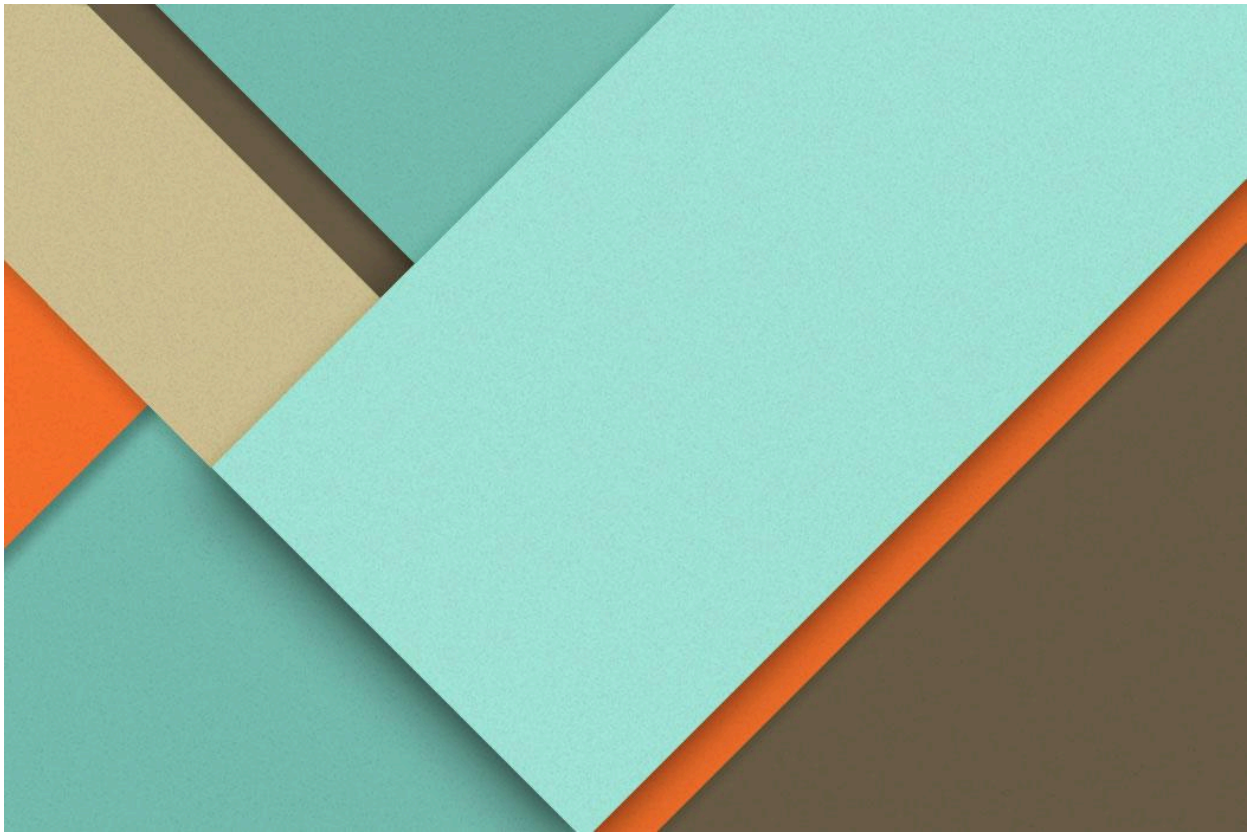

19.09.2025

Citizen AI : Intelligent Citizen Engagement Platform

Project Documentation

1. Introduction

- **Project Title:** Citizen AI : Intelligent Citizen Engagement Platform

- **Team ID : NM2025TMID07257**
- **Team Leader : ANANTH G**
    - Team member : AKASH A
    - Team member : BHARATHI R
    - Team member : KALAI SELVAN R
    - Team member : TAMIL SELVAN G

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2. Project Overview

Purpose:

Citizen AI is designed to strengthen communication and collaboration between city governments and citizens through an AI-powered engagement platform.
By leveraging artificial intelligence, natural language processing (NLP), and real-time data, the platform empowers residents to easily access civic services, report issues, participate in policy discussions, and receive personalized updates.
For municipal officials, Citizen AI offers decision-support tools—analytics dashboards, sentiment trends, and policy feedback summaries—to improve transparency, responsiveness, and trust in governance.

