Citizen AI – Intelligence Citizen Engagement Platform

Project Documentation

1. Introduction

Project Title: City Analysis & Citizen Services AI

Team Members:

• Member 1 – Shwetha M

• Member 2 – Shri kavyaa M

• Member 3 – Anitha M

• Member 4 – Rithika SJ

• Member 5 – Deepika K

2. Project Overview

Purpose

The purpose of this project is to provide citizens and government officials with an intelligent AI-powered platform that delivers:

City Safety Analysis including crime index, accident statistics, and overall safety levels.

Citizen Service Assistance by answering queries about government policies, civic issues, and public services.

The project empowers citizens with real-time, accurate information and assists governments in decision-making by summarizing and analysing complex urban safety and service-related data.

Features

City Analysis

Key Point: AI-based insights

Functionality: Provides safety, crime, and accident analysis for a given city.

Citizen Query Handling

Key Point: Government service assistance

Functionality: Responds to citizen queries about policies, services, and civic issues.

Conversational Interface

Key Point: Natural interaction

Functionality: Uses Gradio for an easy-to-use chatbot-like experience.

AI Model Integration

Key Point: IBM Granite LLM

Functionality: Generates contextual and human-like responses.

3**. Architecture**

Frontend (Gradio)

Built using Gradio Blocks with Tabs for "City Analysis" and "Citizen Services".

Provides textboxes, buttons, and structured responses for user interaction.

Backend (Python + Transformers)

PyTorch and Transformers used to load and run IBM Granite LLM.

Backend functions include:

generate_response() – Core AI response generator.

city_analysis() – Generates city-specific analysis.

citizen_interaction() – Provides answers for government/citizen queries.

Model Integration (IBM Granite)

IBM Granite 3.2 Instruct model is integrated for natural language understanding and response generation.

4. **Setup Instructions**

Prerequisites

Google Colab (with T4 GPU runtime)

Python 3.9+

Libraries: transformers, torch, gradio

Installation Process

Change Google Colab runtime to T4 GPU.

Install dependencies:

```
!pip install transformers torch gradio -q
```

Run the project file in Colab.

Launch the Gradio app – automatically generates a shareable link.

5**. Folder Structure**

project/

|── city_services_ai.ipynb   # Main notebook (Google Colab execution file)

|── requirements.txt   # Dependencies

|── README.md   # Project details

6. Running the Application

Open the project file in Google Colab.

Change runtime to GPU (T4 preferred).

Install requirements and execute the code cells.

Use the Gradio interface to:

Enter city name → Get analysis.

Enter citizen query → Get AI-powered government response.

7. API Documentation

Functions available:

generate_response(prompt, max_length) → Returns AI-generated response.

city_analysis(city_name) → Returns safety, crime, and accident statistics.

citizen_interaction(query) → Returns AI-assisted answers to queries.

8. Authentication

Current version runs in open mode for demonstration.

Future improvements may include:

Role-based access (citizen, admin).

JWT token authentication for secure access.

9. User Interface

Tabbed Layout:

Tab 1: City Analysis → Input city name, output city safety stats.

Tab 2: Citizen Services → Input queries, output government-like responses.

Textboxes and Buttons for interaction.

Real-time results displayed in output text areas.

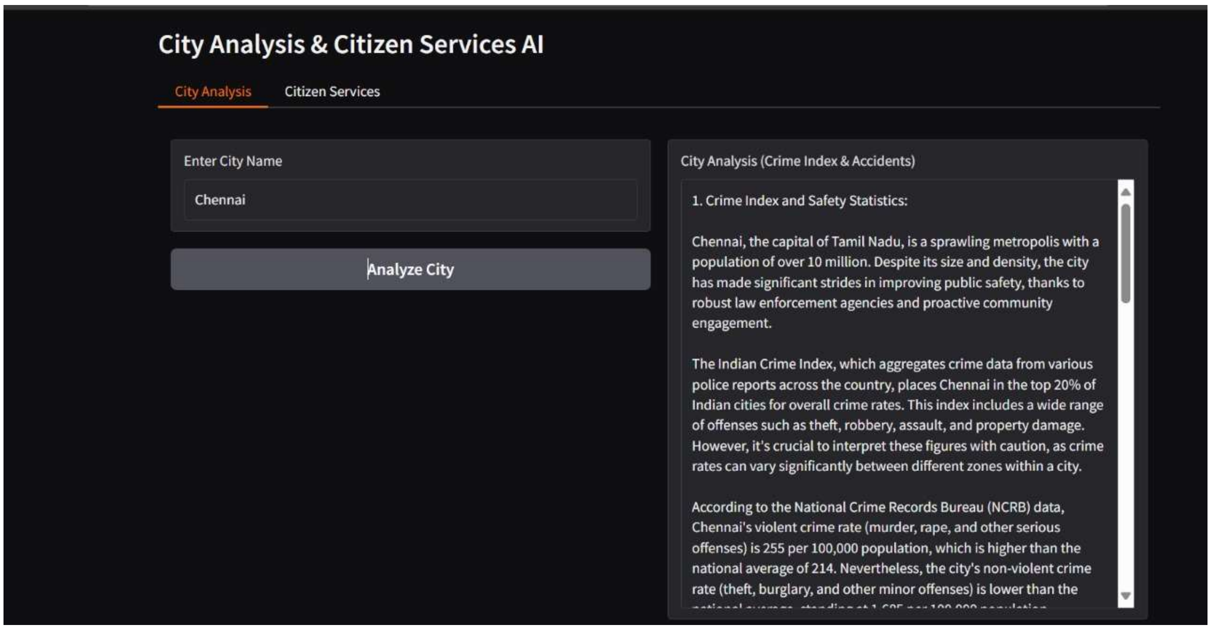
10. Testing

Unit Testing: For response generation functions.

