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Petition and Grievance Management System

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ABSTRACT: This project proposes a Petition and Grievance Management System designed to enhance efficiency, transparency, and accountability in handling public complaints. The system leverages Natural Language Processing (NLP) and Machine Learning (ML) techniques to automatically analyze incoming petitions, extract key information, categorize them into relevant departments, and assess their urgency and importance. Petition classification, also known as topic labeling or topic identification, is a text classification method which is used to assign document Petition or category labels to documents of various types and lengths. In this proposed work, used Hybrid Ensemble Algorithm. The platform incorporates automated reminders and escalation mechanisms to ensure timely resolution of grievances. It also employs semantic similarity detection to identify repetitive or recurring complaints, enabling authorities to recognize systemic issues and take proactive corrective measures. A real-time tracking module allows petitioners to monitor the status of their submissions, receive updates, and communicate directly with officials, ensuring transparency throughout the resolution process.

KEYWORDS: Transformer models significantly outperform traditional ML approaches in understanding context and semantics.

I. INTRODUCTION

Human society is developing with rapid momentum and achieved various successes for making its livelihood better. The civilization is witness for various changes related to it's the development through different catalysts like industrial development, green revaluation, science and technology, etc. The present era is augmented on Information and Communication Technology.

This technology has proved its potential in various sectors of development in urban and rural landscapes. Urban areas are seeming to more inclined to accept and adopt Information and Communication Technology due to advantages of literacy and better infrastructure as compared to rural areas. Due to such suitable situations of urban landscapes good amount of success of this technology is visible in the form of smart cities and better livelihood of residing human beings. But the problems, consequences and opportunities in urban areas are different for effective utilization of Information and Communication Technology for sustainable development of rural masses.

The present research article discusses about rural development in developing world for the up-liftment of livelihood of the rural masses and to take a 'look ahead' at scientific developments and technologies that might be influential over the next 10-20 years. The driving motivation behind the concept on "Smart Village " is that the technology should acts as a catalyst for development, enabling education and local business opportunities, improving health and welfare.

The enhancing democratic engagement and overall enhancement of rural village dwellers. The " Smart Village " concept aims to realize its goal through providing policymakers with insightful, bottom-up analyses of the challenges of village development. 2 Initiative focuses on improved resource-use efficiency.

Initiative focuses on improved resource-use efficiency, empowered local self governance, access to assured basic amenities and responsible individual and community behaviour to build a vibrant and happy society. In tune with the Hon'ble Prime Minister's call to the members of parliament to provide leadership and work in partnership with the local communities, the Government of Andhra Pradesh seeks partnerships in 12,918 Gram Panchayats and 3,465 Wards. It appeals to public representatives (like Ministers, MPs, MLCs, MLAs, Mayors), film personalities, celebrities,

NRIs, NRVs, corporate houses, officers viz. IAS/IPS/IFS and other officers, NGOs and volunteers etc. to partner a village/ward.

II. LITERATURE SURVEY

A literature survey is an important part of project development that helps researchers understand existing technologies, methods, and challenges related to the proposed system. In the case of the Petition and Grievance Management System, several studies have been conducted on complaint handling, e-governance services, AI-based grievance classification, and online petition systems. These studies mainly focus on improving transparency, efficiency, and communication between citizens and authorities. Traditional grievance management systems were mostly manual and paper-based, leading to delays, data loss, and lack of transparency. To overcome these issues, many organizations introduced web-based grievance portals. Researchers found that online systems improve accessibility, reduce processing time, and help users track complaint status easily. Digital grievance systems also increase accountability by maintaining records and providing timely updates.

