AI-POWEREDCIVICCOMPLAINTMANAGEMANTSYSTEM

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ABSTRACT

An AI-powered civic complaint management system is designed to improve communication between citizens and municipal authorities by automating the process of reporting, tracking, and resolving public issues. The system uses artificial intelligence techniques such as natural language processing and machine learning to categorize complaints, prioritize urgent cases, and route them to the appropriate departmentsefficiently. Citizenscan submit complaintsthrough a web or mobile platform, while administrators monitor progress through an intelligent dashboard. By reducing manual workload, improving response time, and enabling data-driven decision-making, the proposed system enhances transparency,accountability,andoverallurbanservicemanagement.Thissolutioncontributestothedevelopmentofsmart cities by ensuring faster issue resolution and better citizen engagement.

IINTRODUCTION

With the rapid growth of urban populations, managing civic issues such as road damage, waste management, water leakage, streetlight failures, and public safety concerns has become increasingly challenging for municipalities. Traditional complaint management systems often rely on manual processes, leading to delays, misclassification of issues, lack of transparency, and inefficient communication between citizens and authorities. As smart city initiatives expand, there is a growing need for intelligent digital platforms that can streamline civic services and improve public engagement.

An AI-powered civic complaint management system leverages modern technologies such as artificial intelligence, natural language processing (NLP), and machine learning to automate and optimize the complaint-handling process. Citizens can easily submit complaintsthroughuser-friendlywebormobile interfaces, while AI algorithms analyze the content, categorizeproblems,andprioritizeurgentrequestsbased onseverityandlocation.Thisautomationreduceshuman workload, minimizes response time, and ensures that complaints are directed to the appropriate departments without delay.

The proposed system aims to enhance efficiency, transparency,andaccountabilityinurbangovernanceby providing real-time tracking, data analytics, and decision-support tools for administrators. By transforming traditional complaint systems into intelligent platforms, the solution supports effective resource allocation and promotes better collaboration between citizens and local authorities, ultimately contributing to sustainable and smart city development.

II RELATEDWORK

Severaldigitalcivicmanagementplatformsandresearch studies have focused on improving communication betweencitizensandgovernmentauthoritiesthrough

technology-driven solutions. Early complaint managementsystemsmainlyprovidedweb-basedportals where users could manually submit issues, but these systemslackedintelligentautomationandoftenrequired significant human intervention for sorting and prioritization.

Recentstudieshaveexploredthe integrationofmachine learning and natural language processing (NLP) to automatically classify and analyze civic complaints. Researchers have proposed text classification models that identify complaint categories such as sanitation, infrastructure,orwatersupply,enablingfasterroutingto relevant departments. Some smart city projects also implemented mobile applications with geo-tagging features, allowing authorities to locate problems more accurately and respond efficiently.

Inaddition,socialmedia-basedmonitoringsystemshave beendevelopedtodetectpublicgrievancesbyanalyzing postsandcommentsusingsentimentanalysistechniques. These approaches demonstrate how AI can enhance responsivenessand public engagement. However, many existing solutions face challenges such as limited scalability, lack of real-time analytics, and insufficient prioritization mechanisms for urgent complaints.

The proposed AI-powered civic complaint management system builds upon these earlier works by combining automated complaint classification, intelligent prioritization, and real-time tracking within a unified platform.Thisintegratedapproachaimstoovercomethe limitations of traditional systems and provide a more efficient, transparent, and user-friendly solution for modern urban governance.

III LITERATUREREVIEW

The development of intelligent civic complaint management systems has gained significant attention withtheriseofsmartcityinitiativesanddigital governance. Several researchers have explored the use ofinformationandcommunicationtechnologies(ICT)to improve the efficiency of public service delivery. Early studies focused on web-based grievance redressal platforms that allowed citizens to submit complaints online;however,thesesystemswerelargelymanualand lacked automation, resulting in delayed responses and inefficient issue handling.

Recent literature highlights the adoption of artificial intelligenceandmachinelearningtechniquestoenhance complaint processing. Natural Language Processing (NLP) models have been widely used for text classification and sentiment analysis to automatically categorize complaints based on keywords and context. Studiesshowthatsupervisedlearningalgorithmssuchas Support Vector Machines (SVM), Naïve Bayes, and deep learning models can significantly improve classification accuracy and reduce administrative workload.

