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# AI Driven Smartcity Issue Reporting Application

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**Abstract:** ***Urban areas frequently face issues such as potholes, garbage overflow, streetlight failures, and water leakages that negatively impact public safety and quality of life. Traditional complaint systems are slow, manual, and lack transparency. This project proposes an AI-Driven Smart City Issue Reporting and Resolution System that enables citizens to report issues through a mobile application using images and location data. Artificial Intelligence techniques including Computer Vision and Machine Learning are used to automatically classify the type of issue and determine its priority level. The system forwards complaints to relevant municipal departments through a web-based dashboard used by officers and administrators. It also provides real-time tracking, notifications, and analytics for efficient issue resolution. The proposed system improves response time, enhances transparency, and supports data-driven smart governance.***

**Keywords:** Smart City, Issue Reporting, Artificial Intelligence, Computer Vision, Public Services, Mobile Application

## 1. Introduction

Urban cities are rapidly expanding, and with this growth comes a wide range of infrastructure and public service challenges such as damaged roads (potholes), inefficient waste management, water leakages, and malfunctioning streetlights. These issues not only affect the daily convenience of citizens but also pose serious risks to public safety, environmental sustainability, and urban mobility. Timely identification and resolution of such problems are crucial for maintaining a high quality of life in smart cities. However, existing complaint management systems are often manual, paper-based, and lack proper coordination between citizens and municipal authorities. This leads to delays in issue reporting, inefficient tracking, lack of accountability, and minimal transparency in the resolution process.

To overcome these limitations, the AI-Driven Smart City Issue Reporting System is proposed as an intelligent and user-friendly digital platform. This system enables citizens to report urban issues easily through a mobile application by capturing images and providing real-time location data. The integration of Artificial Intelligence, particularly Computer Vision techniques, allows the system to automatically analyze the uploaded images, classify the type of issue (such as potholes, garbage overflow, or streetlight failure), and determine its priority level based on severity and urgency. This automation significantly reduces manual intervention and ensures faster processing of complaints.

Once a complaint is registered, it is automatically forwarded to the appropriate municipal department through a centralized web-based dashboard used by municipal officers and administrators. The system supports real-time status tracking, allowing citizens to monitor the progress of their complaints from submission to resolution. Additionally, automated notifications keep users informed about updates, approvals, and completion of tasks.

## 2. Related Works

Sharma et al. (2025) proposed an AI-based urban issue detection system that uses computer vision techniques to identify road damages and waste accumulation from images. The system demonstrated high accuracy in classifying issues and highlighted the importance of automation in smart city governance.[1]

Kumar and Singh (2025) developed a mobile-based complaint management system that allows citizens to report civic issues with location data. The system improved communication between citizens and authorities but lacked intelligent classification capabilities.[2]

Rao et al. (2024) introduced a smart waste management system using IoT sensors and machine learning to monitor garbage levels and optimize waste collection routes.[3]

Patel and Mehta (2024) proposed a web-based municipal complaint system with real-time tracking features. However, the system relied on manual categorization of issues, which reduced efficiency.[4]

Chen et al. (2023) explored the use of deep learning models for detecting urban infrastructure problems such as potholes and cracks from images. Their study showed that convolutional neural networks can significantly improve detection accuracy.[5]

Singh and Verma (2023) developed a smart city monitoring system that integrates data analytics and visualization tools for urban planning and decision-making.[6]

Ahmed and Khan (2022) focused on intelligent public service systems that use mobile applications and cloud platforms for issue reporting and management.[7]

Gupta et al. (2025) proposed a real-time road condition monitoring system using image processing and AI techniques to detect potholes and road damages, improving maintenance efficiency.[8]

Nair and Joseph (2025) developed a geolocation-based complaint reporting system that enables citizens to submit

issues with GPS tagging, improving accuracy in issue identification.[9]

Das et al. (2024) introduced a deep learning-based garbage detection system using image datasets to classify waste types and improve waste management processes.[10]

Verma and Yadav (2024) proposed an AI-powered smart governance system that integrates complaint management with predictive analytics to prioritize critical issues.[11]

Li et al. (2023) developed a smart urban infrastructure monitoring system using computer vision and IoT integration for real-time issue detection.[12]

Fernandez and Lopez (2023) designed a cloud-based civic issue tracking platform that enhances transparency and communication between authorities and citizens.[13]

Reddy et al. (2023) implemented a machine learning model for classifying urban issues such as drainage problems and road damage based on image data.[14]

Bansal et al. (2022) proposed a mobile application for smart city services that includes complaint registration, tracking, and feedback mechanisms.[15]

Karthik and Prasad (2022) developed an automated streetlight monitoring system using IoT sensors to detect failures and notify authorities instantly.[16]

Zhang et al. (2021) explored the application of artificial intelligence in smart city management, focusing on automated issue detection and resource optimization.[17]

Roy and Dutta (2021) proposed a centralized digital platform for municipal services that integrates complaint handling, analytics, and reporting features.[18]

## 3. Outlined Method

Designing an AI-Driven Smart City Issue Reporting System involves a structured process aimed at improving urban issue management and automating complaint handling activities. The proposed methodology integrates computer vision, machine learning, and web technologies to create an efficient issue reporting and resolution platform.