Several studies explain the role of e-governance in public grievance redressal. Researchers observed that online complaint systems improve citizen participation and strengthen trust in government services. These systems allow users to submit complaints remotely and receive faster responses from departments. However, some existing systems still suffer from poor coordination, delayed responses, and inefficient complaint categorization. Recent research focuses on Artificial Intelligence (AI) and Natural Language Processing (NLP) techniques in grievance management. AI-based systems can automatically classify petitions based on their content and forward them to the appropriate department. Some systems also identify urgent complaints and send automatic reminders to officials. These intelligent approaches reduce manual work and improve accuracy in handling grievances. Web-based complaint management systems developed using technologies such as HTML, CSS, JavaScript, PHP, Python, MySQL, and Django provide features like online registration, complaint tracking, document upload, and admin dashboards. Researchers concluded that automation significantly improves transparency, reduces paperwork, and speeds up grievance resolution. Another important area of research is e-petition systems. These systems encourage public participation by allowing citizens to raise social and civic issues digitally. Studies show that e-petition platforms improve communication between the public and government authorities. However, proper monitoring and quick response mechanisms are necessary for the success of such systems. From the literature survey, it is identified that many existing systems still lack intelligent prioritization, multilingual support, real-time communication, and predictive analysis for repetitive complaints. Therefore, the proposed Petition and Grievance Management System aims to overcome these limitations by integrating automation, AI-based classification, notification services, and transparent tracking mechanisms to improve overall efficiency and user satisfaction.

III. METHODOLOGY

The methodology of the Petition and Grievance Management System explains the systematic procedure followed for designing, developing, and implementing the proposed system. The main objective of the system is to provide an efficient, transparent, and user-friendly platform for managing public petitions and grievances digitally. Initially, requirement analysis is carried out to understand the problems in the existing manual grievance handling system. The existing system often suffers from delays, paperwork, lack of transparency, poor communication, and difficulty in tracking complaint status. To overcome these issues, the proposed system is developed using modern web technologies and database management techniques.

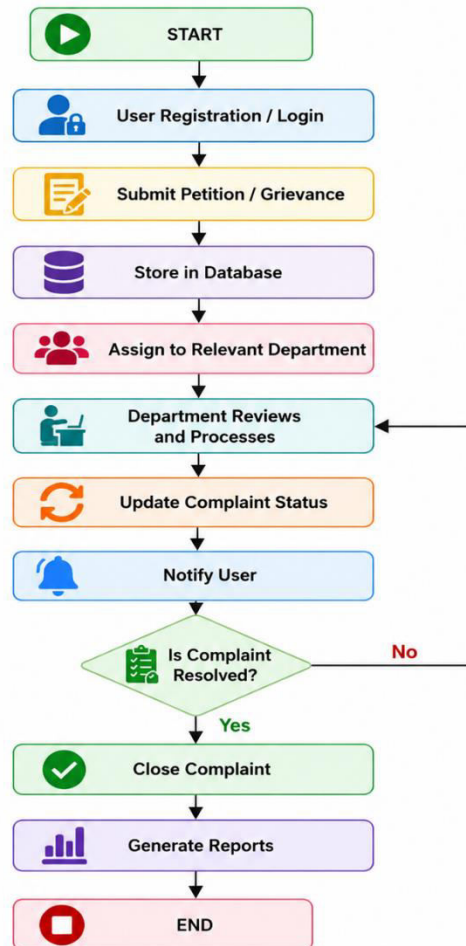
The system begins with user registration and authentication, where citizens create an account and log in securely using their credentials. After successful login, users can submit their petitions or grievances by entering details such as complaint title, description, category, location, date, and supporting documents if necessary. Each complaint submitted is stored in the database with a unique complaint ID, which helps users track the progress of their grievances at any time.

Once the complaint is submitted, the system processes and categorizes the grievance based on its type. In the proposed system, complaints can either be classified manually by the administrator or automatically using Artificial Intelligence and Natural Language Processing techniques. Automatic classification helps in identifying the complaint category quickly and forwarding it to the appropriate department without human intervention. For example, water supply complaints are directed to the municipal department, electricity-related issues are sent to the electricity board, and road

maintenance complaints are forwarded to the public works department. This automated routing process reduces processing time and increases operational efficiency.

