
AI ENABLED GRIEVANCE REDRESSAL ANALYTICS PLATFORM

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ABSTRACT - The AI Enabled Grievance Redressal Analytics Platform is an intelligent web-based application that uses Artificial Intelligence (AI) improve the grievance management process. The primary objective of the system is to automatically classify complaints, analyze their sentiment, assign priority levels, and provide analytical insights to authorities for faster decision-making. Users can submit grievances related to various public services such as water supply, electricity, roads, sanitation, healthcare, and education. The AI model processes each complaint using Natural Language Processing (NLP) to identify the complaint category, determine its urgency, and detect the user's sentiment.

KEYWORDS: Artificial Intelligence (AI), Natural Language Processing (NLP), Grievance Management, Complaint

Classification, Sentiment Analysis, Analytics Dashboard, Flask, SQLite, Google Gemini AI.

INTRODUCTION

Public grievance redressal is an important service that allows citizens to report problems related to government and public services. Traditional grievance systems mainly depend on manual processing, which often results in delayed responses, incorrect categorization, and inefficient complaint handling. The AI Enabled Grievance Redressal Analytics Platform addresses these limitations by using Artificial Intelligence and Natural Language Processing to automate complaint analysis. The system classifies complaints into appropriate categories, identifies their priority level, and performs

LITERATURE SURVEY

Recent research shows that Artificial Intelligence improved public service management through automated text analysis and intelligent decision-making.

Natural Language Processing techniques are widely used for complaint classification, sentiment analysis, and automated ticket management. AI-powered grievance systems reduce manual work, improve response accuracy, and enable authorities to identify recurring public issues. Modern analytics platforms further assist administrators by providing visualization dashboards, predictive insights, and performance monitoring for efficient governance.

RELATED WORK

Several researchers have developed online grievance management systems using web technologies and machine learning. Earlier systems mainly focused on digital complaint registration and manual complaint forwarding. Recent AI-based systems integrate Natural Language Processing to automatically classify complaints, detect user sentiment, and prioritize issues based on severity.

These intelligent systems improve complaint handling efficiency, minimize human

intervention, and support better public administration through analytical reporting.

EXISTING SYSTEM

Most existing grievance redressal systems require manual complaint verification and categorization. Complaints are forwarded manually to different departments, causing delays in resolution. These systems generally lack intelligent complaint classification, sentiment analysis, and automated prioritization. They also provide limited analytical reports, making it difficult for authorities to identify

PROPOSED SYSTEM

The proposed AI Enabled Grievance Redressal Analytics Platform uses Artificial Intelligence, Machine Learning, and Natural Language Processing to automate the grievance handling process. Users can register, log in, and submit complaints through an easy-to-use web interface. The AI model classifies complaints into categories such as Water Supply, Electricity, Roads, Healthcare, Education, and General Services. It also determines complaint priority and performs sentiment analysis. Complaint records are securely stored in a SQLite

database, while administrators can access dashboards displaying complaint statistics, priority distribution, sentiment reports, and departmental performance. The proposed system improves transparency, reduces manual work, and enables faster complaint resolution.

SYSTEM ARCHITECTURE

The system architecture consists of User Registration, Login Module, Complaint Submission Module, AI Processing Module, SQLite Database. Users register and login before submitting grievances. The Flask backend forwards complaint data to the Google Gemini AI model, which performs complaint classification, sentiment analysis, and priority prediction. The processed results are stored securely in the SQLite database.

METHODOLOGY DESCRIPTION

The methodology begins with user registration and authentication. After logging in, users submit complaints through the complaint form. The complaint text is processed using Natural Language Processing techniques. Google Gemini AI analyzes the complaint, classifies it into an appropriate department, predicts its priority level, and performs sentiment analysis. The processed complaint is stored in the SQLite database. Administrators can review complaints, update their status, generate reports, and analyze complaint trends using the analytics dashboard. This methodology provides accurate, secure, and efficient grievance management.