Key Goals:

- Provide a 24/7 conversational interface for citizen queries and service requests.
- Enable data-driven policymaking through automated summarization and sentiment analysis.
- Foster inclusive civic participation by simplifying access to government resources.

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3. Features

Conversational Interface

Key Point: Natural language interaction

Functionality: Citizens can ask questions about services, report local issues, or track requests in plain language. The assistant responds with AI-generated guidance and real-time updates.

Policy & Feedback Summarization
Key Point: Simplified policy understanding
Functionality: Converts lengthy government documents and citizen feedback into concise, actionable summaries for both officials and the public.

Community Insights Dashboard
Key Point: Data-driven decision support
Functionality: Provides sentiment analysis, trending topics, and participation metrics to help officials identify priorities and track engagement.

Real-Time Notifications
Key Point: Instant updates
Functionality: Pushes alerts about city announcements, emergencies, or policy changes directly to users.

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4. Setup Instructions

Prerequisites

- Python 3.9 or later
- pip and virtual environment tools
- API keys for IBM Watsonx (or OpenAI) and Pinecone (for vector storage)
- Internet access to connect to cloud services

Installation Process

1. Clone the repository.
2. Install dependencies from `requirements.txt`.
3. Create a `.env` file and configure API credentials.
4. Run the backend server using FastAPI.

5. Launch the frontend using Streamlit.
6. Access the web UI and begin interaction.

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5. Folder Structure

app/ → FastAPI backend logic (routers, models, integrations)

app/api/ → Modular API routes (chat, feedback, summarization)

ui/ → Streamlit frontend components and page layouts

citizen_dashboard.py → Entry script for launching the main dashboard

nlp_engine.py → Handles natural language understanding & summarization

vector_search.py → Converts documents to embeddings and stores in Pinecone

report_generator.py → Generates AI-based engagement reports

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6. Running the Application

- Launch the FastAPI server to expose backend endpoints.
- Run the Streamlit dashboard to access the web interface.
- Navigate through pages using the sidebar.
- Upload documents or CSVs, interact with the chat assistant, and view outputs such as reports, summaries, and participation predictions.

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7. API Documentation

Backend API endpoints include:

- **POST /chat/ask** – Accepts a user query and responds with an AI-generated message.
- **POST /upload-doc** – Uploads and embeds civic policy or feedback documents.

- **GET /search-docs** – Returns semantically similar policies or community feedback.
- **GET /get-citizen-tips** – Provides engagement tips or local service information.
- **POST /submit-feedback** – Stores citizen feedback for later analysis.

All endpoints are tested and documented in Swagger UI for quick inspection and trial during development.

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8. Authentication

- Token-based authentication (JWT or API keys)
- OAuth2 with cloud credentials for secure deployments
- Role-based access (Admin, Citizen, Analyst)
- Optional user session tracking for history and personalization

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9. User Interface

- Minimalist design with sidebar navigation
- KPI visualizations with summary cards (citizen queries, response times, participation rates)
- Tabbed layouts for chat, feedback, and policy summaries
- Real-time form handling and PDF report download capability

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10. Testing

Testing is performed in multiple phases:

- **Unit Testing** – For NLP functions and utility scripts
- **API Testing** – Via Swagger UI, Postman, and automated test scripts
- **Manual Testing** – For file uploads, chat responses, and output consistency

