Citizen AI – Intelligent Citizen Engagement Platform

Project Documentation

Citizen AI
Intelligent Citizen
Engagement Platform

Introduction

• **Project title: Citizen AI-Intelligent Citizen Engagement Platform**

• **Team Leader/Member: MANOJ.P**

• **Team Member: SUNDARA MAHALINGAM.M**

• **Team Member: AROKIYA JONESHWA.T**

Abstract

CitizenAI is a web-based application designed to provide citizens with an interactive platform to raise issues, seek services, and access AI-powered responses. Built using Flask, the system integrates AI utilities, user authentication, dashboards, and chat functionalities to deliver an intuitive and intelligent citizen support system.

This project demonstrates the integration of Natural Language Processing (NLP) with web technologies to assist citizens in resolving queries efficiently.

Project Overview – Citizen AI

Purpose:

The purpose of *CitizenAI* is to serve as a digital assistant that bridges the gap between citizens and governance through Artificial Intelligence. It empowers people to easily access government services, understand civil policies, and engage with authorities in a transparent and efficient way. For citizens, it provides quick answers to common queries like ID services, schemes, and application procedures. For aspirants and students, it acts as a knowledge hub for civil services preparation. For officials, it functions as a feedback and service monitoring tool, making governance more responsive and citizen-friendly.

Ultimately, *CitizenAI* enhances **civic engagement, policy understanding, and service accessibility**, creating a smarter, more informed, and participatory society.

Features:

1. Conversational Interface

- **Key Point:** AI-powered citizen assistant
- **Functionality:** Provides natural language chat to answer queries related to civil services, exams, and government processes.

2. Citizen Services Guidance

- **Key Point:** Simplified access to services
- **Functionality:** Helps users navigate processes like applying for Aadhaar, voter ID, PAN, passport, and government schemes.

3. Policy & Exam Knowledge Base

- **Key Point:** Clear, simplified learning
- **Functionality:** Offers concise summaries of government policies and provides civil service exam–related Q&A for preparation.

4. Secure Login & Registration

- **Key Point:** Personalized access
- **Functionality:** Users can register, log in, and manage personal queries; officials can use it for data insights.

5. Dashboard

- **Key Point:** Centralized citizen portal
- **Functionality:** Displays user activity, saved queries, and recommended services in one place.

6. Citizen Feedback Loop

- **Key Point:** Community engagement
- **Functionality:** Collects user opinions and suggestions to improve services and policies.

7. Knowledge Expansion

- **Key Point:** Civil service practice
- **Functionality:** Provides mock Q&A, general awareness, and exam-style questions to help aspirants prepare.

8. Flask-Based Web Application

- **Key Point:** Lightweight, scalable system
- **Functionality:** Built using Python Flask, with SQLite for database storage and HTML/CSS frontend for a responsive interface.

Architecture

Frontend (Flask + HTML/CSS/JS)

- The frontend is developed using Flask templates (Jinja2) with HTML, CSS, and JavaScript.
- Pages include **Home, Login, Registration, Services, Chat, Dashboard, About, and Feedback**.
- Navigation is handled using a **navbar** and Flask's url_for for routing.
- UI is responsive, modern, and citizen-friendly.

Backend (Flask Framework)

- Flask powers the backend, handling routes, authentication, and database interaction.
- SQLite is used for persistent storage of user credentials, feedback, and chat history.
- APIs are exposed for login validation, service retrieval, and chatbot responses.
- The backend is modularized with separate functions for **auth, services, and chatbot logic**.

AI Chatbot Integration

- The chatbot is integrated with a **local NLP model / rule-based QA system** to handle civil service–related questions.
- Citizens can ask about government schemes, ID processes, and exam preparation.
- For extended AI, APIs (like OpenAI, Hugging Face, or IBM Watson) can be plugged in.

Database (SQLite)

- A lightweight SQLite database stores user login data, registration details, feedback, and service records.
- Tables include:
  - **users** (id, name, reg_id, password, email, phone)
  - **feedback** (id, user_id, message, timestamp)

- **chat_history** (id, user_id, query, response, timestamp)

.

