INDIA INTERNATIONAL SCIENCE FESTIVAL 2024

30 Nov - 3 Dec 2024 Guwahati, Assam

Team Name: RoboRoadsters

Name of College/University: **Kongunadu College of Engineering and Technology (Autonomous)**

Team Member Details:

- Mr. K. Ajay, III Year IT
- Ms. R. Gayathri, III Year IT
- Ms. S. Prasheetha, III Year IT

Mentor Details:

Mrs.A.Mohana Devi, AP/ IT

Problem Statement: AI-Driven Grievance Redressal System for Public Service Enhancement–Enhancing Public Service Response and Trust through AI-Powered Categorization, Prioritization, and Transparency Techniques.

Explain your understanding on Problem Statement:

The grievance redressal system is AI-driven in addressing the inadequacies associated with grievance handling processes of public services, such as delayed responses, poor issue categorization, and lack of transparency. These vulnerabilities often lead to public dissatisfaction, eroding trust in institutions, hence making the grievance management process efficient, responsive, and transparent.

Brief about your approach:

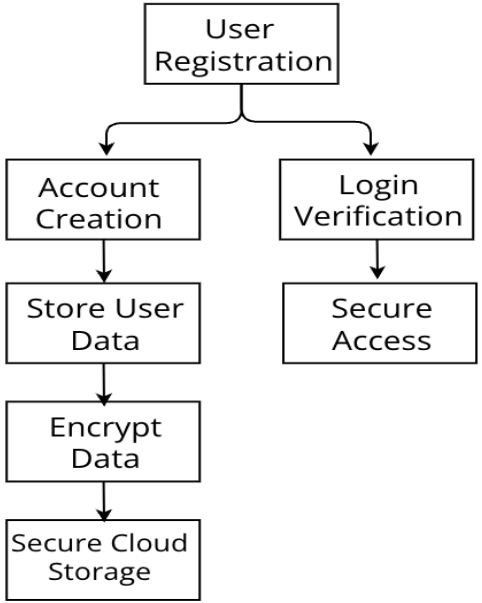
We would create an AI-powered remedial system. With NLP and machine learning, we will design an auto-platform that can categorize and prioritize grievances very effectively. It would be analyzed and classified by the AI algorithms of the system, assigned to departments, followed in real-time by the status of resolution progress, and even provide clear transparency about updates regarding grievance status through automated messages to citizens. It speed up the responses and help establish trust among citizens. Moreover, incorporating data analytics into the system will enable insights to be made so that recurrent issues in public services are better identified and solved.

Detailed Proposal & Solution Approach

The solution uses **Natural Language Processing (NLP)** to understand and categorize citizen complaints, like broken streetlights or healthcare queries. **Machine Learning (ML)** helps prioritize and route these complaints to the right departments. **Geolocation APIs** pinpoint the location of issues for quick response. **Cloud Computing** ensures the system can handle large amounts of data securely and efficiently.

•**AI-Driven Public Grievance Redressal and Healthcare Support System:** AI-ML technologies are thereby adopted to manage public complaint flow and provide health guidance so that the delivery of urban services and citizens' satisfaction improve.

•**Intelligent Grievance Redressal with NLP and ML**: It collects complaints over public infrastructure, such as non-functional streetlights or road repairs; it also collects healthcare inquiries that are not time-bound. It uses NLP and ML models to classify the problems, prioritize them, and route the cases to relevant departments so that all problems get solved with optimum efficiency. Geolocation APIs precisely identify complaints with quicker action to avoid repeated problems as well as response.