- **Edge Case Handling** – Malformed inputs, large files, invalid API keys

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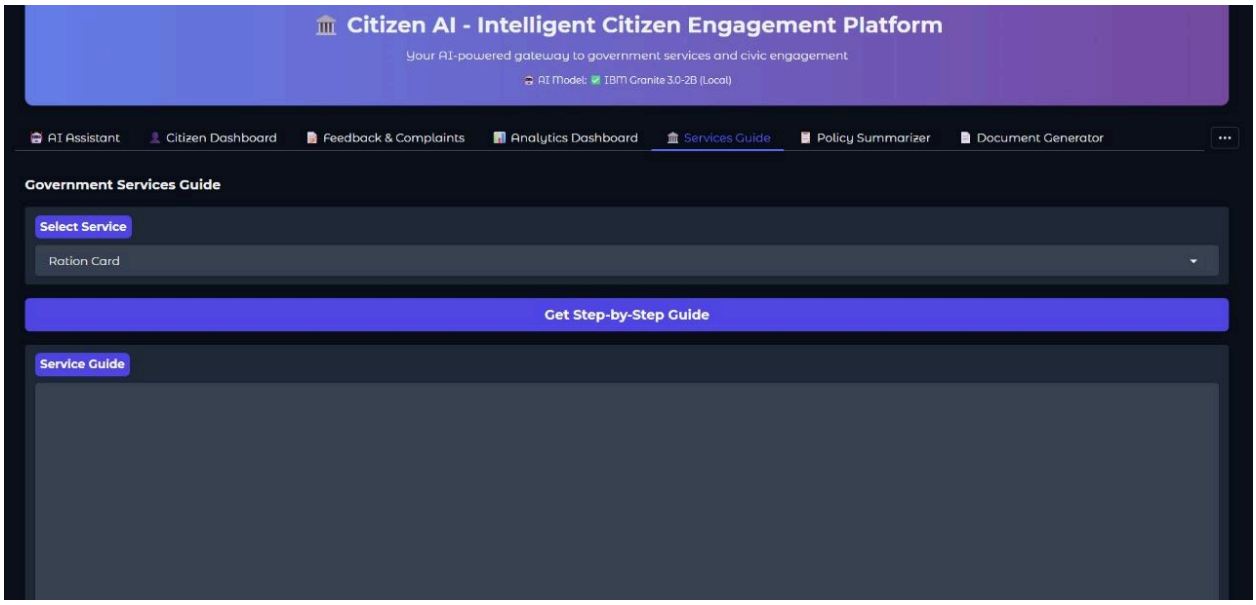
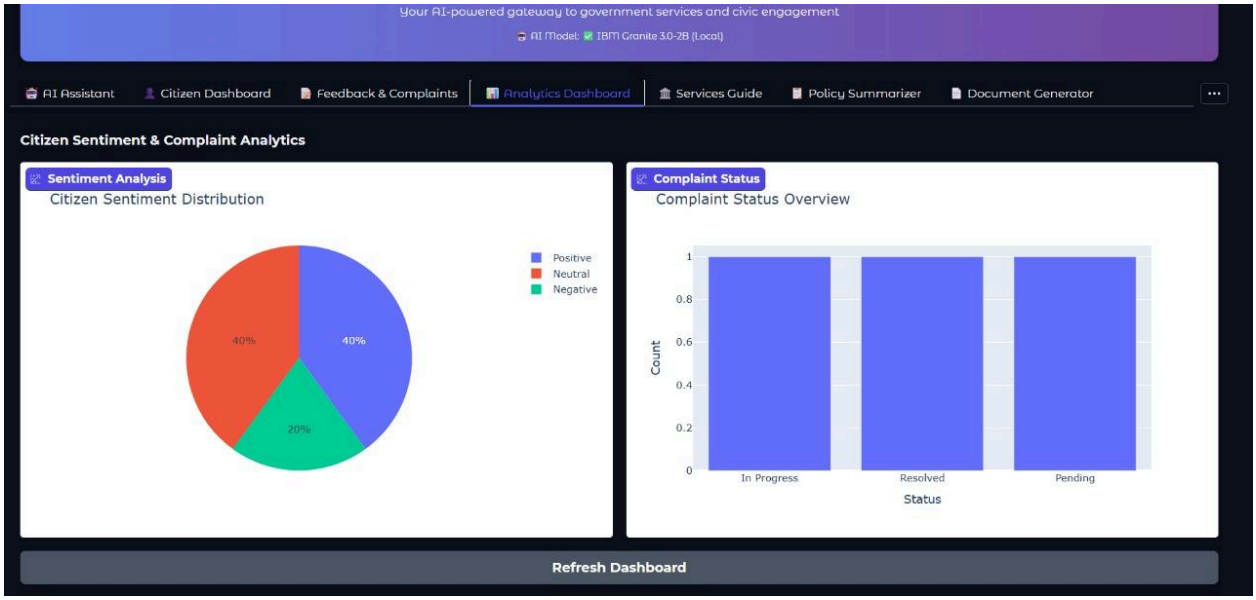
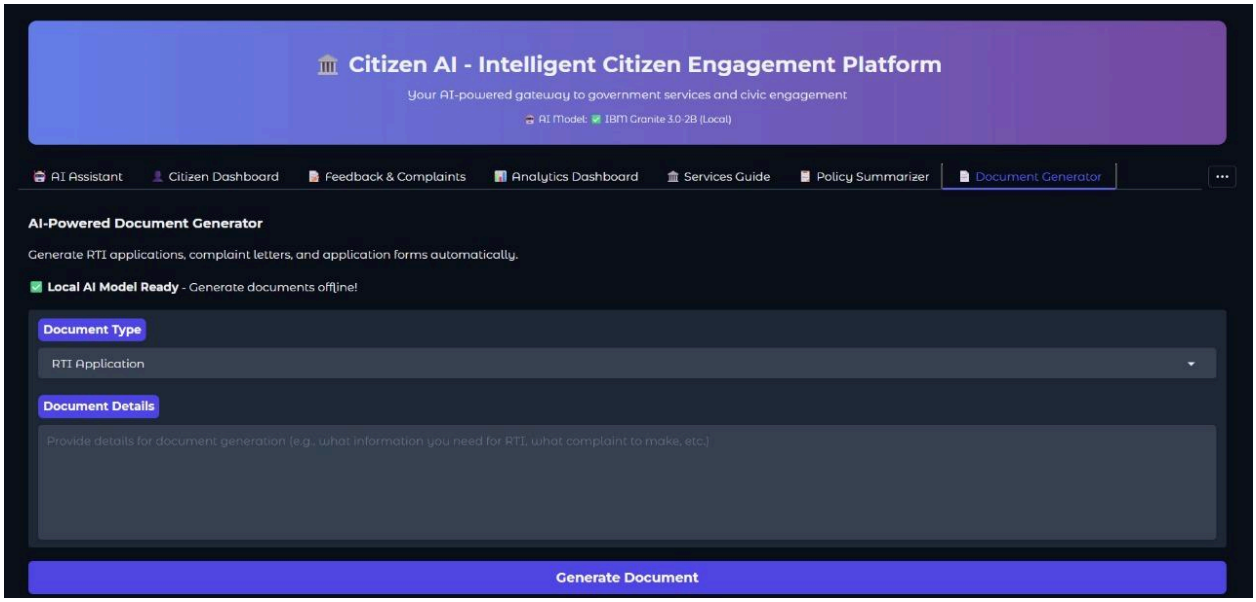
11. Screenshots