Setup Instructions

Prerequisites:

- Python 3.9 or later
- Flask installed (pip install flask)
- SQLite (pre-installed with Python)
- Basic knowledge of HTML/CSS

Installation Process:

1. Clone the repository.
2. Install dependencies:
3. pip install -r requirements.txt
4. Initialize the database by running the setup script.
5. Start the Flask server:
6. python app.py
7. Open browser at: **http://127.0.0.1:5000/**

Folder Structure

```
CitizenAI/
│ ─── app.py          # Main Flask application
│ ─── user.db      # SQLite database
│ ─── static/          # CSS, JS, Images
│    ├──── css/
│    └──── image/
│ ─── templates/        # HTML templates
│    ├──── index.html
│    ├──── login.html
│    ├──── register.html
│    ├──── services.html
│    ├──── dashboard.html
│    └──── chat.html
│ ─── utils/          # Helper functions
```

Running the Application

 Launch the Flask server using:

python app.py

 Navigate through pages via the navbar (Home → Services → Chat → Dashboard).

 Register as a new user, then log in.

 Use the chatbot to ask civil service–related questions.

 Access the dashboard to view saved queries, feedback, and recommendations.

API Endpoints

- **POST /login** → Authenticates user with reg_id & password
- **POST /register** → Stores new user registration data
- **POST /chat** → Accepts a query and returns chatbot response
- **POST /feedback** → Submits user feedback
- **GET /services** → Returns list of available citizen services.

Authentication

⍰ Basic authentication using username (reg_id) & password stored in SQLite.

□ Passwords hashed for security.

□ Planned enhancements include:

- JWT-based authentication
- Role-based access (citizen, admin, officer)
- Session tracking for chat history

User Interface

□ Minimalist, mobile-responsive design.

□ Features**:**

- Navbar with navigation
- Hero section with “Get Started” button
- Chatbot window for civil queries
- Service cards with descriptions
- Dashboard with user history & feedback

Testing

□ Unit **Testing** → For database operations (login, register, chat storage)

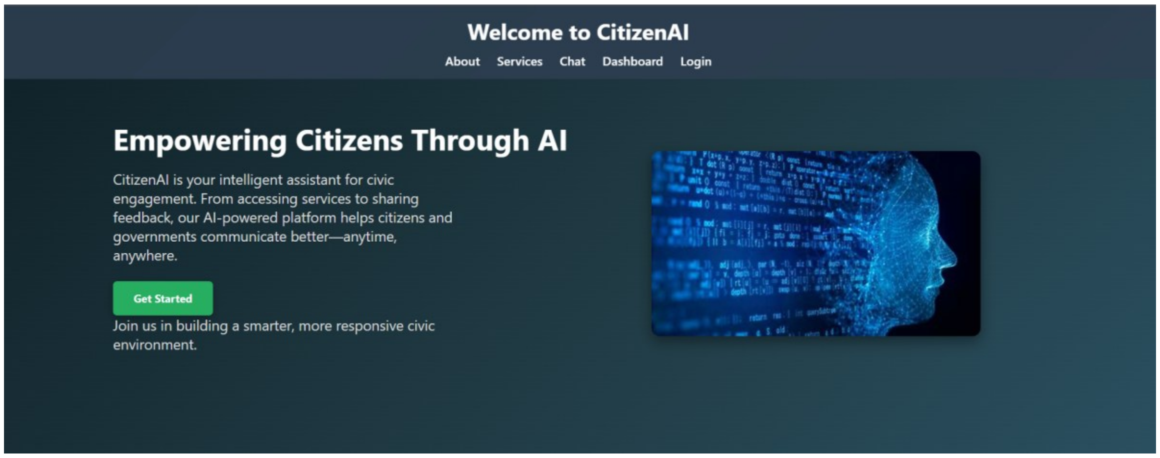
□ Integration **Testing** → Routes tested with Flask test client

□ Manual **Testing** → Validated login flow, chatbot responses, and UI navigation