Research has also examined the role of geo-location services and mobile applications in civic engagement. Systems integrating GPS tagging and image-based reportingenableauthoritiestoidentifytheexactlocation and severity of issues, leading to faster resolution. Furthermore, cloud-based architectures and data analytics frameworks have been proposed to manage large volumes of complaints while providing real-time monitoring and performance evaluation for municipal departments.

Despite these advancements, existing solutions often face challenges related to scalability, data privacy, and effective prioritization of urgent complaints. The proposed AI-powered civic complaint management system builds upon previous research by integrating automated classification, intelligent prioritization, and centralized dashboards to enhance transparency, efficiency,and citizen satisfaction in urbangovernance.

IV EXISTINGSYSTEM

In the current civic complaint management systems, citizens usually submit complaints through government portals, phone calls, or by visiting municipal offices. These complaints are generally recorded manually or stored in basic databases. The complaints are then forwarded to the respective departments for resolution.

Most existing systems lack intelligent automation. Complaintsareoftenprocessedmanually,whichleadsto delays in identifying the correct department and prioritizingurgentissues.Inmanycases,complaintsare not categorized properly, which increases the workload of administrative staff.

Additionally, the trackingandmonitoringofcomplaints is limited. Citizens may not receive timely updates regarding the status of their complaints. This results in inefficiency,lackoftransparency,andslowresolutionof civic issues such as garbagemanagement,roaddamage, water leakage, and streetlight failures.

DISADVANTAGES

- **Manualclassificationofcomplaints,which consumes time and effort.**
- **Delayinresponseandresolutionduetoinefficient routing of complaints.**
- **Lackoftransparencyforcitizensregarding complaint status.**
- **Highworkloadformunicipalstaffduetomanual processing.**
- **Poorprioritization,whereurgentcomplaintsmay not be handled immediately.**
- **Limited analytics, making it difficult for authorities to analyze civic issues and plan improvements.**

V PROPOSEDSYSTEM

The proposed system introduces an **AI-Powered Civic Complaint Management System** designed to improve the efficiency, transparency, and responsiveness of public grievance handling. Traditional complaint systems often involve manual processing, delayed responses, and lack of proper prioritization. The proposed system overcomes these limitations by integrating **Artificial Intelligence techniques for automated complaint classification, prioritization, and routing**.

In thissystem, citizenscan submitcomplaintsthrough a **web or mobile interface** by entering details such as location,complaintdescription,andsupportingimagesif available.Onceacomplaintissubmitted,thesystemuses **Natural Language Processing (NLP)** techniques to analyze the complaint text and automatically categorize it into predefined departments such as sanitation, water supply, road maintenance, electricity, or public safety.

The AI model further performs **priority detection** by analyzing keywords, urgency level, and location severity. Critical complaints such as water leakage, power failures, or road accidents are automatically marked as **high priority**, ensuring that authorities respondquickly.Lesscriticalissuesareassignednormal priority and handled accordingly.

The proposed system also includes a **GIS-based mapping feature**, which helps authorities visualize complaint locations on a map. This enables better resource allocation and helps identify areas with recurring issues. Government officials can track complaint status in real time, assign tasks to relevant departments, and update progress through an administrative dashboard.

Another important feature of the system is **automatic notification and status tracking**. Citizens receive updates through SMS or email whenever the complaint status changes, such as when it is accepted, assigned, in progress, or resolved. This improves transparency and buildstrustbetweencitizensandgovernmentauthorities.

Additionally, the system stores complaint data in a centralized database, which can be analyzed to generate **reports, trends, and predictive insights**. These analytics help government bodies understand common civic issues, identify problem-prone areas, and make better urban planning decisions.

Overall,theproposedAI-poweredsystemaimstocreate a **smart, transparent, and efficient platform** for civic issue management, reducing manual workload and ensuring faster resolution of public complaints.

ADVANTAGES

 AutomaticcomplaintclassificationusingArtificial Intelligence.

 Fastercomplaintprocessingandresponsetime.

 Improved transparency through real-time complaint tracking.

 Efficientprioritizationofurgentcivicissues.

 Reduced manual workload for municipal authorities.

 Data analytics and insights to help governments improve city management.

 Better communication between citizens and civic authorities.