RESULTS AND DISCUSSION

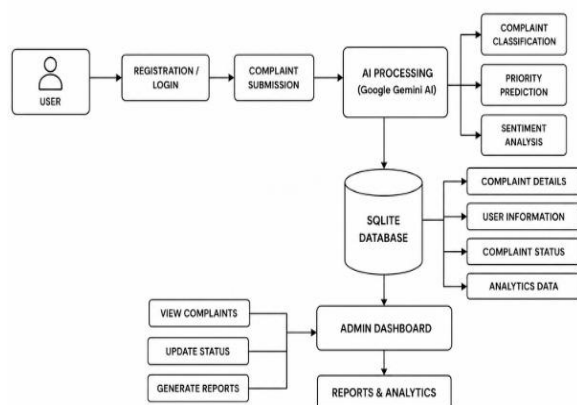


Fig 1: System Architecture

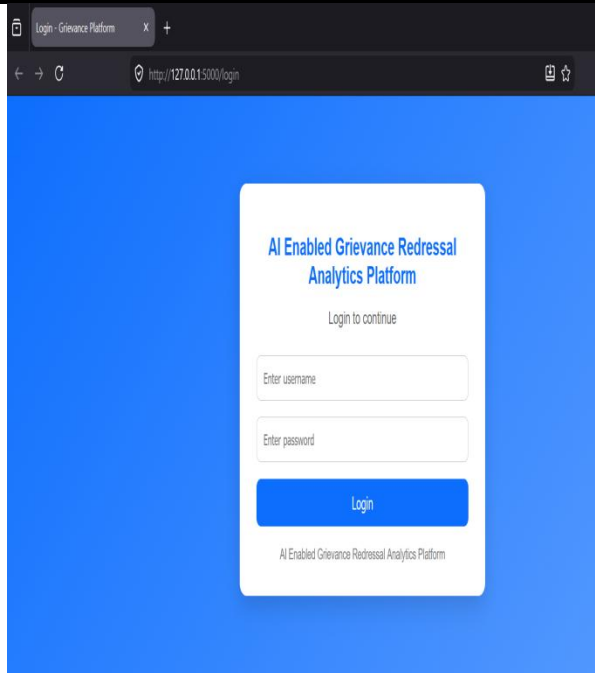


Fig 2: Login Page

The Login page provides secure access to the AI Enabled Grievance Redressal Analytics Platform. Users enter their username and password to authenticate themselves before accessing the grievance management system.

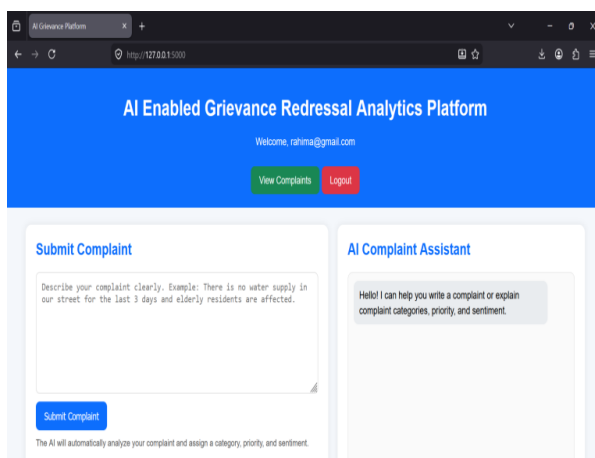


Fig 3: Home Page

The Home page serves as the main interface of the platform. It allows users to submit grievances, access the AI Complaint Assistant, view complaint records, and log out securely after completing their tasks.

