

# AI-Powered Citizen Evidence Verification & Civic Complaint Management

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## ABSTRACT

*The AI-Powered Citizen Evidence Verification & Civic Complaint Management System improves digital grievance redressal by integrating Artificial Intelligence with full-stack web technologies. It allows citizens to submit complaints with multiple images, geolocation data, and multilingual descriptions while ensuring authenticity through deepfake detection and image validation. NLP techniques are used for translation and urgency analysis to enable automated prioritization. The system enhances transparency, security, and efficiency in modern smart governance.*

**Keywords:** *Artificial Intelligence (AI), Civic Complaint Management, Deepfake Detection, Natural Language Processing (NLP), Multilingual Processing, Image Verification, Smart Governance, Geolocation Validation, Role-Based Access Control (RBAC), Full-Stack Web Development.*

## INTRODUCTION

With the rapid growth of digital governance and smart city initiatives, online platforms have become essential for handling civic complaints. Citizens frequently report issues such as road damage, sanitation problems, and public safety concerns through digital portals. However, existing systems often lack proper evidence verification, multilingual support, and automated prioritization, leading to delays and misuse. The AI-Powered Citizen Evidence Verification & Civic Complaint Management System addresses these limitations by integrating Artificial Intelligence with full-stack web technologies. The system enables complaint submission with multiple images, accurate geolocation data, and multilingual descriptions. Deepfake detection and multi-image validation ensure the authenticity of visual evidence. Natural Language Processing (NLP) analyzes complaint text to identify urgency and priority levels. Role-based access control and cloud-based storage enhance transparency and security. This intelligent approach strengthens efficiency, reliability, and trust in modern civic governance systems.

## LITERATURE REVIEW

Research shows that traditional civic complaint systems rely on manual verification, leading to delays, inefficiencies, and misuse through fake evidence. Studies such as *“Smart Complaint System using AI and Web Technologies”* highlight automated routing and real-time tracking but lack authenticity verification. The IJCRT paper on image-based complaint reporting improves visual validation but does not address deepfake detection. IRJMETS research focuses on grievance tracking and transparency without AI-driven prioritization. Mobile-based civic reporting systems integrate GPS and machine learning for better routing but lack multi-image validation. Research on deepfake detection and NLP-based emotion analysis emphasizes the need for verifying digital evidence and identifying urgency automatically. Overall, existing systems improve automation but do not integrate authenticity verification, multilingual processing, and urgency detection into a unified framework. The proposed system addresses these gaps by combining deepfake detection, multi-image validation, NLP-based prioritization, and secure role-based management to enhance transparency and efficiency in civic governance.

## RELATED WORK

Existing civic complaint systems mainly focus on online grievance submission with basic image upload and location tracking features. Some platforms use machine learning for complaint categorization and automated

routing. Mobile-based systems integrate GPS to improve reporting accuracy and response time. Research on deepfake detection and image forensics addresses the challenge of verifying digital evidence authenticity. NLP-based techniques have also been applied to analyze user sentiment and prioritize service requests. However, these features are rarely integrated into a single framework, which the proposed system aims to achieve through unified AI-driven verification and prioritization.

## EXISTING METHOD

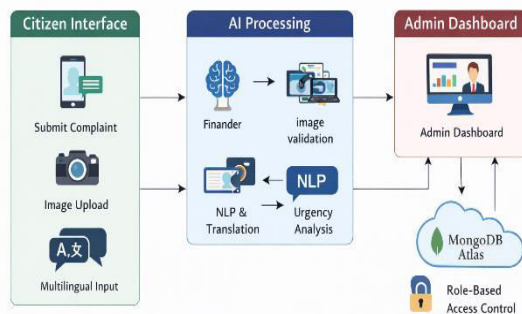
Most existing civic complaint management systems rely on basic digital portals or manual verification processes. Citizens typically submit complaints using plain text descriptions or a single uploaded image without proper authenticity validation. These platforms often lack mechanisms to detect manipulated or fake evidence, making them vulnerable to misuse. Complaint prioritization is generally performed manually, which can lead to delays in addressing urgent issues. Additionally, many systems provide limited multilingual support, restricting accessibility for diverse users. Location details are sometimes manually entered, resulting in inaccurate routing and slower resolution. Furthermore, data management is often semi-automated, reducing transparency and accountability in complaint handling.

