

## A CROWDSOURCED COMPLAINT RESOLUTION SYSTEM USING GEOTAGGING AND SOCIAL MEDIA ENGAGEMENT

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### ABSTRACT

Urban road maintenance is a persistent challenge for municipal authorities, often hindered by delayed reporting and inefficient resource allocation. To address this, we propose Civic Alerts, a cross-platform, Flutter-based application that empowers citizens to report road issues such as potholes and waterlogging through GPS-tagged images and descriptions. The system facilitates real-time communication between users and authorities while ensuring secure data management through Appwrite. This paper introduces the foundational concept behind Civic Alerts, discusses its system architecture, and reviews related works in the field. The proposed system aims to foster public engagement, improve complaint resolution timelines, and support smart infrastructure governance.

**Keywords:** Citizen-Centric Reporting, Multimedia Complaint Submission, Community Engagement, Real-Time Updates And Notifications, Ticket Generation, Upvote System, Flutter Cross-Platform Development.

### I. INTRODUCTION

Road infrastructure plays a critical role in ensuring safety, mobility, and economic efficiency in urban environments. Despite this, timely detection and resolution of road-related issues like potholes, cracks, and drainage problems remain a significant challenge. Traditional complaint registration methods—such as phone calls or in-person reporting—are often slow, non-transparent, and poorly tracked.

Civic Alerts addresses this gap by introducing a mobile-based platform that allows citizens to report road issues in real time. The app supports image uploads, GPS tagging, and descriptions, enabling authorities to localize and assess issues efficiently. Through its Flutter-based mobile front end and web admin dashboard, Civic Alerts ensures seamless user experience and effective administrative response. The system is built on Appwrite, which ensures secure backend operations, authentication, and database management.

This paper presents an introductory overview of Civic Alerts, it focuses on the techniques of Geotagging, Ticket generation methods, and threshold setup for authentication of complaints in the form of upvotes.

### II. LITERATURE SURVEY

Various researchers have explored different aspects of pothole detection and management:

- **Kumar S., Yadav M. (2023)** "Pothole Detection using YOLO and Image Processing for Real-Time Road Monitoring" – Implements a real-time pothole detection system using YOLO and image processing to increase road safety and maintenance responsiveness.
- **Patel A., Mehta V. (2022)** "Enhancing Smart City Infrastructure with AI-driven Pothole Management Systems" – Describes how AI can be leveraged to build scalable pothole management systems for smart cities, integrating detection, geotagging, and reporting.
- **Kumar V., Singh M., Rani S. (2021)** "A Crowdsourced Civic Issue Tracking System for Smart Cities" – Proposes a civic issue platform with a threshold-based upvote mechanism to authenticate and prioritize complaints for smart governance.
- **Kamble R., Deshmukh P. (2020)** "Smart City Pothole Management System Using Mobile Crowdsourcing and GPS Data" – Introduces a mobile crowdsourcing approach where users can report potholes, with locations tagged using GPS to enable rapid municipal response.

- **Krishna A., Dhanalakshmi R., Kannan A.(2020)** Smart City: Crowd Sourced Geo-Tagged Mobile Application for Civic Issue Reporting - This paper introduces a mobile-based platform that utilizes geotagging and crowdsourcing for civic issue reporting. Citizens can report issues along with their GPS location and multimedia evidence. The paper emphasizes the role of geo-tagging in increasing accuracy, reducing the response time of municipal bodies, and enhancing public participation in smart city initiatives.
- **Maheen F.F., Sumithra M.D. (2018)** “Development of Smart Complaint Portal Based on Geotagging and Proximity Search” – Presents a geotagged complaint system that utilizes proximity search to route civic issues efficiently to concerned departments.
- **Safitri P.M.N., Basid A., Tolle H., Ramdani F. (2017)** “Designing Module E-Complaint System Based on Geotagging and Geofencing” – Describes an e-complaint system using EXIF-based geotagging and geofencing to ensure precise location capture and targeted redressal.