After classification, the responsible department reviews the complaint and updates its status regularly. Different complaint statuses such as “Submitted,” “Under Review,” “In Progress,” “Resolved,” and “Closed” are maintained in the system. Users can view these updates through the complaint tracking feature. The system also sends automatic notifications and reminders through email or SMS to both users and officials. These notifications improve transparency and ensure continuous communication between citizens and authorities.

Petition and Grievance Management System – Flow Diagram

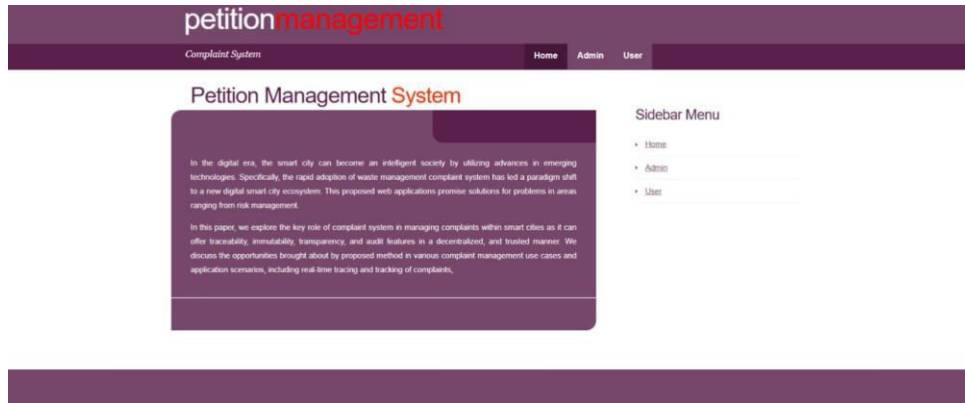


IV. EXPERIMENTAL RESULTS

The experimental results of the Petition and Grievance Management System show that the proposed system performs efficiently in managing petitions and complaints digitally. The system was tested with different types of grievances submitted by users through the web interface. The results indicate that the automated grievance handling process reduces manual effort, minimizes paperwork, and improves complaint resolution speed compared to the traditional manual system.

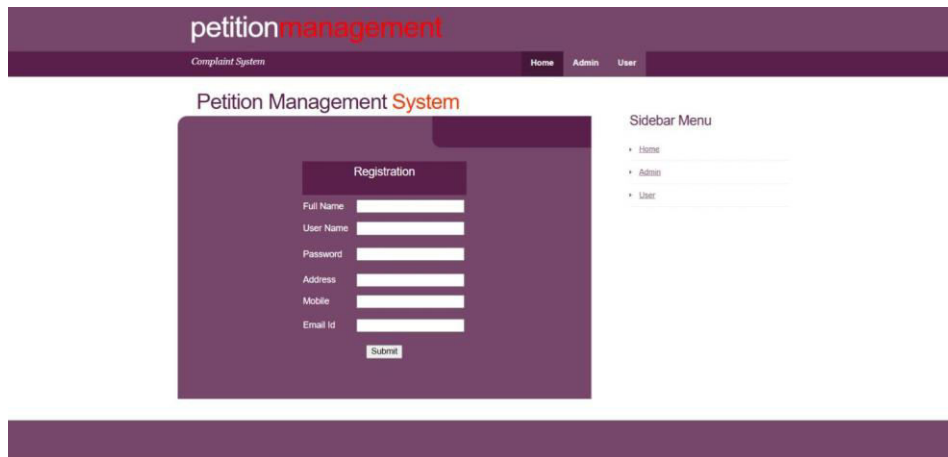
4.1 Home page

The Home Page is the main page of the Petition Management System. It provides navigation links for users and administrators to access different modules such as registration, login, complaint submission, complaint view, and status tracking.