## PROPOSED METHOD

The proposed system introduces an AI-driven civic complaint management platform that

improves authenticity and prioritization in grievance handling. Citizens can submit complaints with multiple images, geolocation data, and multilingual descriptions through a web interface. The backend manages authentication and complaint workflows, while a Python-based AI microservice performs deepfake detection, image validation, language translation, and emotion analysis. NLP techniques determine urgency levels for automated prioritization. All data is securely stored in MongoDB Atlas with role-based access control. This integrated approach reduces misuse, enhances transparency, and ensures efficient complaint resolution in smart governance systems.

## ARCHITECTURE



**Fig 1: AI-Powered Citizen Evidence Verification & Civic Complaint Management System**

## METHODOLOGY DESCRIPTION

### CLIENT SIDE (Frontend Layer):

The Client Side acts as the user interface, developed using React.js and Tailwind CSS to provide a responsive and interactive experience. Citizens can register, log in, submit

complaints with multiple images, enter multilingual descriptions, and share geolocation data. Administrators and monitors can access dashboards to review, manage, and track complaints efficiently.

### API REQUEST / API RESPONSE:

The system follows RESTful API principles using structured HTTP methods such as GET, POST, PUT, and DELETE. Data is exchanged in JSON format, and standard HTTP status codes ensure clear communication between frontend, backend, and AI microservices.

### SERVER SIDE (Application Layer):

The backend is built using Node.js and Express.js, following a layered architecture to separate routing, business logic, authentication, and complaint processing. A Python FastAPI microservice handles AI operations such as deepfake detection, image validation, language translation, and emotion analysis.

### STORE / RETRIEVE:

The system uses MongoDB Atlas (NoSQL database) to store and retrieve user details, complaint data, uploaded images, geolocation information, and AI analysis results efficiently and securely.

### DATABASE:

The Database Layer stores encrypted passwords, complaint records, image verification results, urgency scores, and status updates. Cloud-based storage ensures scalability, real-time access, and high data security.

# RESULT AND DISCUSSION

## HOME PAGE:

Displays an introduction to the AI-powered civic complaint platform, highlighting secure and intelligent grievance handling.

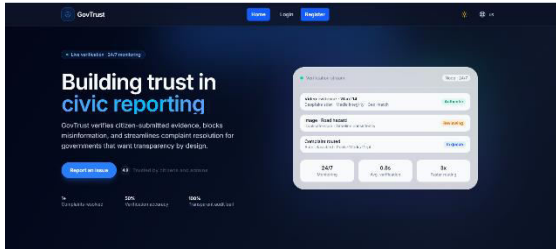


Fig 2: Home Page



Fig 3: Home page in Hindi Language

## CITIZEN REGISTRATION PAGE:

Allows users to create accounts by entering personal details securely.

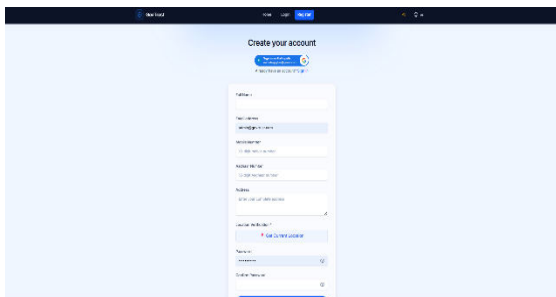


Fig 4: Registration Page

## CITIZEN LOGIN PAGE:

Provides secure authentication with role-based access.

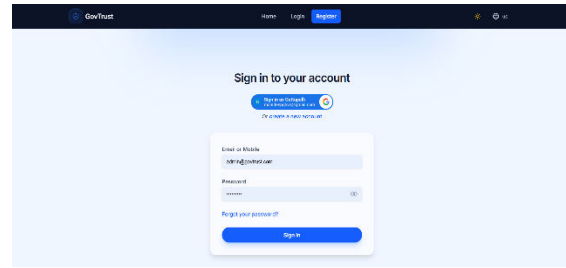


Fig 5: Login page

## ADMIN DASHBOARD:

Displays verified complaints, urgency levels, status updates, and analytics reports.