VI METHODOLOGY

TheproposedAI-poweredciviccomplaintmanagement systemfollowsastructuredmethodologythatintegrates data collection, intelligent processing, and automated workflow management to ensure efficient handling of citizen complaints. The system is designed using a modular architecture where each componentperformsa specific function, enabling scalability and real-time performance.

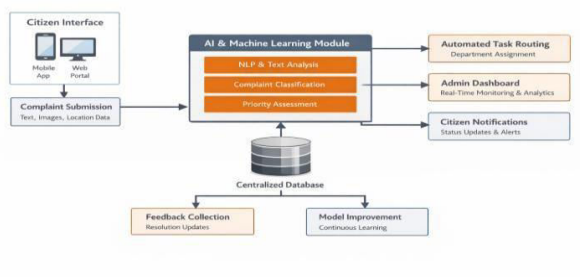
Initially, citizens submit complaints through a web or mobileinterfacebyenteringtextdescriptions,uploading images, and providing location details. The collected data is stored in a centralized database where preprocessing techniques such as text cleaning, tokenization,andfeatureextractionareapplied.Natural Language Processing (NLP) algorithms analyze the complaint content to identify keywords, sentiment, and context, which helps in automatically classifying issues intopredefinedcategorieslikesanitation,infrastructure, or utilities.

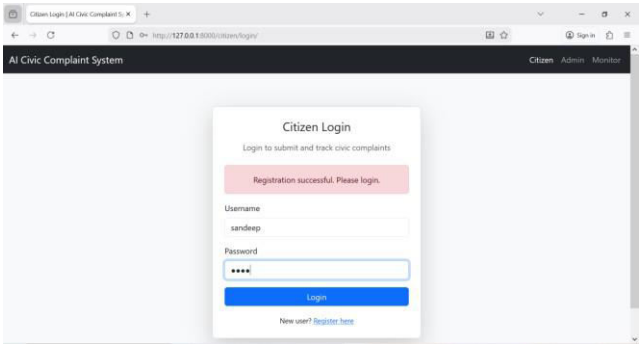
Afterclassification,amachinelearningmodelprioritizes complaints based on severity, urgency, and historical data patterns. High-priority issues are immediately routed to the relevant municipal department through an automatedtaskallocationsystem.Administratorsaccess an intelligent dashboard that displays real-time complaint status, analytics, and performance metrics. The system also sends notifications and updates to citizens, ensuring transparency and continuous engagement.

Finally, feedback and resolution data are collected to improve the learning model over time. This iterative process enables the system to enhance prediction accuracy,optimizeresourceallocation,andsupportdata-driven decision-making for better civic service management.