### 3.1 Requirement Analysis

The requirement analysis phase focuses on identifying system objectives and challenges in traditional complaint management systems. These include manual complaint registration, delayed response from authorities, lack of transparency, and difficulty in tracking issue status. Key requirements include capturing user-submitted images and location data, automatically classifying issues, prioritizing complaints based on severity, and maintaining a centralized database for storing issue records and tracking progress.

**a) System design**

The system design includes several interconnected modules. Citizens can submit complaints through a mobile application by uploading images along with location details. The system processes the images using computer vision techniques to identify the type of issue and assign priority. A web-based dashboard is provided for municipal officers and administrators to view, manage, and update issue status. All modules interact with a centralized database that stores user details, issue reports, media files, and resolution updates.

**b) Development**

The system is implemented using Python for AI model development and backend processing. Computer vision libraries are used for image classification and issue detection. The backend is developed using the Django framework to manage application logic and database operations. A mobile application is developed using Flutter for citizen interaction, while a web interface is used by municipal authorities. A relational database such as MySQL or SQLite is used to store user data, issue details, and system logs.

**c) Integration & Testing**

Integration ensures that all modules operate together as a complete system. Testing procedures verify the accuracy of issue classification, reliability of location tracking, performance of the notification system, and correctness of issue status updates. The system is tested under different scenarios to ensure smooth functionality, quick response time, and efficient handling of urban issues.

## 4. Evaluation & Optimization

Evaluation and optimization involve analysing the performance of all modules within the AI-Driven Smart City Issue Reporting System. This includes measuring the accuracy of AI-based issue classification, evaluating complaint processing efficiency, analysing notification delivery reliability, and validating real-time tracking functionality.

Optimization techniques improve classification accuracy, enhance data processing efficiency, and ensure reliable system performance. Image preprocessing, improved training datasets, and optimized database queries are applied to enhance overall system performance.

### 4.1 Machine Learning Approach

The AI-Driven Smart City Issue Reporting System applies machine learning and artificial intelligence techniques to automate urban issue detection and improve complaint management. One of the key components of the system is the image classification module, which uses computer vision algorithms to identify issues such as potholes, garbage accumulation, water leakage, and streetlight failures from uploaded images. The system processes user-submitted images and extracts features that are analysed using trained models to classify the type of issue and determine its severity level.

In addition to automated issue classification, machine learning techniques support other intelligent modules of the system. Priority prediction helps in assigning urgency levels to reported issues based on severity and location data. Notification systems ensure that users receive timely updates

about complaint status. Analytics modules evaluate system performance and provide insights for better decision-making by municipal authorities.

By integrating these intelligent modules, the system provides an efficient platform for automating urban issue reporting and resolution processes. The combination of computer vision and machine learning techniques allows the system to operate accurately and efficiently within smart city environments.

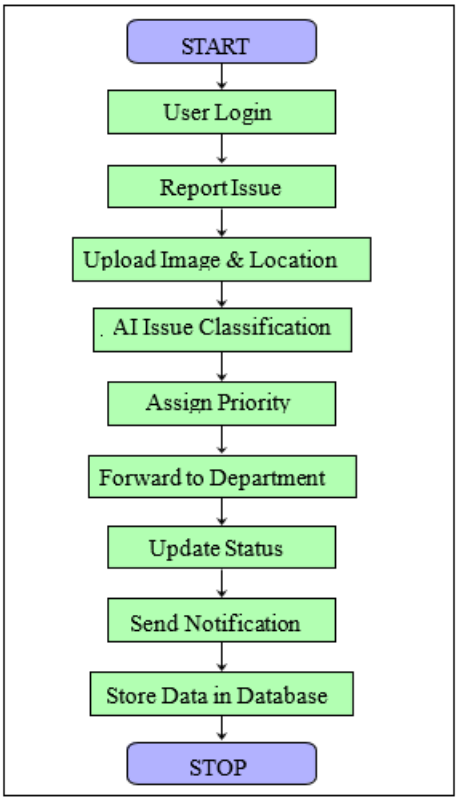


**Figure 1:** Flowchart of Smart City Issue Reporting System

### 4.2 Dataset Description

The AI-Driven Smart City Issue Reporting System uses datasets consisting of urban issue images such as potholes, garbage overflow, water leakage, and streetlight failures. These datasets are collected from public sources and real-world data captured by users through the mobile application. The images are used to train machine learning models for accurate issue classification.