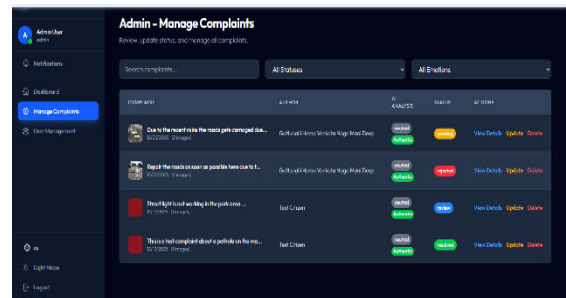


Fig 6 : Managing the User Complaints

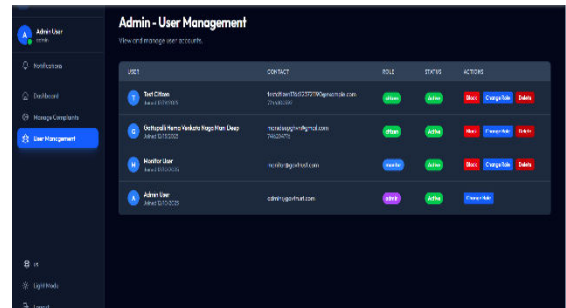


Fig 7: Managing the Users

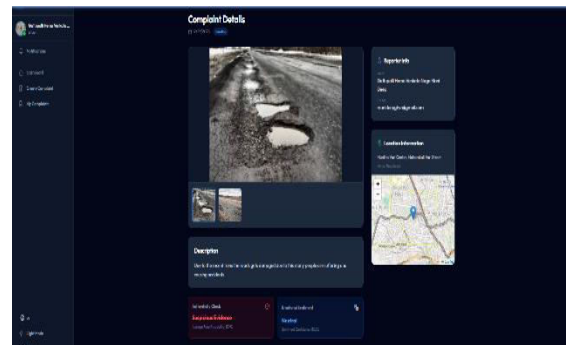
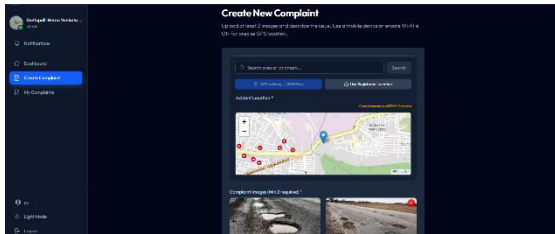


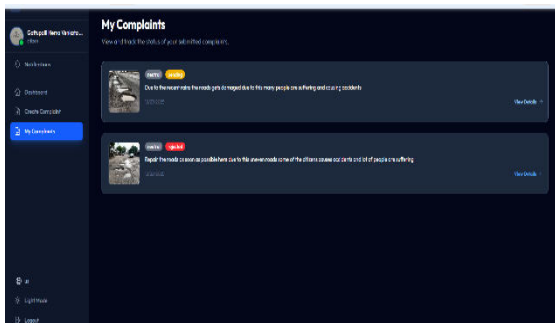
Fig 8: Viewing a complaint

**COMPLAINT SUBMISSION PAGE:**

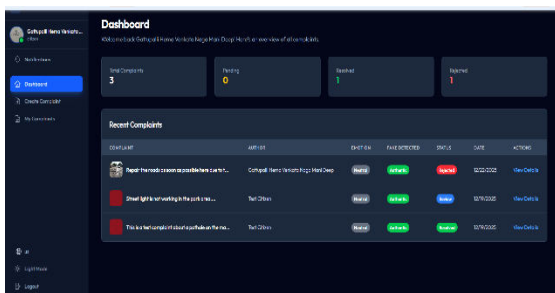
Enables users to upload 3–5 images, provide descriptions, and share geolocation data for verification



**Fig 9: Creating a complaint by entering live location**



**Fig 10: List of Complaints**



**Fig 11: Citizen Dashboard**

**CONCLUSION**

The AI-Powered Citizen Evidence Verification & Civic Complaint Management System enhances transparency and efficiency in digital governance by integrating AI-based image verification, NLP-driven urgency detection,

and secure cloud storage. The system reduces fake complaints, automates prioritization, and improves response time, making civic complaint handling more reliable and intelligent.

**FUTURE SCOPE**

Future enhancements may include mobile application development, GIS-based complaint mapping, predictive analytics for issue forecasting, blockchain-based transparency, IoT integration for automated issue detection, and real-time notifications to citizens and authorities for improved governance.

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