### III. EXISTING SYSTEM

#### Existing Pothole Management System

The current pothole management approach is predominantly manual, relying on citizens to report road damage through phone calls, complaint portals, or municipal offices. This system suffers from several limitations:

1. Manual Reporting: Users must actively report potholes, leading to under reporting.
2. Inaccurate Location Data: Reports often lack precise GPS coordinates, making it difficult for authorities to locate potholes efficiently
3. Slow Response Time: Due to bureaucratic processes, repair work is often delayed.
4. Inefficient Repair Prioritization: Repairs are scheduled based on complaint frequency rather than severity, causing delays in addressing critical road hazards.
5. Lack of Transparency: No systematic tracking exists to ensure accountability in the repair process.

### IV. PROPOSED SYSTEM

The proposed system integrates pothole detection, real-time geotagging, smart dashboards, and automated reporting to enhance road maintenance efficiency. It leverages Flutter for the frontend, Appwrite for backend services and authentication, and Google Maps services for accurate location tracking.

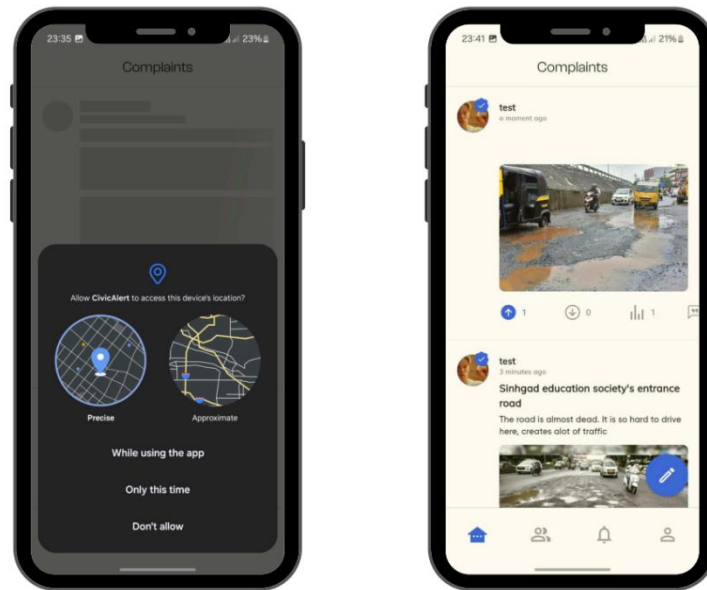
Key Components of the Proposed System:

#### 1. Geotagging & Google Maps Integration:

- GPS coordinates are captured for precise pothole location mapping.
- Google Maps services provide real-time visualization of pothole reports.
- Authorities can prioritize repairs based on traffic density and pothole severity.

When a user submits a complaint, the app automatically fetches the device's GPS coordinates using Flutter's location plugin. These coordinates are embedded in the complaint metadata and stored in the Appwrite database. Google Maps API is used to get latitude and longitude (location) of potholes on a map within user application.

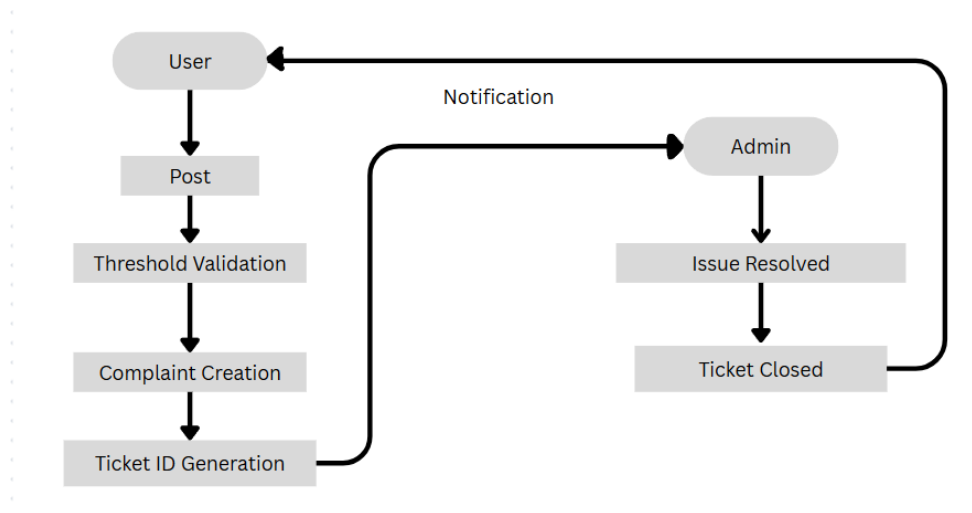
It enables Authorities to pinpoint the exact location of the issue without needing additional communication. Also, higher authorities can use live maps to locate and resolve issues in clusters.