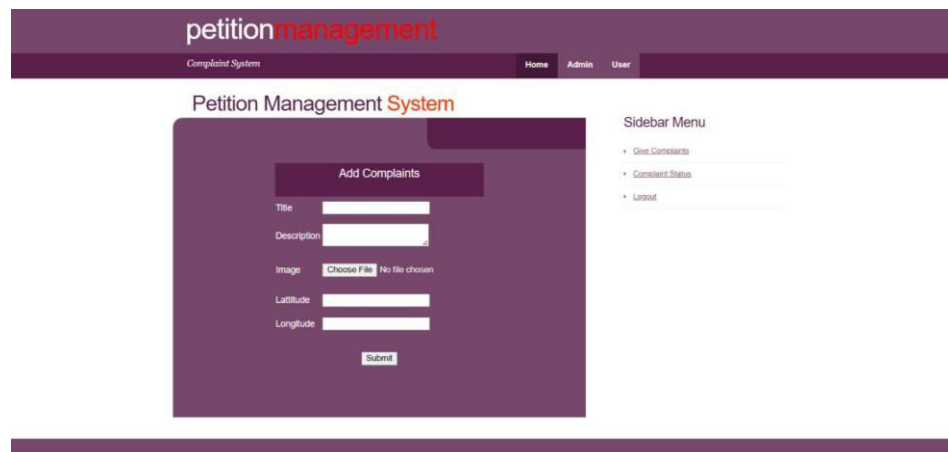
4.2 New user registration

The New User Registration Page is used to create a new account in the Petition Management System. It allows citizens or users to register by entering their personal details. After successful registration, users can log in and submit petitions, track petition status, and receive updates.



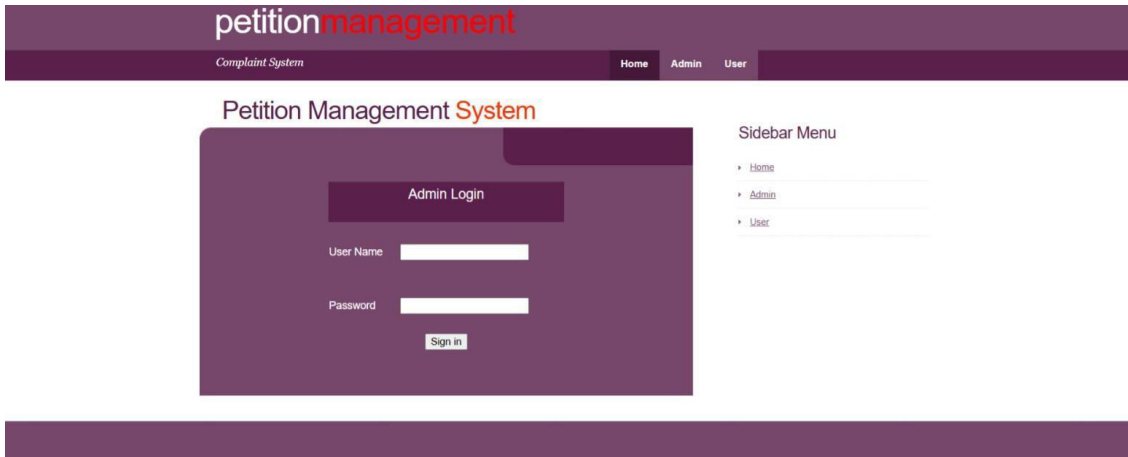
4.3 Complaint description

The Complaint Description module is used to describe the issue or problem faced by the user in detail. It helps the authorities understand the complaint clearly and take appropriate action. Users can enter complete information about the complaint while submitting a petition.



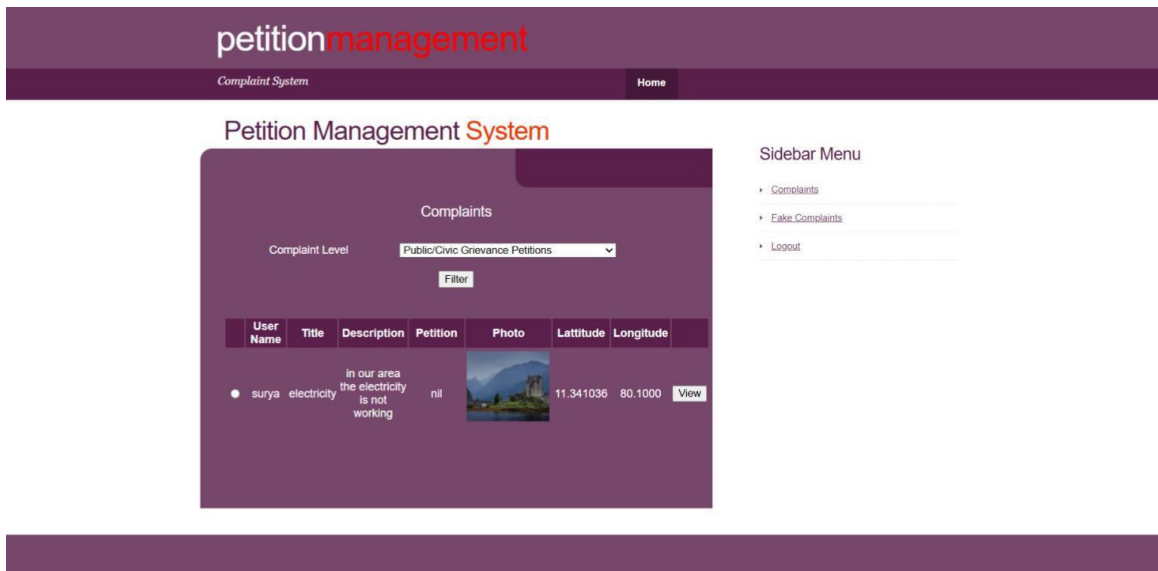
4.4 Admin login

The Admin Login Page is used by the administrator to access the Petition Management System securely. The admin can manage users, view complaints, update petition status, and monitor the overall system after successful login.



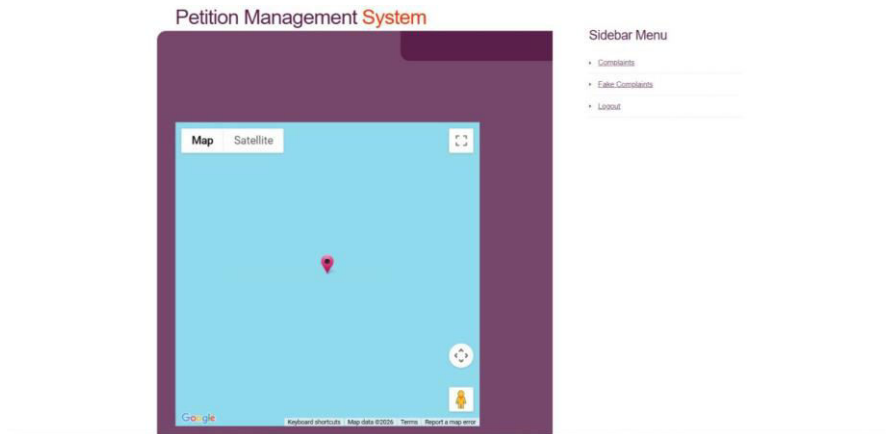
4.5 Complaint view page

The Complaint View Page is used to display all submitted complaints in the Petition Management System. The admin or authorized user can view complaint details such as complaint ID, user name, category, description, date, and status.