In addition to image datasets, the system also stores complaint records, user details, issue status updates, and feedback data in the database. This data is used for tracking, analysis, and improving system performance over time. The availability of diverse datasets ensures better accuracy, reliability, and adaptability of the system in real-world urban environments.

## 5. Result & Discussion

### 5.1 System Performance and Functionality

The AI-Driven Smart City Issue Reporting System demonstrates effective performance in automating urban issue management and complaint handling processes. The AI-based classification module successfully identifies issues such as potholes, garbage accumulation, water leakage, and streetlight failures from user-uploaded images. The system integrates multiple intelligent modules including issue reporting, priority assignment, real-time tracking, and notification services. These modules work together to reduce manual effort for municipal authorities while improving response time and service efficiency. The integration of Python, computer vision techniques, Django, and database systems enables the platform to operate efficiently and manage urban issue data in a structured manner.

### 5.2 Test Cases and Outcomes

The system was tested under different real-world scenarios to evaluate its performance and reliability. The image classification module was able to correctly detect and categorize reported issues in most test cases, enabling accurate issue identification and prioritization. The complaint reporting module successfully captured user inputs including images and location details. The notification system delivered real-time updates regarding issue status changes, while the tracking module allowed users to monitor progress from submission to resolution. These results demonstrate that the Smart City Issue Reporting System can effectively support urban management activities and improve communication between citizens and authorities.

### 5.3 Comparative Analysis with Existing Systems

A comparison with traditional complaint management systems shows that the proposed system significantly improves efficiency, transparency, and accuracy. Conventional systems rely on manual complaint registration and processing, which can be slow and prone to delays. In contrast, the proposed system automates issue classification and prioritization using artificial intelligence and computer vision techniques. It provides a centralized platform for managing complaints, tracking status, and monitoring performance, thereby enhancing productivity and enabling authorities to respond more effectively.

In addition to improving issue management, the system provides valuable insights into urban problem patterns and service performance. By combining automated classification with real-time tracking and analytics, the platform creates a more organized and data-driven governance environment. The collected data helps authorities identify frequently occurring issues and allocate resources efficiently. Overall, the implementation of intelligent technologies in urban management demonstrates significant potential in enhancing public service delivery and improving the quality of life in smart cities.

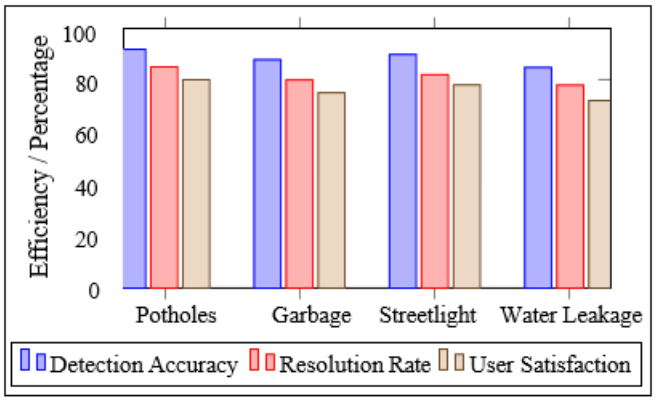


**Figure 2:** Performance Analysis of Smart City Issue Reporting System

## 6. Conclusion

The AI-Driven Smart City Issue Reporting System provides an effective solution for improving urban issue management and public service delivery through the integration of artificial intelligence technologies. By incorporating AI-based image classification for automatic issue detection, real-time complaint reporting, priority assignment, and notification services, the system reduces manual effort and enhances the efficiency of municipal operations. The use of computer vision and machine learning techniques enables accurate identification of urban issues and structured management of complaint data.

The system helps municipal authorities monitor reported issues, track complaint status, and evaluate service performance in a more organized and efficient manner. By automating these processes, the Smart City Issue Reporting System supports better decision-making and allows authorities to respond quickly to citizen complaints. Overall, the proposed system demonstrates how intelligent technologies can transform traditional complaint handling methods into a smart governance platform that improves transparency, responsiveness, and the overall quality of urban living.

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