## 2. Ticket Generation:

- Each submitted complaint automatically generates a unique ticket ID for reference.
- Helps maintain transparency and accountability between users and municipal authorities.
- Status updates (e.g., Pending, In Progress, Resolved) are pushed to users and visible in the admin panel.

The ticket includes a status field (Pending, Assigned, Resolved) that is updated throughout the resolution process. Admins have access to a dashboard that allows them to identify the issues on the basis of ticket IDs. Users receive real-time updates via notifications or app status indicators as their ticket progresses.



## 3. Threshold Setup for Complaint Authentication (Upvote Mechanism):

- Posts can be upvoted by other users based on relevance or impact, ensuring community validation.
- A threshold value (e.g., 10 upvotes) must be reached for the post to be escalated to authorities.
- Reduces false or spam reports by relying on community consensus.
- Highly upvoted complaints are prioritized in the admin dashboard, promoting data-driven decision-making.

After submission, a complaint is visible to other users in the same area. Other users can upvote a post, they also experience or consider valid/important. A configurable threshold (e.g., 5 or 10 upvotes) must be reached for the complaint to be marked as "Verified by Community." Only verified complaints are then shown in the main admin queue or prioritized for review. Authorities can still override this system to manually verify or reject any complaint.

## **V. CONCLUSION**

The project's Complaint Management System provides a modern and efficient means of addressing neighborhood complaints regarding potholes and other infrastructure problems. It addresses significant issues that are not resolved in conventional systems. The proposed system improves the user experience while boosting the efficiency of handling complaints by utilizing real-time tracking, automation, and advanced web technologies. Geotagging, real-time complaint management, threshold setup, etc. These are crucial features that provide transparency, speedier resolution, and enhanced user accessibility. In conclusion, both users and management authorities would benefit from the potential for this web-based complaint management system to significantly enhance the reporting and resolution of community issues.

## **VI. REFERENCES**

- [1] Safitri, P. M. N., Basid, A., Tolle, H., & Ramdani, F. (2017). Designing Module E-Complaint System Based on Geotagging and Geofencing. *International Journal of Interactive Mobile Technologies (ijIM)*, 11(3), 129–141.
- [2] Agrawal, S., Miao, P., Mohassel, P., & Mukherjee, P. (2018). PASTA: PASsword-based Threshold Authentication. *IACR Cryptology ePrint Archive*, 2018(885).
- [3] Radke, M. A., Gautam, N., Tambi, A., Deshpande, U. A., & Syed, Z. (2018). Geotagging Text Data on the Web—A Geometrical Approach. *International Journal of Computer Science and Information Security*, 16(2), 78-85.
- [4] Maheen, F. F., & Sumithra, M. D. (2018). Development of Smart Complaint Portal Based on Geotagging and Proximity Search. *International Research Journal of Engineering and Technology (IRJET)*, 5(7), 1582–1587.
- [5] Al-atraqchi, O. M. A. (2018). Backend as a Service (BaaS) Cloud Computing Integrated with Cross-platform Mobile Development Framework. *International Journal of Computer Science & Information Technology*, 10(3), 34-42.
- [6] Krishna, A., Dhanalakshmi, R., & Kannan, A. (2020). Smart City: Crowd Sourced Geo-Tagged Mobile Application for Civic Issue Reporting. *Procedia Computer Science*, 152, 80-87.
- [7] Kumar, V., Singh, M., & Rani, S. (2021). A Crowdsourced Civic Issue Tracking System for Smart Cities. In *2021 International Conference on Smart Technologies in Computing, Electrical and Electronics (ICSTCEE)*, IEEE, 401–406.
- [8] Kamble, R., & Deshmukh, P. (2020). Smart City Pothole Management System Using Mobile Crowdsourcing and GPS Data. *International Journal of Scientific & Technology Research*, 9(4), 1230–1234.