VII SystemModel

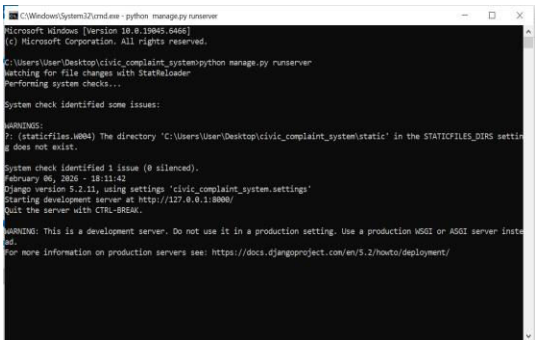
SYSTEMARCHITECTURE

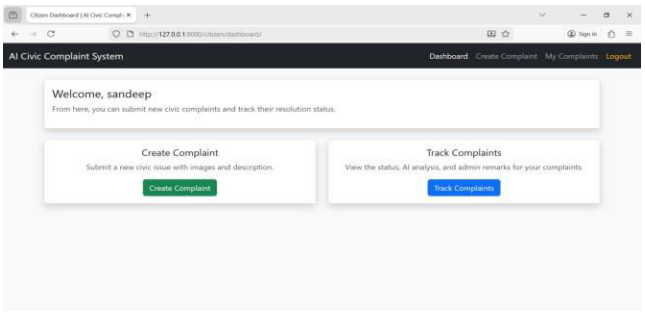


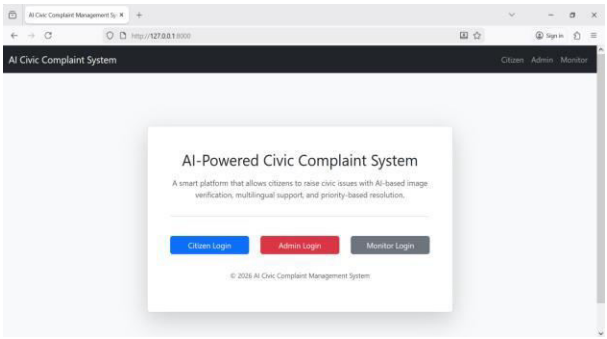


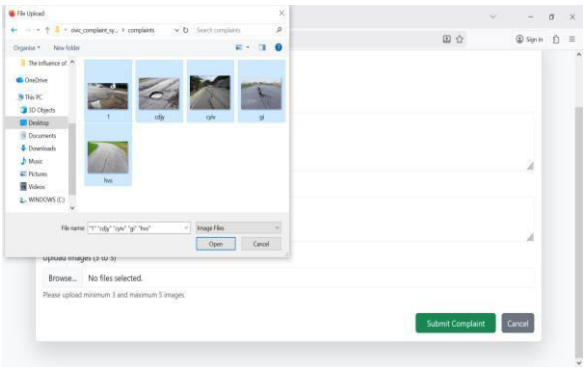
VIII RESULTSANDDISCUSSIONS

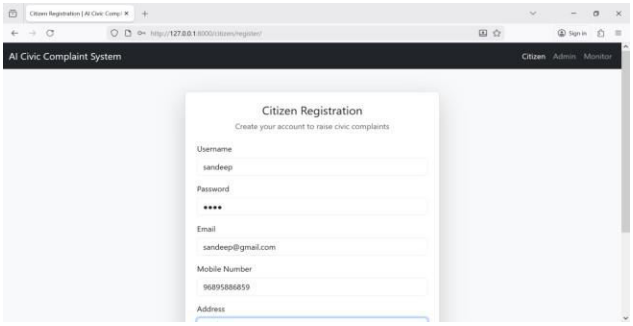
AI-PoweredCivicComplaintManagementSystem