□ Edge **Cases** → Wrong passwords, duplicate registrations, empty

screen shots

HOME PAGE

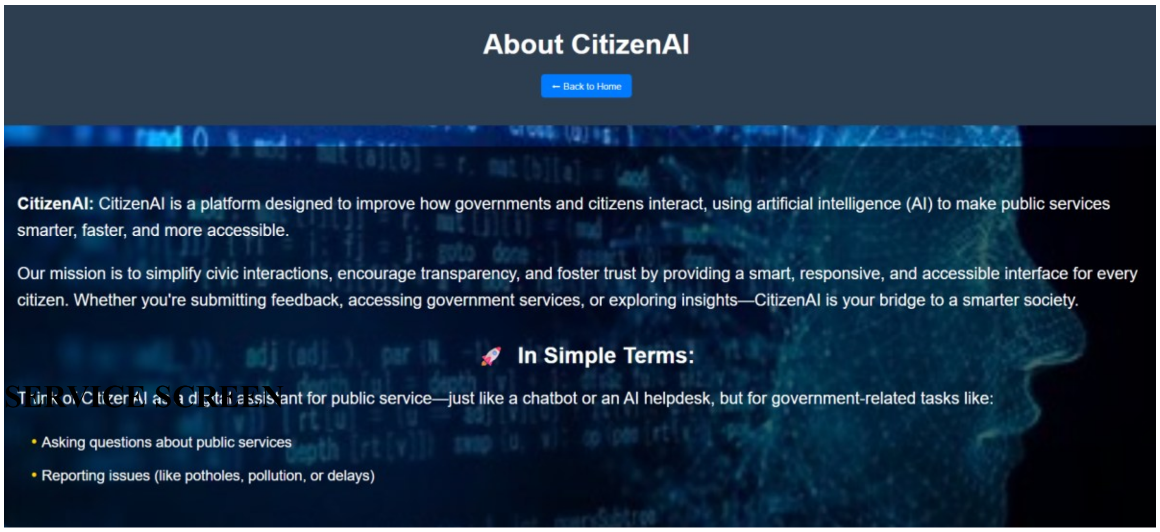


Empowering Citizens Through AI

CitizenAI is your intelligent assistant for civic engagement. From accessing services to sharing feedback, our AI-powered platform helps citizens and governments communicate better—anytime, anywhere.

Join us in building a smarter, more responsive civic environment.

ABOUT SCREEN



About CitizenAI

CitizenAI: CitizenAI is a platform designed to improve how governments and citizens interact, using artificial intelligence (AI) to make public services smarter, faster, and more accessible.

Our mission is to simplify civic interactions, encourage transparency, and foster trust by providing a smart, responsive, and accessible interface for every citizen. Whether you're submitting feedback, accessing government services, or exploring insights—CitizenAI is your bridge to a smarter society.

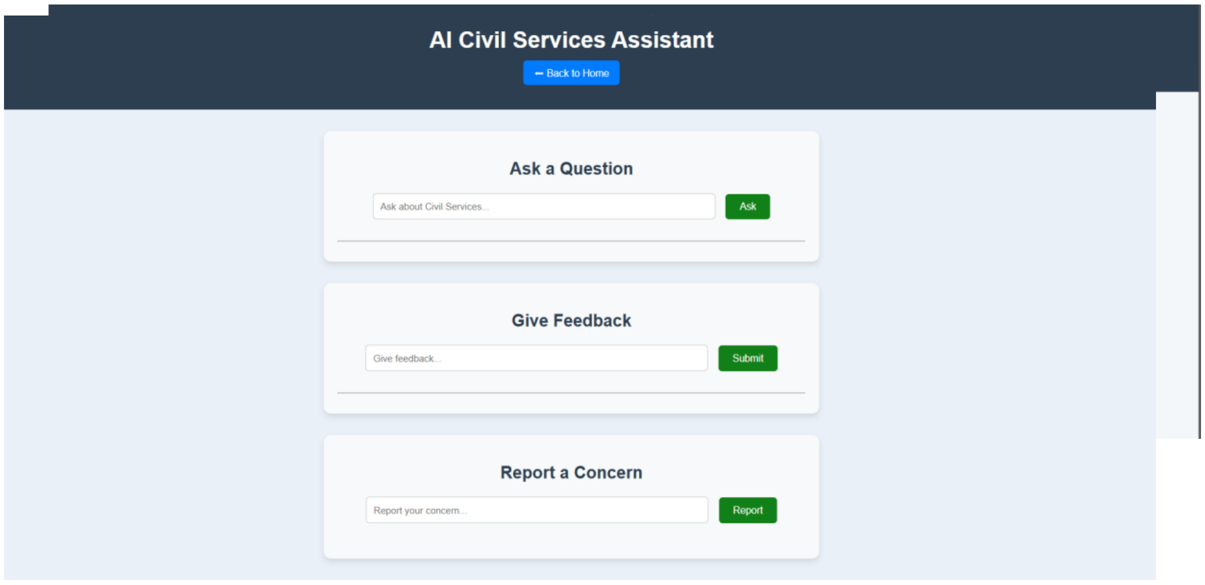
🚀 **In Simple Terms:**

Think of CitizenAI as a digital assistant for public service—just like a chatbot or an AI helpdesk, but for government-related tasks like:

- Asking questions about public services
- Reporting issues (like potholes, pollution, or delays)

SERVICE SCREEN

AI CHAT SCREEN


AI Civil Services Assistant

← Back to Home

Ask a Question

Ask about Civil Services...