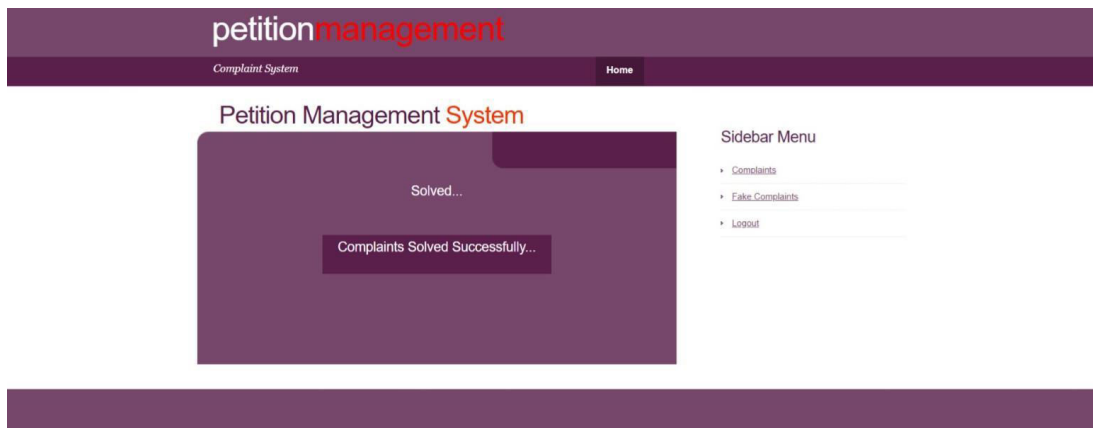
4.6 Complaint location

The Complaint Location Page is used to specify the exact location where the complaint or issue occurred. This helps the authorities identify the problem area quickly and take necessary action efficiently.



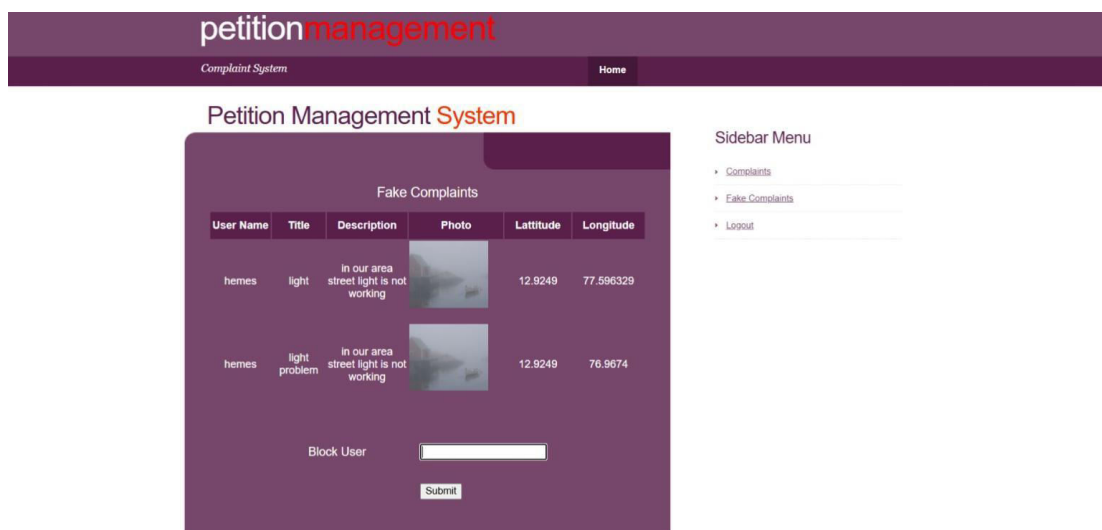
4.7 Complaint solving status

The Complaint Status Page is used to check the current status of submitted complaints in the Petition Management System. Users can enter their complaint ID and view whether the complaint is pending, in progress, or resolved.



4.8 Fake Complaints

The Fake Complaints module is used to identify and manage false or duplicate complaints submitted in the Petition Management System. It helps the administrator detect invalid complaints and maintain the reliability of the system.



V. CONCLUSION

For any overall development, concentration on the basic amenities such as health, drinking water, electricity, primary education, etc., is the first priority. The village level maps showing several land form details would help in proper scientific developmental planning of the villages. user-friendly Decision Support Information system is developed to help the planners to do planning at village level. Socio economic data of available in detail which can be updated in future. This Information system can be used by any authenticated user without having any prior knowledge. The user can query and know the present conditions and accordingly go for further planning. It is useful to find out the drawbacks and potential of any area before going for any developmental activities. The information system can be used to evaluate the Capacity of the area for its shortcomings and therefore to improve the productivity. India is a developing country and for the development of Indian economy rural development is an important factor. The rural development minister in India is a summit body to build up the rural 170 areas by implementing numerous developmental projects and programs. It requires the latest and related spatial and non-spatial data at mandal and village level.

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