Documentation for Citizen AI

This document provides detailed documentation for the **Citizen AI** program. The application is built using **Gradio**, **PyTorch**, and **Hugging Face Transformers**. It allows users to perform city safety analysis and interact with government services through an AI-powered chatbot.

1. Dependencies

The application requires the following Python libraries: - gradio - torch - transformers These libraries are used to build the user interface, run AI inference, and load pre-trained language models.

2. Model Loading

The program loads a pre-trained language model **ibm-granite/granite-3.2-2b-instruct** from Hugging Face Hub. It initializes both the tokenizer and the model with proper device mapping (GPU if available, otherwise CPU).

3. Response Generation Function

The function `generate_response(prompt, max_length=1024)` is responsible for generating responses from the model. It tokenizes the input, moves it to GPU if available, and generates text using sampling techniques.

4. City Analysis Function

The function `city_analysis(city_name)` prompts the AI model to provide: - Crime Index and safety statistics - Accident rates and traffic safety information - Overall safety assessment

5. Citizen Interaction Function

The function `citizen_interaction(query)` is designed to provide answers to citizen-related queries such as public services, government policies, or civic issues. It generates structured and helpful responses.

6. User Interface

The user interface is created using **Gradio Blocks** with two main tabs: - **City Analysis Tab**: Allows the user to enter a city name and get safety-related analysis. - **Citizen Services Tab**: Lets the user input queries about government services and receive AI-powered responses.

7. Application Launch

Finally, the app is launched with `app.launch(share=True)`, which enables the interface to be shared publicly.

In summary, the **Citizen AI** program leverages a large language model to provide useful civic information and city analysis. It combines natural language processing with an intuitive Gradio interface to make government-related data more accessible to citizens.