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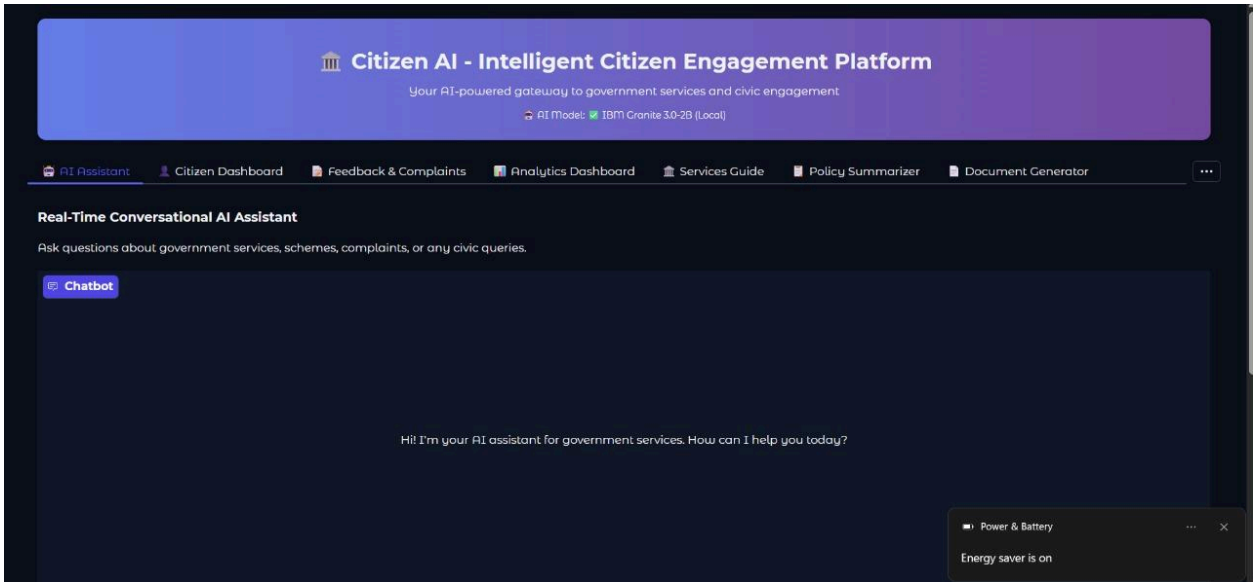
Your AI-powered gateway to government services and civic engagement
AI Model: IBM Granite 3.0-2B (Local)
AI Assistant
Citizen Dashboard
Feedback & Complaints
Analytics Dashboard
Services Guide
Policy Summarizer
Document Generator
AI-Powered Document Generator
Generate RTI applications, complaint letters, and application forms automatically.
Local AI Model Ready - Generate documents offline!
Document Type
RTI Application
Document Details
Provide details for document generation (e.g., what information you need for RTI, what complaint to make, etc.)
Generate Document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AI Assistant
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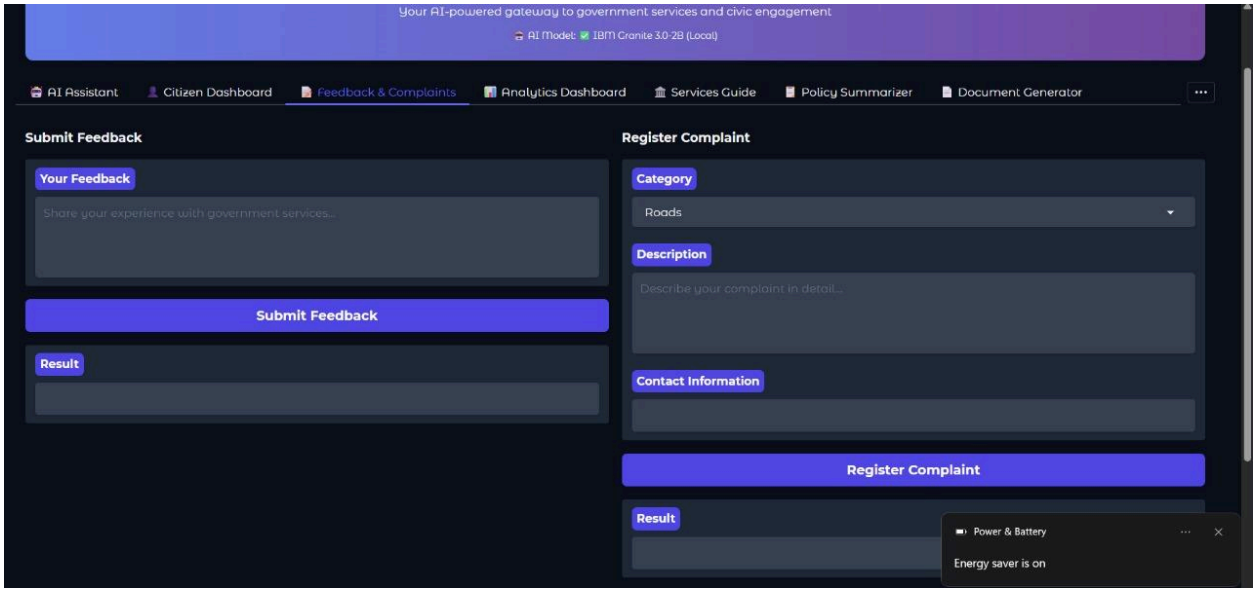
Analytics Dashboard
Services Guide
Policy Summarizer
Document Generator
Real-Time Conversational AI Assistant
Ask questions about government services, schemes, complaints, or any civic queries.
Chatbot
Hi! I'm your AI assistant for government services. How can I help you today?
Power & Battery
Energy saver is on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Submit Feedback
Your Feedback
Share your experience with government services...
Submit Feedback
Result
Register Complaint
Category
Roads
Description
Describe your complaint in detail...
Contact Information
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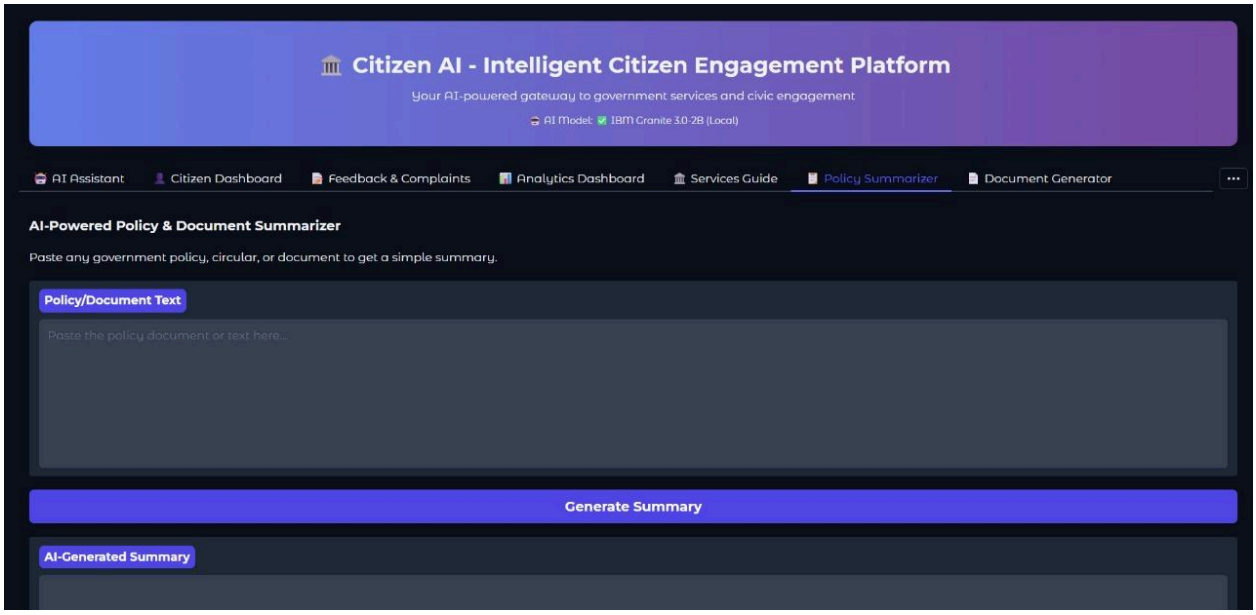
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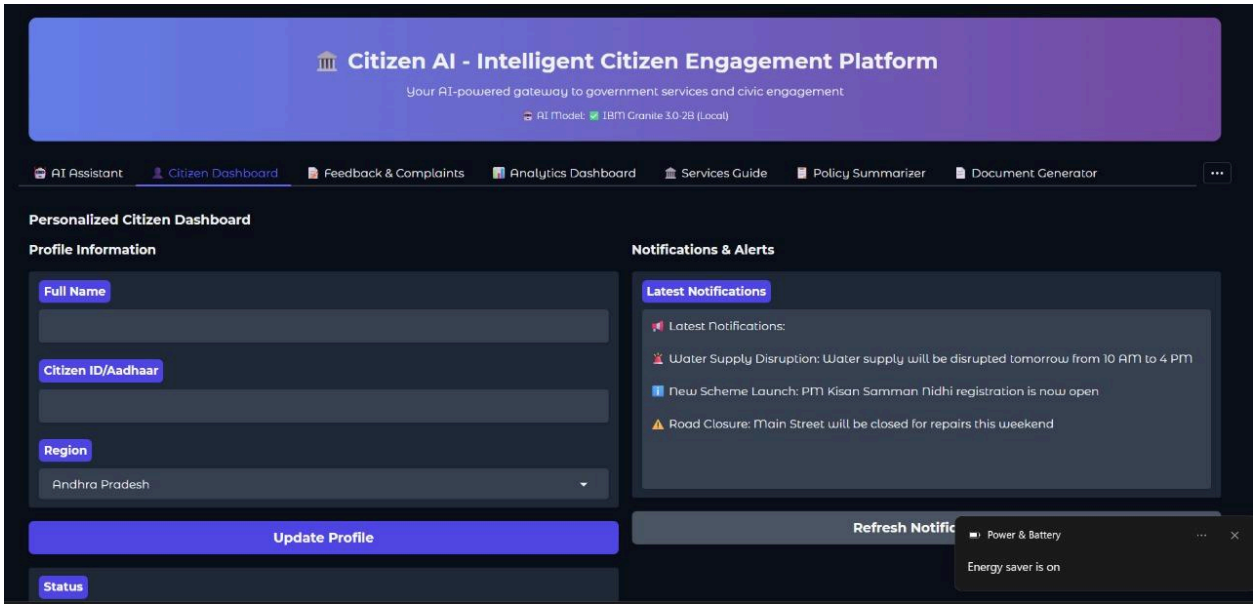
Policy/Document Text
Paste the policy document or text here...
Generate Summary
AI-Generated Summary



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12. Known Issues

- Limited multilingual support in the current version
- Occasional latency during heavy document uploads

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13. Future Enhancements

- Integration with city CRM and complaint management systems
- Multilingual conversational models for broader accessibility
- Mobile app version with push notifications
- Advanced analytics using predictive models for citizen sentiment trends

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