

# **Citizen AI: Intelligent Citizen Engagement Platform**

## **Project Documentation**

### **1.Introduction:**

- Project Title: Citizen AI: Intelligent Citizen Engagement Platform
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### **2. Project Overview:**

#### **Purpose:**

The project's main objective is to create an AI assistant that can serve two important roles:

1.City Safety Analysis – Provide detailed insights into a city's safety profile (crime index, accident statistics, overall safety).

2. Citizen Services Assistant – Allow citizens to interact with the system by asking questions about public services, civic policies, or governance.

## **Features:**

### City Analysis

- Generates structured analysis about crime, accidents, and safety ratings.
- Uses AI-driven text generation to make the data readable and informative.

### Citizen Services Chatbot

- Responds to queries about public services, policies, or civic issues.
- Provides helpful and natural responses.
- Interactive Gradio Interface
- Two tabs: “City Analysis” and “Citizen Services.”
- Clean and simple UI for non-technical users.

### AI-Powered Responses

- Powered by IBM Granite LLM (granite-3.2-2b-instruct).
- Generates contextual, human-like answers.

## **3. Architecture**

The system has a modular design consisting of three main parts:

### **Frontend (Gradio):**

Provides a web-based interface where users can enter inputs and view outputs.

Offers two modes of interaction: City Analysis and Citizen Services.

Handles user-friendly layouts with textboxes and buttons.

### **Backend (Transformers + PyTorch):**

Manages communication with the Granite LLM.

Handles tokenization, model inference, and response decoding.

Includes logic for generating prompts for both city analysis and queries.

### **Model Integration (IBM Granite):**

Uses IBM Granite 3.2-2b-instruct model for natural language processing.

The model is capable of understanding queries and generating detailed responses.

## **4. Setup Instructions:**

### **Prerequisites:**

- Python 3.9 or later
- pip and virtual environment tools
- Libraries: torch, transformers, gradio

- Internet connection (to fetch and run the IBM Granite model)

### **Installation Process:**

1. Clone or download the project files.

2. Install dependencies:

```
pip install torch transformers gradio
```

3. Run the project:

```
python app.py
```

4. Gradio will generate a local link and a shareable link to access the app in a browser.

### **5. Folder Structure:**

project/

|— app.py                    # Main application code

|— requirements.txt        # List of dependencies

This is a simple project with only one main script file. In larger projects, the folder can be extended into modules for analysis, UI, and data handling.

## **6. Running the Application:**

1. Start the application with `python app.py`.
2. Open the Gradio interface in a browser.
3. Use the City Analysis tab to enter a city name.

The model will generate crime index, accident data, and safety evaluation.

4. Use the Citizen Services tab to ask queries.

The assistant will provide detailed answers about policies or civic issues.

5. Both outputs are generated in real-time and displayed as text.

## **7. API Documentation:**

Even though this project is mainly a Gradio app, internally it uses functions as APIs:

### **city\_analysis(city\_name)**

Input: City name (string).

Output: Text analysis with crime index, accident rates, and safety assessment.

### **citizen\_interaction(query)**

Input: User query (string).

Output: AI-generated response about public services or policies.

## **8. User Interface:**

The UI is designed to be minimal and functional:

- Navigation Tabs: Separate tabs for City Analysis and Citizen Services.
- Textboxes: Input boxes for user queries or city names.
- Output Area: Large textboxes that display AI responses.
- Dark Theme: Easy on the eyes and professional in appearance.

## **9. Testing:**

Testing was carried out at multiple levels:

**Unit Testing:** Verified AI response generation functions.

**Interface Testing:** Checked Gradio buttons, textboxes, and outputs.

**Manual Testing:** Entered multiple cities (e.g., Mumbai, London) to verify consistency.

## **10. Known Issues:**

- The analysis depends on AI-generated responses; no real-time crime/traffic database is used.
- Requires internet connection to load the IBM Granite model.
- Responses may vary slightly each time due to AI's generative nature.