Ask

Give Feedback

Give feedback...

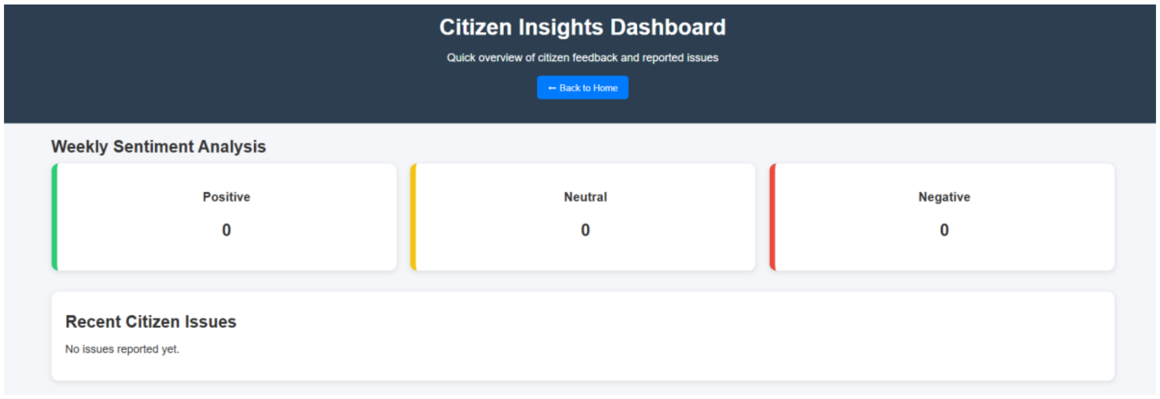
Submit

Report a Concern

Report your concern...

Report

DASHBOARD


Citizen Insights Dashboard

Quick overview of citizen feedback and reported issues

← Back to Home

Weekly Sentiment Analysis

Positive	Neutral	Negative
0	0	0

Recent Citizen Issues

No issues reported yet.

Future Enhancements

Although the current version of CitizenAI provides a functional platform for citizen engagement, several improvements can be introduced to make it more powerful and scalable:

1. **Advanced AI Chatbot Integration**

    - Replace rule-based answers with **Generative AI (LLMs like GPT/Watsonx)** for natural, context-aware responses.
    - Multilingual support to help citizens interact in **regional languages**.

2. **Mobile Application**
    - Develop a **mobile app (Android/iOS)** with push notifications for government updates, service reminders, and policy changes.
3. **Real-Time Notifications**
    - Integration of **SMS/Email/WhatsApp APIs** to notify citizens about upcoming deadlines, application statuses, or service alerts.
4. **Role-Based Access**
    - Expand authentication with **roles for citizens, administrators, and government officials**, enabling dashboards tailored to each role.
5. **Integration with Government APIs**
    - Connect with **official e-Governance portals** to fetch live data like exam notifications, scheme updates, or ID application statuses.
6. **Data Analytics Dashboard**
    - Provide **visual insights** (graphs/charts) on citizen queries, feedback trends, and most-used services to assist decision-makers.
7. **Voice Assistant Support**
    - Integrate **speech-to-text and text-to-speech** modules so citizens can interact with the system through voice.
8. **Blockchain for Secure Records**
    - Store sensitive documents and service logs on a **blockchain ledger** for tamper-proof security and transparency.

Conclusion

CitizenAI is designed as a **smart, user-friendly, and AI-powered civic assistant** that bridges the gap between citizens and governance. By integrating a secure login system, chatbot support, service information pages, and a personalized dashboard, it simplifies access to essential services and civic information.

The project demonstrates how **AI, data management, and web technologies** can be combined to improve citizen engagement, transparency, and efficiency.

With further enhancements such as **mobile app support, multilingual AI, government API integration, and advanced analytics**, CitizenAI has the potential to evolve into a **comprehensive civic platform**. This can empower citizens to participate more actively in governance and help authorities deliver services in a more transparent, responsive, and sustainable manner.