**GRIEVEASE : MAKING GRIEVANCE SUBMISSION AND TRACKING EASY WHILE MAPPING GOVERNMENT BENEFITS.**

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**I. ABSTRACT**

For a number of citizens it is even hard to decipher and to take advantage of the right government programmes: information is scattered, eligibility rules are complicated, and there is no support to find the right programme. Traditionally, searching has meant a person needing to go through the laborious process of searching for the information available at their local government office. To address this issue, we have created a Government Scheme Recommendation System which is an online information system that contains intelligent user profiles, data driven recommendations and grievance management capabilities.

The frontend design is through a user portal and a chatbot UI to allow a natural flow and conversation for the citizens to enter their details, ask questions and lodge a grievance. The backend, which is an API server, pulls together profiles and scheme data from a MySQL User and Schemes database. It pulls

all this data together to build a unified XGBoost based machine learning model to predict and recommend schemes to really facilitate the discovery of schemes in real-time.

In one configuration, there is a robust grievance management module, which is supported by Status Tracker and Grievance Handler, assessment tools such as Fairlearn and AIF360 to help assure a transparent and fair process of handling and resolution of grievances. This process is already organized much like a structured pathway of a software development lifecycle (SDLC); requirements gathering, system design, development, testing and deployment.

It gives a more personalized, transparent and data driven experience to citizens to find out about schemes and lodge grievances over the existing system of manual processes. The objective is to render the government welfare program more democratic and citizens can contribute to it and make sure it serves people in a manner that ameliorates its services through automation.

Keywords: Government Scheme Recommendation, Machine Learning Prediction, Citizen Grievance Management, Fairness Evaluation, Web Application for Public Services, AI in Governance

**II. INTRODUCTION**

Government welfare schemes serve as a fundamental tool to support all citizens and promote inclusive development opportunities. However, Locating appropriate government schemes and their accessibility presents challenges because information exists across various sources and eligibility requirements are complex and there is no personal support. Generally, Citizens have traditionally depended on manual methods which include word of mouth and physical visits to government offices that prove to be tedious and inaccurate and delayed. The rise of Digital governance and intelligent web based tools have enhanced citizen access to government welfare schemes.

This research will discuss the design and Of A web-based recommendation system for government schemes will be developed through this research which uses React frontend together with MySQL database backend and XGBoost machine learning to provide intelligent matching between citizens and eligible schemes based on their profiles. This research will be situated in the research that takes place within e-governance and artificial intelligence frameworks for public services and explores standard functionality through user profile management and real-time scheme recommendations and grievance submission and fairness mediation during grievance processes.

The system aims to reduce citizen interactions with welfare services through a system that accepts personal information and enables users to ask domain-specific questions through a chatbot and receive personalized scheme recommendations. The system features a grievance management module which demonstrates transparency in grievance handling and enables real-time status tracking and fairness audit of grievance management processes using various tools (e.g. Fairlearn and AIF360). This research study aims to produce a citizen-driven, data-driven, and transparent solution that improves the reachability, efficiency, and fairness in using government schemes.

**III. LITERATURE REVIEW**

**G-Cloud in Governance 2012:**

R. Garg et al. studies G-Cloud's influence on e-Governance. It is understood as a solution that enhances transparency, efficiency, and accessibility in public service delivery competently. The research mainly applied the description of cloud services as the one reducing bureaucratic delay in service delivery to citizens. Outcomes have shown that some other challenges such as inaccessibility to the Internet and digital illiteracy act as constraining factors.

**Smart E-Grievance System 2018:**

New Delhi, Joshi and B.P/patil, some suggested Smart E-Grievance that will help input image/video/text and geolocation better communication with authorities and personnel in smart cities. The system is using Hadoop MapReduce as input for effective issues in prioritizing complaints.

**Blockchain Complaint Redressal 2020:**

K.J. Surve and S.S. Patil developed the Smart Complaint Redressal System in which complaints are made, tracked, and recorded using Ethereum smart contracts and stored on IPFS. Users are ensured that the complaints will be tracked by them without any form of tampering. Direct tracking of the complaint's progress was provided to the user in real-time.

**ClouT Smart City Platform 2015:**

The ClouT platform developed by

D. Uckelmann et al. integrates IoT, cloud-based and social media data for citizen-centric smart services. The platform is deployed in different cities such as Santander and Fujisawa and has demonstrated results towards participatory urban planning and safety.

**E-Government Websites Evaluation (2005):**

Shu et al. are considering the evaluation of e-government sites based on user behavior, navigation efficiency, and information clarity. According to the results, simple and orderly designs yield an increase in satisfaction and participation of citizens.

**Sentiment Analysis for the Evaluation of Schemes Machine Learning for Categorization of Complaints (2018):**

Y. Wang and L. Liu presented SVM and Naive Bayes models for the automatic categorization of consumer protection complaints. This methodology proved much more efficient and faster processing of the complaints based on the automated categorization.

**E-A Models in e-Gov (2013):**

M. Kumar and V. Khari evaluated the most promising Enterprise Architecture frameworks for the alignment of e-Gov, namely, TOGAF and Zachman. Dual Mapping with SDLC would ensure efficiency in inter-agency integration and service planning.

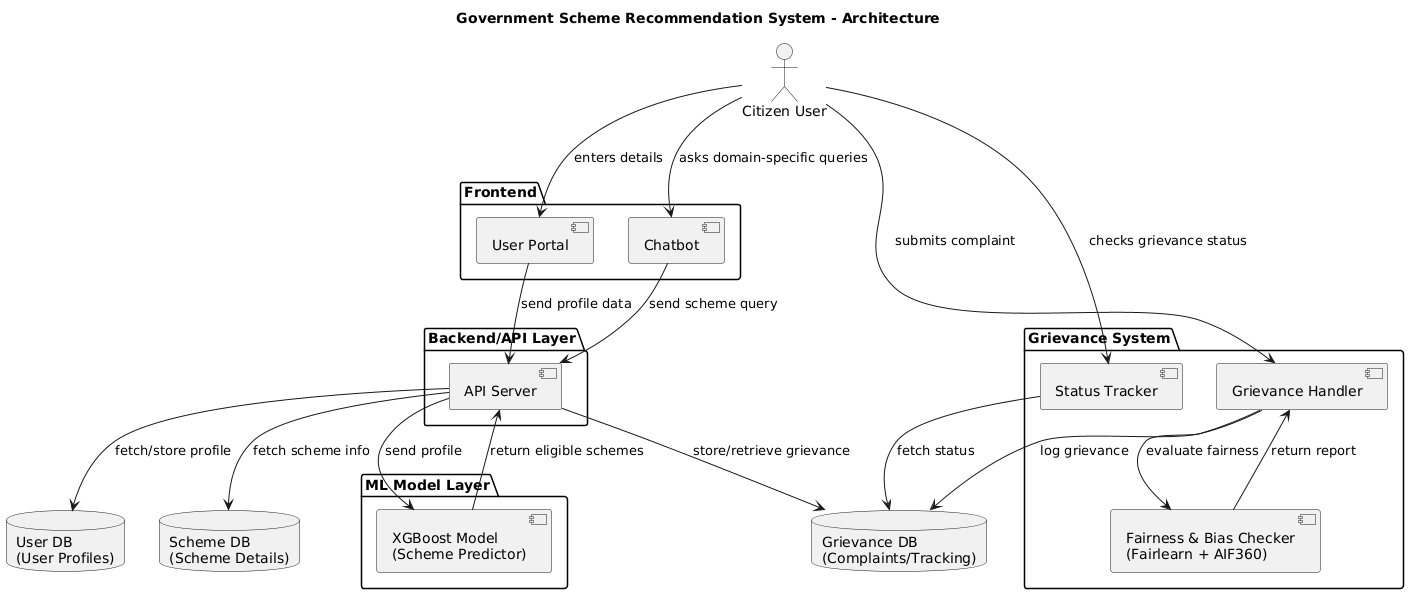
**Reddit Sentiment Mining (2023):**

S. Kumi et al. performed sentiment analysis on Reddit data from Saskatoon Canada to unearth civic issues. The analysis via the BERTopic and SiEBERT models revealed housing and healthcare as the main problems.

**Complaint Optimization Algorithm (2019):**

M. Heinrichsmeyer et al. have described an algorithm to ease the handling of complaints during the usage phase of the product. The system automated the manual 8D-methods so that quicker responses can be made from recognized past patterns.