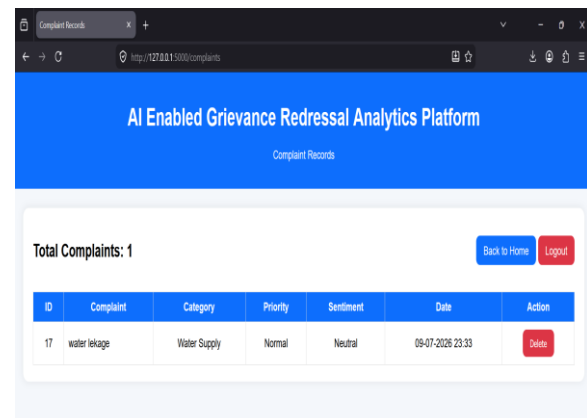
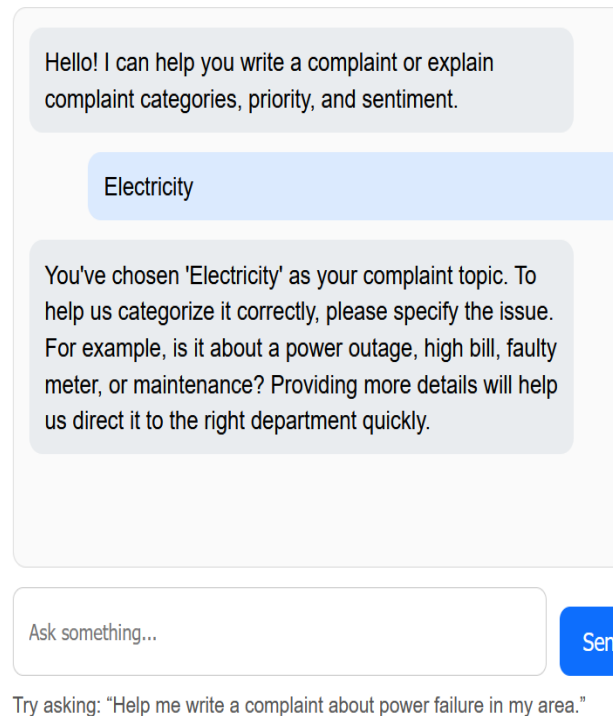


Fig 4: Complaint Submission

The Complaint Submission Page allows users to register their grievances through a simple and user-friendly interface. Users can enter complaint details in the text area, and the system uses Google Gemini AI to automatically classify the complaint, determine its priority level, and perform sentiment analysis. The page also includes the AI Complaint Assistant, which helps users write clear and complete complaints, ensuring accurate processing and faster grievance resolution.

AI Complaint Assistant



The screenshot shows a chat interface for an 'AI Complaint Assistant'. It starts with a greeting: 'Hello! I can help you write a complaint or explain complaint categories, priority, and sentiment.' Below this, a blue button labeled 'Electricity' is selected. A response box says: 'You've chosen 'Electricity' as your complaint topic. To help us categorize it correctly, please specify the issue. For example, is it about a power outage, high bill, faulty meter, or maintenance? Providing more details will help us direct it to the right department quickly.' At the bottom, there is a text input field with the placeholder 'Ask something...' and a blue 'Send' button. Below the input field, a suggestion text reads: 'Try asking: "Help me write a complaint about power failure in my area."'.

Fig 5:AI Complaint Assistant

The AI Complaint Assistant helps users prepare and understand their complaints using Google Gemini AI. It provides guidance on complaint categories, suggests appropriate complaint descriptions, explains priority levels and sentiment analysis, and assists users in submitting complete and accurate grievances.

CONCLUSION

The AI Enabled Grievance Redressal Analytics Platform provides an intelligent solution for modern grievance management

using Artificial Intelligence and Machine Learning. The system automates complaint classification, sentiment analysis, and priority prediction while generating analytical reports for administrators. It reduces manual workload, improves transparency, and enables faster complaint resolution. The platform enhances citizen satisfaction and supports effective governance through data-driven decision-making.

FUTURE SCOPE

In the future, the platform can be enhanced by integrating multilingual support, real-time notifications, and advanced predictive analytics. Cloud deployment and mobile application support can improve accessibility and enable users to submit and track grievances from anywhere. The system can also incorporate automated complaint routing and resolution-time prediction to provide faster and more efficient grievance redressal.

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