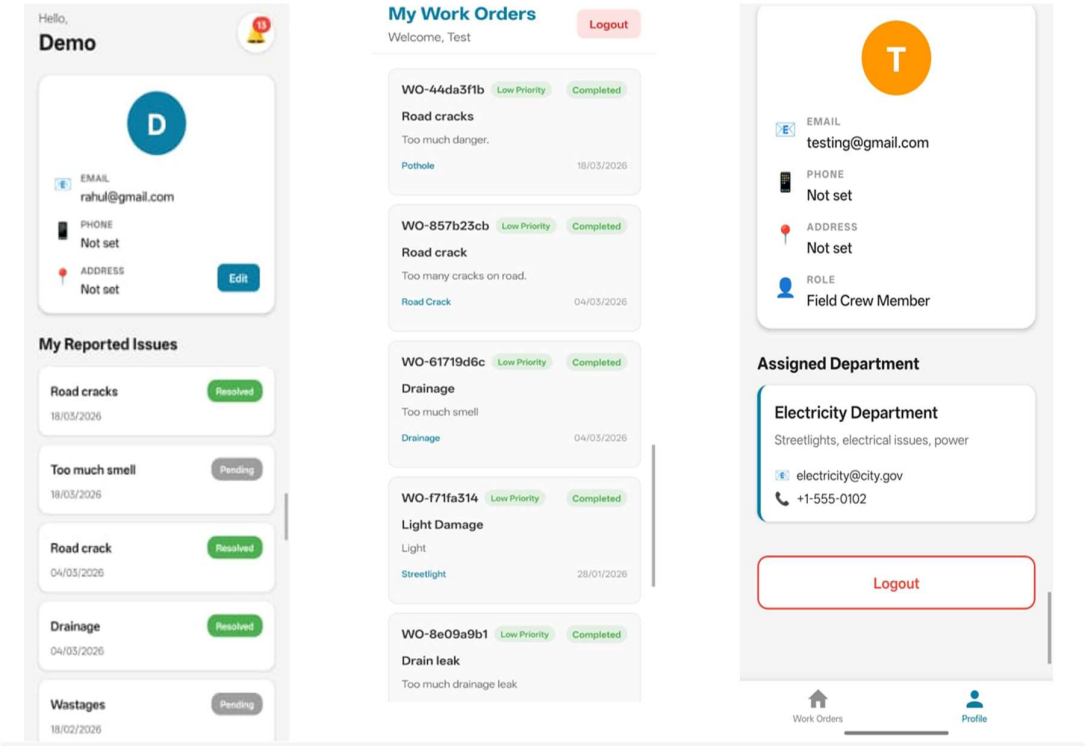

Reported Issues Work Orders Assigned Department

IV. Result

The FixMyCity system was tested under various user scenarios to evaluate its performance, usability, and efficiency. The application successfully enabled users to report civic issues by uploading images, providing descriptions, and capturing location data accurately.

The system demonstrated reliable performance in storing and retrieving complaint data using the PostgreSQL database. The integration of Google Maps API allowed precise mapping of reported issues, helping visualize problem areas effectively. Most user submissions were processed without delay, ensuring smooth interaction and quick response.The rule-based text classification algorithm effectively categorized complaints into relevant issue types, improving organization and filtering. The image handling workflow ensured proper validation and secure storage of uploaded images.Overall, the system improved communication between users and authorities by providing a structured and transparent reporting mechanism. The application showed good responsiveness, ease of use, and scalability, making it suitable for real-world urban issue management.

V. CONCLUSION

FixMyCity provides an efficient digital solution for reporting and managing urban civic issues. The system allows users to submit complaints with images, descriptions, and location data, ensuring accurate identification and tracking.

The project follows the Waterfall Model, enabling a structured and systematic development process. The use of modern technologies and lightweight algorithms ensures reliability, scalability, and ease of use.

Overall, FixMyCity enhances transparency, improves communication between citizens and authorities, and supports better urban management. Future improvements can further increase system effectiveness and user engagement.

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