**V. METHODOLOGY**

** Fig.1.1 Architecture diagram**

**PROPOSED SOLUTION**

The proposed solution is the development of a **basic PHP website** integrated with a **MySQL database** using **XAMPP**. The website functions as a **Government Scheme Recommendation System**, allowing citizens to register, log in, receive scheme recommendations, submit grievances, and track grievance statuses. The system follows a **layered architecture**, each with specific responsibilities to ensure a smooth, modular, and scalable development process.

### 1. Frontend Layer (User Interface)

* **Components**:  
  1. **User Portal**: For registration, login, entering user details, and viewing recommendations.  
  2. **Chatbot**: A basic FAQ/chat interface for asking scheme-related queries.
* **Functions**:  
  1. Collects citizen input (personal details, queries).  
  2. Sends data to the backend for processing.  
  3. Displays scheme recommendations and grievance status.
* **Implementation**:  
  1. Developed using HTML, CSS, JavaScript, and PHP.  
  2. Simple form-based chatbot interface.

### 2. Backend Layer (Application Logic)

* **Component**:  
  1. **API Server**: PHP scripts handling frontend and database interactions.
* **Functions**:  
  1. Processes data received from frontend.  
  2. Fetches user details and scheme information from MySQL database.  
  3. Performs eligibility checks based on profile data.  
  4. Handles grievance submission and status updates.
* **Implementation**:  
  1. PHP APIs (api\_server.php) for processing and database interaction.  
  2. Use of mysqli for MySQL operations.

### 3. ML Model Layer (Recommendation Engine)

* **Component**:  
  1. **Eligibility Prediction Model** (Simulated with PHP rule-based logic initially).
* **Functions**:  
  1. Predicts eligible schemes based on user profiles (age, income, location, etc.).
* **Implementation**:  
  1. Basic decision-tree logic using if-else conditions in PHP.  
  2. Future scope to integrate an XGBoost model via Python microservice.

### 4.Grievance System Layer (Complaint Management)

* **Components**:  
  1. **Status Tracker**: Allows citizens to check grievance status.  
  2. **Grievance Handler**: Admin-side tool for grievance management.
* **Functions**:  
  1. Stores user-submitted complaints in the grievance database.  
  2. Assigns unique grievance IDs and tracks status (pending, reviewed, resolved).  
  3. Allows admin to view and update complaint statuses.
* **Implementation**:  
  1. Pages like submit\_grievance.php and view\_grievance.php for citizens.  
  2. Admin portal (admin\_dashboard.php) for grievance handling.

### 2.5 Database Layer (MySQL Storage)

* **Components**:  
  1. **User Database**: Stores citizen details.  
  2. **Scheme Database**: Stores government scheme information.  
  3. **Grievance Database**: Stores grievance records and status updates.
* **MySQL Tables**:  
  1. users  
  2. schemes  
  3. grievances

**Existing Solutions**

There are various platforms available for citizens to access government schemes, including the UMANG , MyGov portal, state government websites, and department-specific portals. While these tools provide useful information, but fail because the information is scattered and not personalized, and there is no review system to help users understand which schemes are truly helpful,Many government sites have poor user interfaces, while rural areas require physical visits to understand. Overall ,the current platforms are not user-friendly or personalized, which makes it hard for people to find the right schemes. This shows the need for a better, smarter, and more accessible solution like GRIEVEASE.

**Why is GRIEVEASE Different ?**

It does help the users with inquiring about the schemes according to their need and eligibility. It further helps in personalizing the recommendations, easy navigation for quick and accurate selection of schemes, a user-friendly chatbot, and a review system for feedback.

**CONCLUSION**

Many people are unaware of the government schemes they are eligible for, and finding the right one can be confusing and time-consuming. GRIEVEASE aims to address this by assisting users in conveniently finding government schemes according to what they need and can qualify for. It gives plain suggestions, enables people to search through available schemes at a glance,and includes a friendly chatbot for guidance. Users can also provide ratings or reviews on schemes that they find useful, which can help others in the future. Overall, GRIEVEASE facilitates scheme discovery to be easy, quick and allows citizens to make better use of government support.

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**RESULT (WEBSITE SCREENSHOTS)**