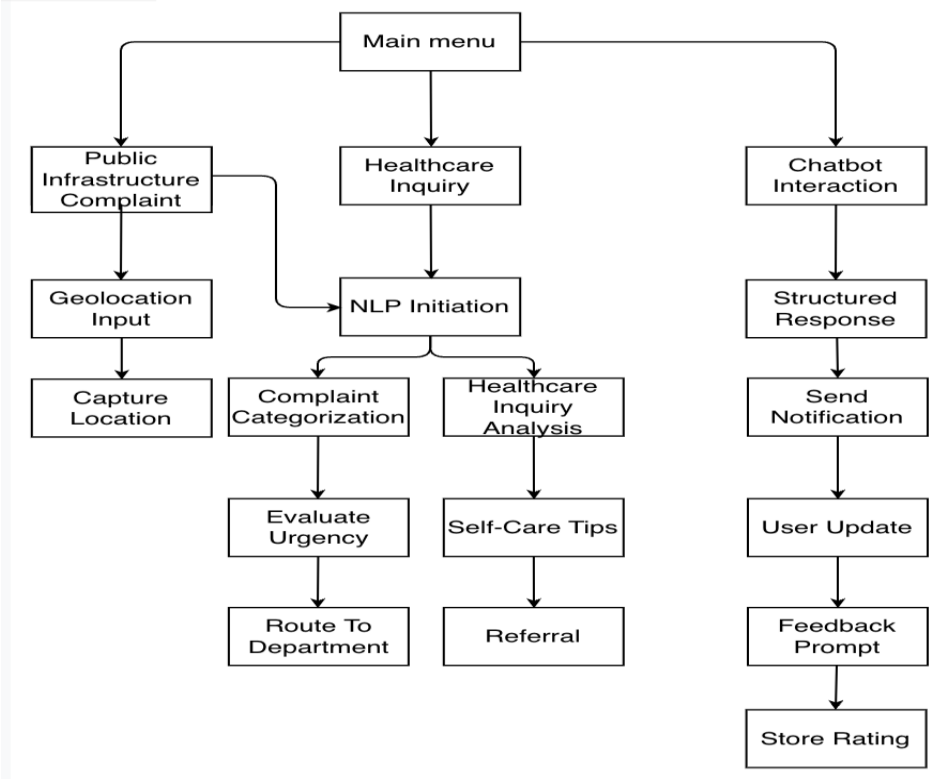


Detailed Proposal & Solution Approach:

Automated Communication and Cloud Integration: The central system, integrated with cloud services, scales up complaints accordingly and allows secure data storage. Natural Language Processing comes up with clear updates to users on complaint status and health guidance in real time, therefore creating an interactive user experience.

Technological Innovation: It improves service efficiency, reduces response times, and builds trust with citizens, thus creating a more connected and responsive urban community through AI-ML-based predictive complaint management and basic healthcare assistance.

This holistic approach combines automated complaint handling and accessible healthcare support, empowering citizens with timely responses and strengthening public service effectiveness.



Tools and devices used on development

Database Management:

- MongoDB for handling large amounts of unstructured data.

Development Environment:

- Integrated Development Environments (IDEs) like Visual Studio Code for writing and testing code.

Programming Languages:

- Python for implementing NLP and ML models, as it offers extensive libraries and frameworks.
- Flutter for front-end development of web applications .

Healthcare APIs:

- Symptom Checker APIs to provide symptom-based healthcare assistance and resources.

Technologies involved/used

- Natural Language Processing (NLP): Enables the system to understand and categorize user complaints and inquiries using language-processing libraries.
- Machine Learning (ML): Classifies and prioritizes complaints based on urgency, using supervised learning models and feedback loops for continuous improvement.
- Chatbot Interface: Creates a conversational agent for managing complaint submissions and healthcare queries through interactive platforms.
- Data Analytics and Reporting: Analyzes trends and insights using BI tools to enhance service response and inform policy.

References/Acknowledgement

- K. M. A. Hassan, M. A. Haque and S. Ahmed, "Comparative Study of Forecasting Global Mean Sea Level Rising using Machine Learning," *2021 International Conference on Electronics, Communications and Information Technology (ICECIT)*, Khulna, Bangladesh, 2021, pp. 1-4, https://ieeexplore.ieee.org/document/9641339

- M. Tavassoli and A. Kamran-Pirzaman, "Comparison of effective greenhouse gases and global warming," *2023 8th International Conference on Technology and Energy Management (ICTEM)*, Mazandaran, Babol, Iran, Islamic Republic of, 2023, pp. 1-5, doi https://ieeexplore.ieee.org/document/10083954