

Citizen AI – Intelligent Citizen Engagement Platform

Project Documentation

1. Introduction

Project Title : Citizen AI – Intelligent Citizen Engagement Platform

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Background

Urbanization has increased the complexity of managing cities. Citizens need **real-time insights** into city safety, crime rates, and traffic accidents, while governments seek **AI-powered assistants** to respond to civic queries effectively.

This project leverages **Large Language Models (LLMs)** to build a system that:

- Provides **crime index and accident analysis** for cities.
- Responds to **citizen queries on policies, services, and civic issues**.

2. Problem Statement

1. Citizens lack **easy access** to detailed safety and civic information.
2. Public service queries are often **slowly answered** by manual channels.
3. Government data exists but is **scattered across portals**.

3. Objectives

1. Provide **city safety analysis** (crime index, accident rates, traffic safety).
2. Offer **citizen interaction** services for public policy queries.
3. Create a **user-friendly AI assistant** with a web-based interface.
4. Ensure **real-time, AI-generated responses**.

4. Literature Review

- **Existing City Portals:** Provide statistics but are often hard to navigate.

- **Citizen Helplines:** Require manual operators → delays.
- **AI Chatbots (GovTech):** Limited scope, predefined rules.

Gap: No integrated solution that combines **city analysis + citizen interaction** in one AI-driven platform.

5. Project Overview

Features

- **City Analysis Tab:**
 - Input: City name.
 - Output: Crime index, accident rates, traffic safety, overall assessment.
- **Citizen Services Tab:**
 - Input: Query on services, policies, civic issues.
 - Output: Government-like AI response.

Scope

- Can be deployed in **city portals**.
- Useful for **citizens, government agencies, urban planners**.

6. Architecture

Frontend

- Built with **Gradio**.
- Two tabs: *City Analysis & Citizen Services*.

Backend

- **IBM Granite 3.2 LLM** (via Hugging Face).
- **PyTorch** for inference.
- **Prompt engineering** for targeted outputs.

Data Flow

1. User input (city or query).
2. Tokenization & preprocessing.
3. LLM inference.
4. Post-processing (cleaning).
5. Display on UI.

7. Methodology

1. City Analysis:

- Prompt asks model for *crime, accident, and safety analysis*.
- AI generates structured response.

2. Citizen Interaction:

- Input: Civic query (e.g., healthcare, public transport).
- AI responds in **government assistant style**.

3. User Interface:

- Simple input/output text boxes with buttons.

8. Algorithms

Prompt Templates

- **City Analysis:**
- Provide a detailed analysis of {city_name} including:
- 1. Crime Index and safety statistics
- 2. Accident rates and traffic safety
- 3. Overall safety assessment
- **Citizen Query:**
- As a government assistant, provide accurate and helpful information about:
- {query}

Inference Pseudocode

```
function generate_response(prompt):
    inputs = tokenizer(prompt)
    outputs = model.generate(inputs, max_length, temperature=0.7)
    return decode(outputs)
```

9. Deployment

Steps in Google Colab

1. Set runtime → **T4 GPU**.

2. Install dependencies:
3. !pip install transformers torch gradio -q
4. Run the notebook.
5. Gradio launches → Provides **shareable link**.

Alternatives

- **Local System** – Python + Gradio.
- **Cloud Hosting** – IBM Cloud, AWS, GCP.

10. Performance Evaluation

- **GPU (Colab T4):** Responses in ~3–5 seconds.
- **CPU:** Slower (~12–15 seconds).
- **Response Quality:** Structured and context-aware.

11. Security & Ethical Considerations

- **⚠ Disclaimer:** AI responses are **informational only**, not official government data.
- **Data Privacy:** No storage of citizen queries.
- **Ethics:** AI may generate approximate statistics, not official numbers.

12. Testing

- **Unit Testing:** Checked both functions (city_analysis, citizen_interaction).
- **Manual Testing:** Tested with multiple cities & queries.
- **Edge Cases:**
 - Invalid city → General response.
 - Vague queries → AI provides broad answers.

13. Use Cases

1. **Citizens:** Quick access to civic information.
2. **Governments:** Assist in handling common queries.
3. **Urban Planners:** Analyze safety and traffic conditions.
4. **Students/Researchers:** Educational tool for urban studies.