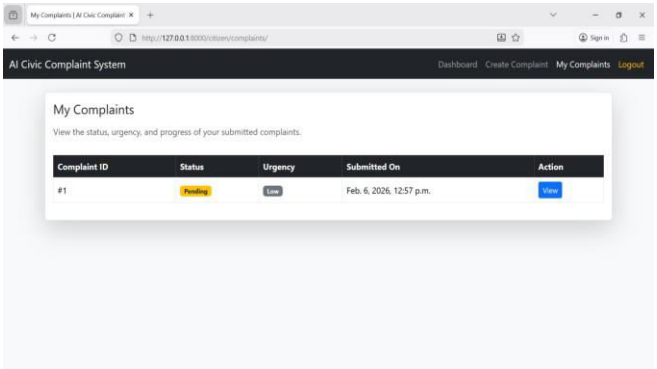


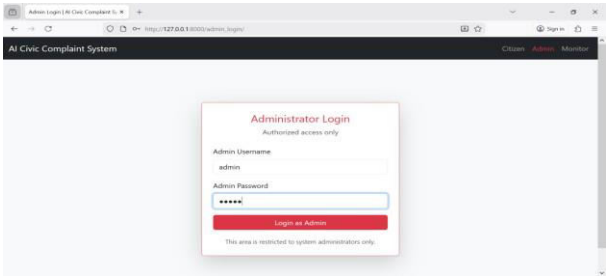


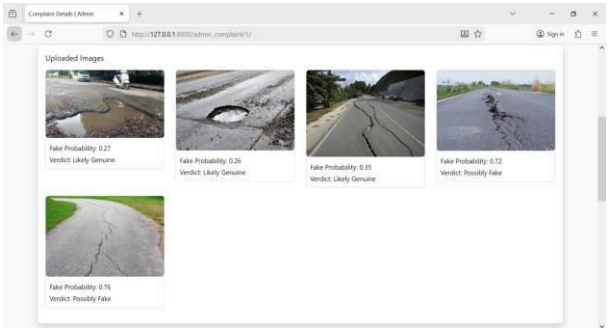


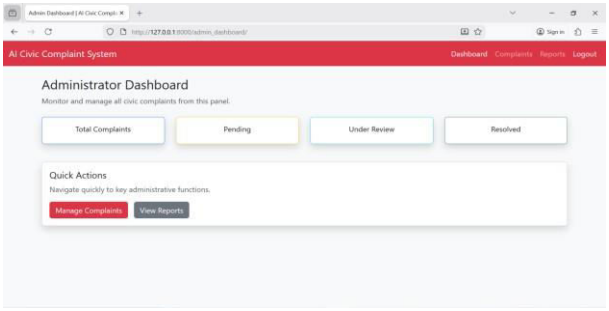


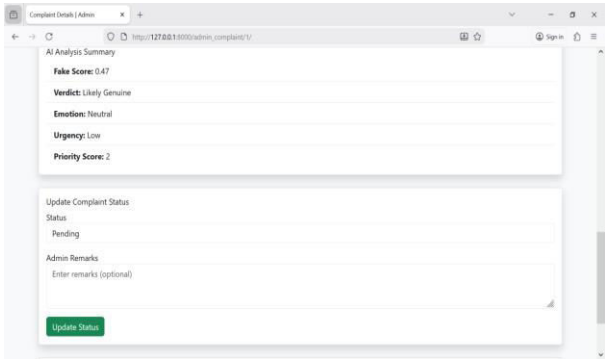


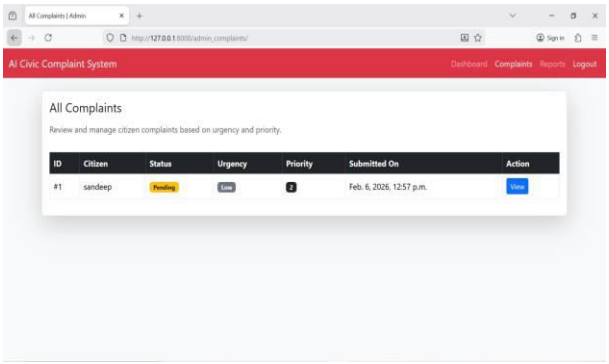


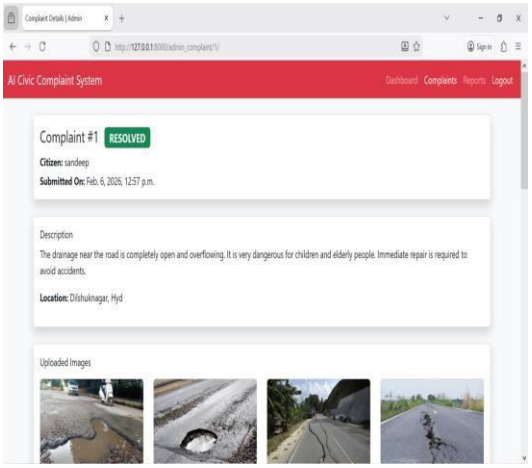

AI Civic Complaint System
Administrator Login
Admin Username
admin
Admin Password
Login as Admin

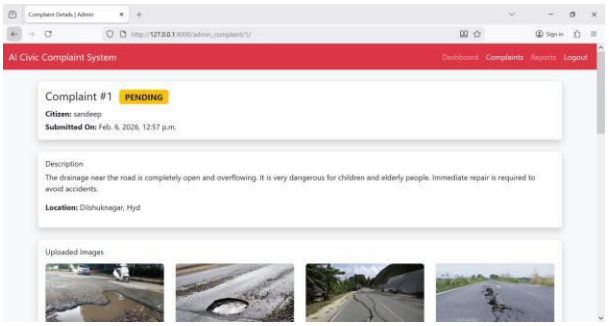

Uploaded Images
Fake Probability: 0.27
Verdict: Likely Genuine
Fake Probability: 0.26
Verdict: Likely Genuine
Fake Probability: 0.35
Verdict: Likely Genuine
Fake Probability: 0.72
Verdict: Possibly Fake
Fake Probability: 0.76
Verdict: Possibly Fake


AI Civic Complaint System
Dashboard Complaints Reports Logout
Administrator Dashboard
Monitor and manage all civic complaints from this panel.
Total Complaints
Pending
Under Review
Resolved
Quick Actions
Navigate quickly to key administrative functions.
Manage Complaints
View Reports


AI Analysis Summary
Fake Score: 0.47
Verdict: Likely Genuine
Emotion: Neutral
Urgency: Low
Priority Score: 2
Update Complaint Status
Status
Pending
Admin Remarks
Enter remarks (optional)
Update Status