Manual Testing: Validating city inputs and government query responses.

Performance Testing: Ensured responses are generated within seconds using GPU.

11. Screenshots


City Analysis & Citizen Services AI

City Analysis | Citizen Services

Enter City Name

Chennai

Analyze City

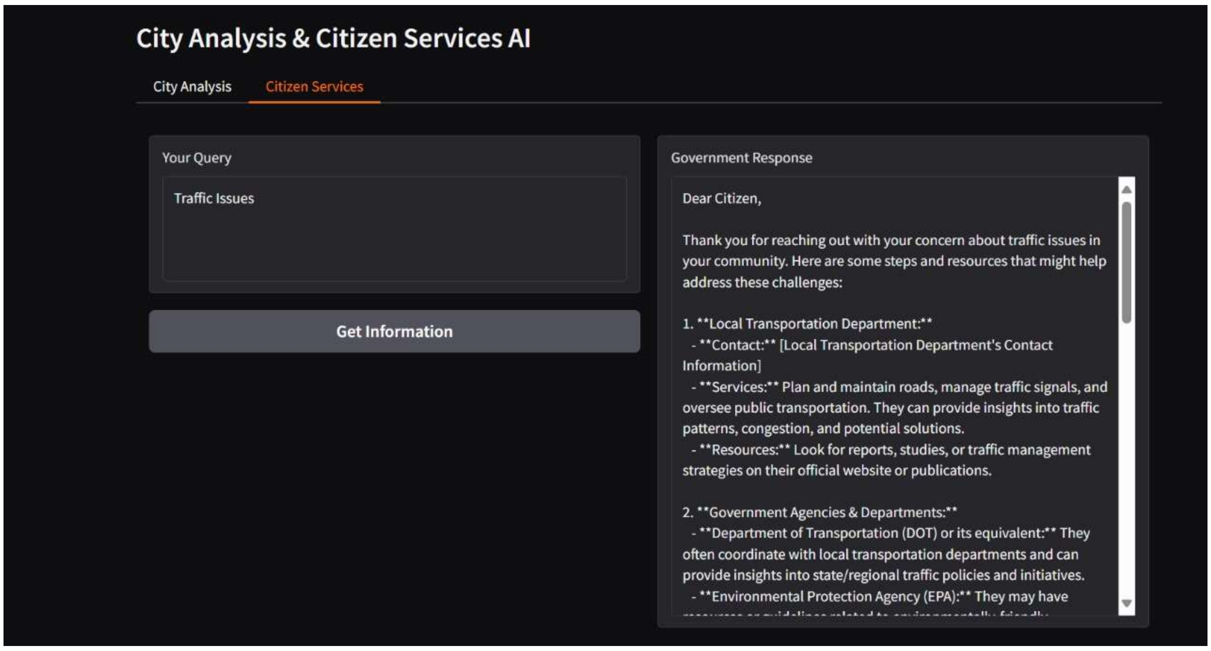
City Analysis (Crime Index & Accidents)

1. Crime Index and Safety Statistics:

Chennai, the capital of Tamil Nadu, is a sprawling metropolis with a population of over 10 million. Despite its size and density, the city has made significant strides in improving public safety, thanks to robust law enforcement agencies and proactive community engagement.

The Indian Crime Index, which aggregates crime data from various police reports across the country, places Chennai in the top 20% of Indian cities for overall crime rates. This index includes a wide range of offenses such as theft, robbery, assault, and property damage. However, it's crucial to interpret these figures with caution, as crime rates can vary significantly between different zones within a city.

According to the National Crime Records Bureau (NCRB) data, Chennai's violent crime rate (murder, rape, and other serious offenses) is 255 per 100,000 population, which is higher than the national average of 214. Nevertheless, the city's non-violent crime rate (theft, burglary, and other minor offenses) is lower than the


City Analysis & Citizen Services AI

City Analysis | Citizen Services

Your Query

Traffic Issues

Get Information

Government Response

Dear Citizen,

Thank you for reaching out with your concern about traffic issues in your community. Here are some steps and resources that might help address these challenges:

1. **Local Transportation Department:**
  - **Contact:** [Local Transportation Department's Contact Information]
  - **Services:** Plan and maintain roads, manage traffic signals, and oversee public transportation. They can provide insights into traffic patterns, congestion, and potential solutions.
  - **Resources:** Look for reports, studies, or traffic management strategies on their official website or publications.

2. **Government Agencies & Departments:**
  - **Department of Transportation (DOT) or its equivalent:** They often coordinate with local transportation departments and can provide insights into state/regional traffic policies and initiatives.
  - **Environmental Protection Agency (EPA):** They may have

12. Known Issues

Responses depend on the AI model’s training data, may not always be fully accurate.

Limited real-time data (no direct connection to live government or city databases).

13. Future Enhancements

Integration with real-time city databases (crime, traffic, weather).

Role-based authentication system.

History tracking for citizen queries.

Multi-language support for wider accessibility.