14. Societal Impact

- Promotes **citizen awareness**.
- Saves government time with **automated query handling**.
- Encourages **data-driven urban planning**.

15. Screenshots

City Analysis & Citizen Services AI

[City Analysis](#) [Citizen Services](#)

Enter City Name
e.g., New York, London, Mumbai...

Analyze City

City Analysis (Crime Index & Accidents)

Use via API · Built with Gradio · Settings

1 cm of rain Friday

Search

ENG IN 20:19 18-09-2025

City Analysis & Citizen Services AI

[City Analysis](#) [Citizen Services](#)

Enter City Name
chennai

Analyze City

City Analysis (Crime Index & Accidents)

1. Crime Index and Safety Statistics:
Chennai, the capital of Tamil Nadu, India, experiences varying levels of crime across its diverse neighborhoods. According to the National Crime Records Bureau (NCRB) data from 2019, Chennai's Crime index stands at 300, which is considered moderately high for Indian cities. The crime rate per 100,000 inhabitants is approximately 745, with the majority of offenses involving property-related crimes (42%), followed by offenses against the person (37%).

Notable offenses include:
- Robbery (12%): Often targeting motorists, cyclists, and pedestrians in crowded areas.
- Theft (24%): Primarily from residences, vehicles, and public spaces.
- Domestic Violence (11%): A growing concern, often due to socio-economic pressures.
- Vehicle-related offenses (11%): Including carjacking, auto-theft, and unauthorized vehicle access.
- Offenses against women (10%): Such as sexual harassment, eve-teasing, and attempts at assault.

Safety measures and initiatives in Chennai include:
- Operation Clean Chennai: A city-wide cleanliness campaign that also improves public visibility and reduces opportunities for criminal activity.
- Chennai Smart City project: Aims to leverage technology for enhanced safety, monitoring, and emergency response.
- Crime Control Rooms: Operate 24/7 to manage and respond to crimes effectively.

Use via API · Built with Gradio · Settings

Light rain Tomorrow

Search

ENG IN 20:21 18-09-2025

The screenshot shows a web browser window titled "Gradio" with the URL "7ce4e93d1dfb1339f6.gradio.live". The main title is "City Analysis & Citizen Services AI". Below it, there are two tabs: "City Analysis" and "Citizen Services", with "Citizen Services" being the active tab. On the left, under "Your Query", the text "government policies" is entered. A large button labeled "Get Information" is centered below the query input. On the right, under "Government Response", there is a dark rectangular area with a small orange progress bar at the top and the text "processing | 5.6s" at the bottom right. At the bottom of the page, there is a footer with links for "Use via API", "Built with Gradio", and "Settings", along with a weather widget showing "Light rain Tomorrow" and system status indicators.

This screenshot shows the same web browser window after the processing has completed. The "Government Response" section now displays a detailed overview of government policies. It starts with a subject line: "Subject: Comprehensive Overview of Key Government Policies". The response begins with a salutation: "Dear Citizen," followed by a message: "Thank you for your interest in understanding the government policies that shape our society. Here's a breakdown of several significant policy areas:". Below this, two numbered sections are listed: "1. Economic Policies:" and "2. Social Policies:". The "Economic Policies" section includes a bullet point about "Fiscal Policy: Balances government revenue and expenditure to influence economic activity. Examples include taxation and public spending". The "Social Policies" section includes bullet points for "Welfare Programs: Direct financial and material support to citizens in need, including unemployment benefits, social security, and healthcare" and "Education Policies: Focusing on access, quality, and equity in K-12 and higher education, often including free or affordable schooling and scholarships". The rest of the response is cut off by a vertical scroll bar. The footer and system status indicators at the bottom of the screen remain the same as in the previous screenshot.

16. Limitations

- Responses may not match official government records.
- Lacks **real-time data integration**.
- Limited to **text responses** (no charts/maps).

17. Future Enhancements

1. Integrate **real datasets** (crime reports, traffic APIs).
2. Provide **visual dashboards** (charts/maps).
3. Add **multilingual support** for wider reach.
4. Deploy in **city websites or apps**.
5. Use **voice interaction** for accessibility.