AI Civic Complaint System
Dashboard Complaints Reports Logout
All Complaints
Review and manage citizen complaints based on urgency and priority.
ID
Citizen
Status
Urgency
Priority
Submitted On
Action
#1
sandeep
Pending
Low
2
Feb. 6, 2026, 12:57 p.m.
View


AI Civic Complaint System
Dashboard Complaints Reports Logout
Complaint #1
RESOLVED
Citizen: sandeep
Submitted On: Feb. 6, 2026, 12:57 p.m.
Description
The drainage near the road is completely open and overflowing. It is very dangerous for children and elderly people. Immediate repair is required to avoid accidents.
Location: Dilshuknagar, Hyd
Uploaded Images


AI Civic Complaint System
Dashboard Complaints Reports Logout
Complaint #1
PENDING
Citizen: sandeep
Submitted On: Feb. 6, 2026, 12:57 p.m.
Description
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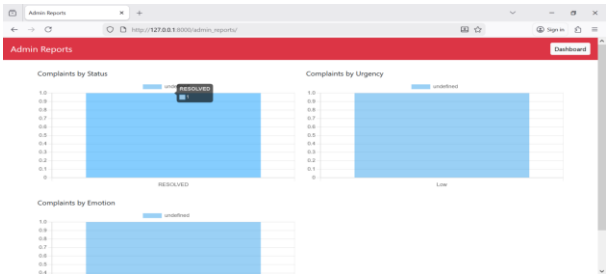
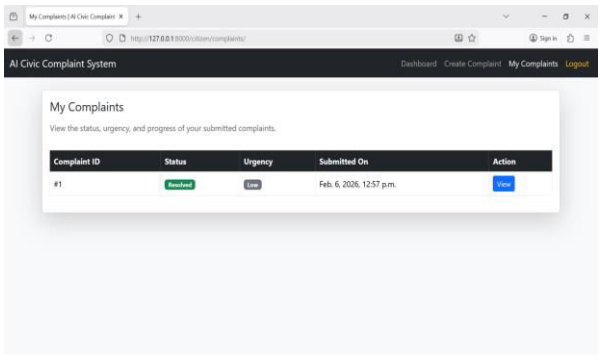
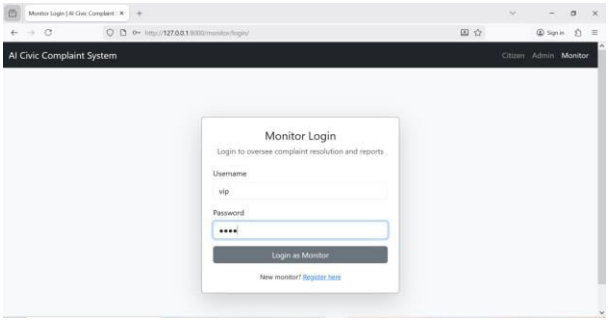
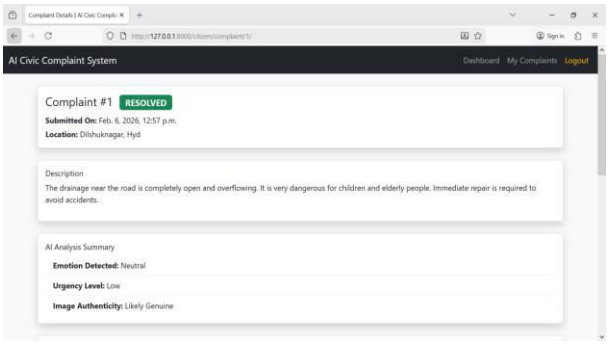
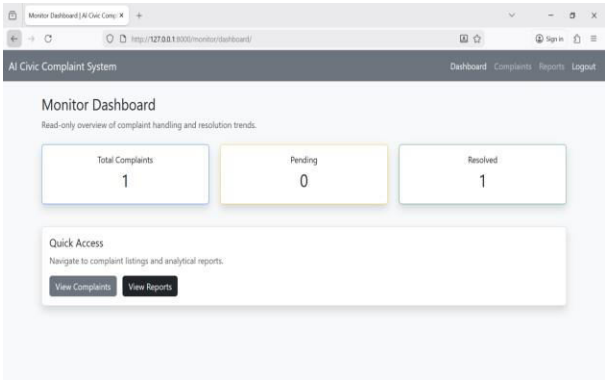
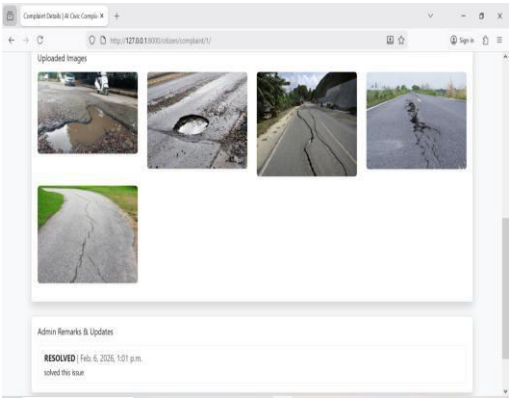

Admin Reports
Dashboard
Complaints by Status
RESOLVED
Complaints by Urgency
Complaints by Emotion

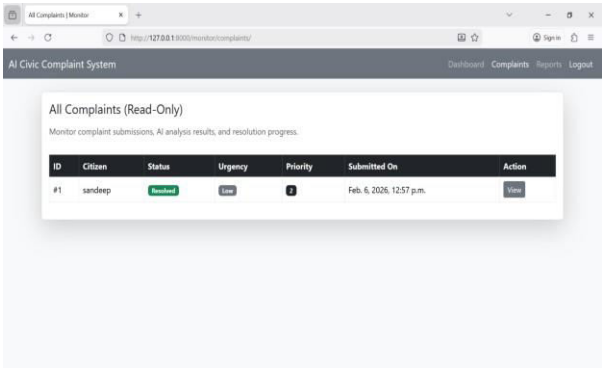


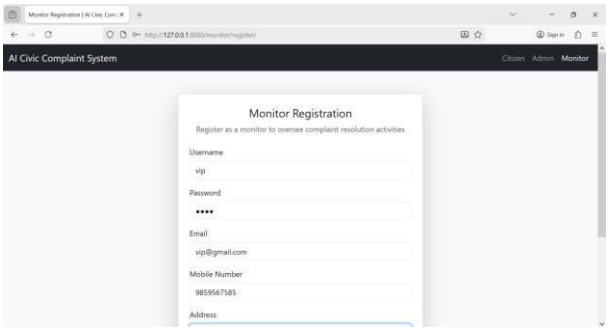












IX CONCLUSION

The AI-powered civic complaint management system providesanintelligentandefficientapproachtohandling public grievances by integrating artificial intelligence, machine learning, and real-time data processing. By automating complaint classification, prioritization, and departmentrouting,thesystemreducesmanualworkload and improves response time for municipal services. The inclusion of citizen-friendly interfaces, real-time notifications, and administrative analytics enhances transparency, accountability, and public engagement.

Overall, the proposed solution supports smart city development by enabling data-driven decision-making and efficient resource management. Future enhancements may include advanced predictive analytics,multilingualsupport,andintegrationwithIoT-based smart infrastructure to further improve urban service delivery and citizen satisfaction.

REFERENCES

1. [1] S. Kumar and R. Singh, "Smart City GrievanceManagementSystemUsingMachine Learning Techniques,"*International Journal of Smart City Applications*, vol. 8, no. 2, pp. 45–52, 2021.
2. [2]A.Sharma,P.Gupta,andK.Verma, "Automated Complaint Classification Using Natural Language Processing,"*IEEE Access*, vol. 9, pp. 112345–112356, 2021.
3. [3] M. Allam and Z. Dhunny, "On Big Data, ArtificialIntelligenceandSmartCities,"*Cities*, vol. 89, pp. 80–91, 2019.
4. [4] T. Chen and C. Guestrin, "XGBoost: A Scalable Tree Boosting System,"in *ProceedingsoftheACMSIGKDDInternational ConferenceonKnowledgeDiscoveryandData Mining*, 2016.
5. [5] J. Devlin, M. Chang, K. Lee, and K. Toutanova, "BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding," in *Proceedings of NAACL-HLT*, 2019.
6. [6] P. Mehta and S. Patel, "AI-Based Public Service Platforms for Smart Governance,"*International Journal of Advanced Computer Science and Applications*, vol. 12, no. 6, pp. 233–240, 2022.