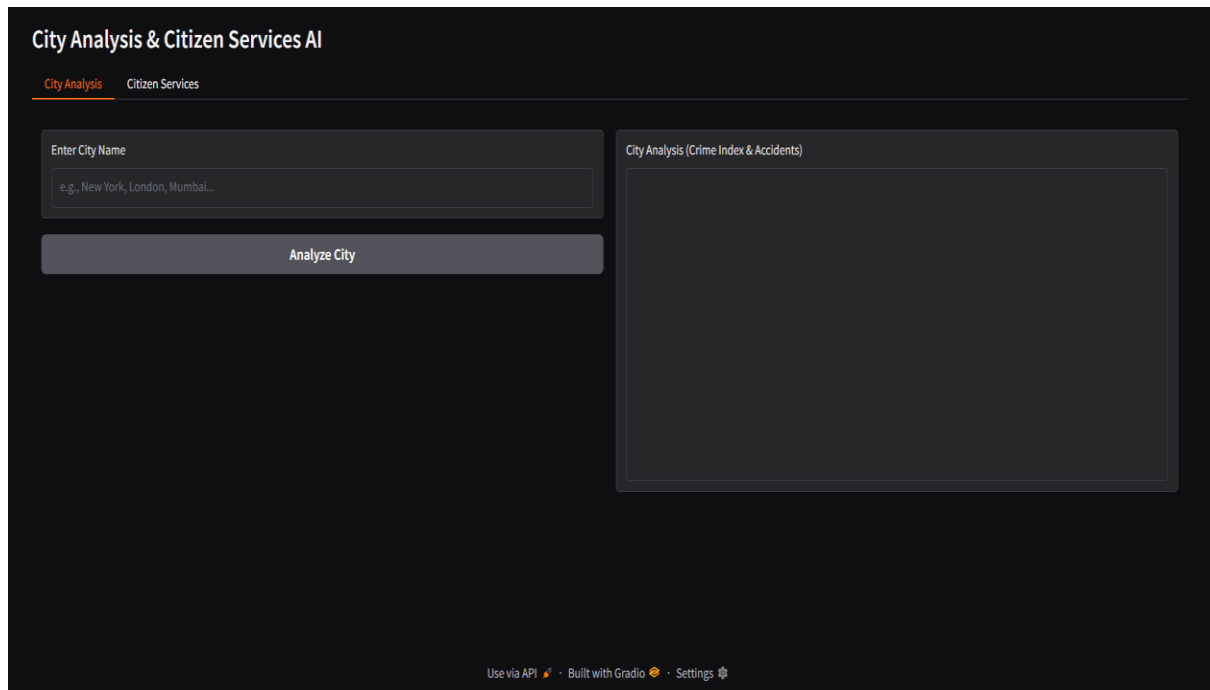
### **13. Future Enhancements:**

- Connect to real-time data APIs (crime reports, traffic statistics).
- Add data visualization (graphs, maps, charts).
- Support multiple languages for wider accessibility.
- Implement query history and analytics for government use.
- Deploy on cloud platforms (AWS, IBM Cloud, Azure) for larger-scale access.

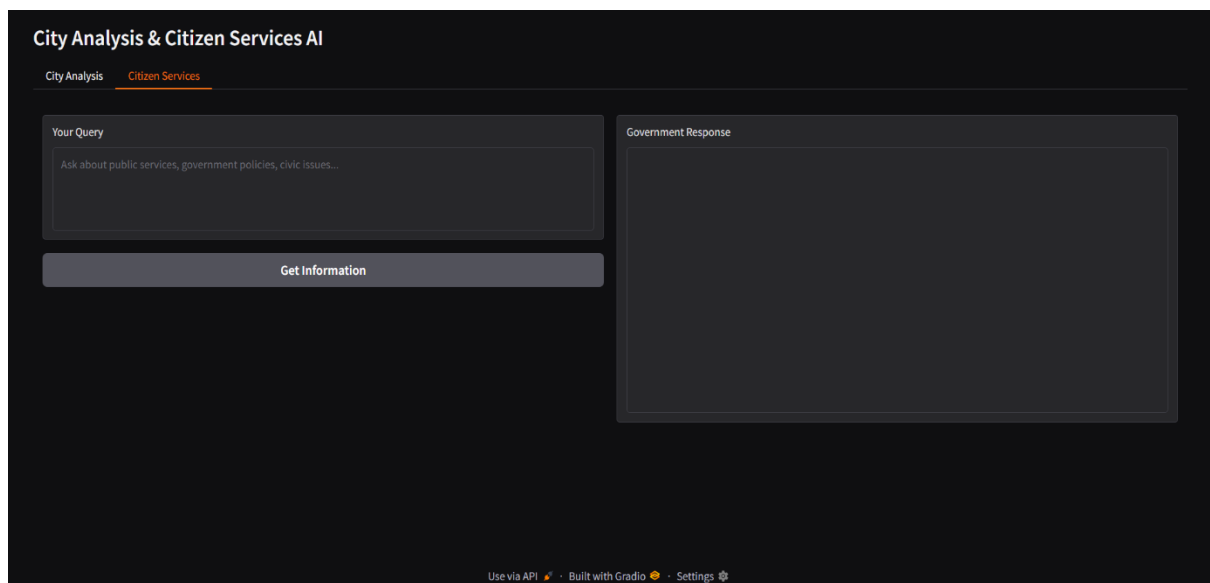
## 14.Screenshots:

### ***Output:***

First view of the screen,



Second view of the output screen, Citizen Services.





# City Analysis & Citizen Services AI

City Analysis Citizen Services

Enter City Name

Mumbai

Analyze City

City Analysis (Crime Index & Accidents)

1. Crime Index and Safety Statistics:

Mumbai, the commercial capital of India, is renowned for its vibrant culture, bustling markets, and iconic skyline. However, it also faces significant challenges in maintaining public safety. The city's crime index is relatively high compared to other major Indian cities, primarily due to its dense population, economic disparity, and the presence of slums.

According to the National Crime Records Bureau (NCRB) data for 2019, Mumbai has the highest number of crimes reported among Indian cities, with a total of 2,39,620 offenses. The most common crimes include:

- Robbery with violence: 24,438 incidents
- Theft: 160,340 incidents
- Domestic violence: 10,478 incidents
- Murder: 3,804 incidents
- Motor vehicle theft: 11,750 incidents

The city's safety statistics reveal a disparity in crime rates across different localities. Areas like Dadar, Malabar Hill, and Colaba have lower crime rates, while slums such as Dharavi and Govandi experience higher crime rates, often related to overcrowding, illegal activities, and lack of law enforcement presence.

2. Accident Data and Traffic Safety Information: