

# **Citizen AI – Documentation**

## **Intelligent Citizen Engagement Platform**

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## **Abstract**

Citizen AI is an AI-powered platform designed to simplify and improve the way citizens interact with government services. Instead of navigating complex websites and documents, citizens can ask natural language questions and receive accurate, real-time responses generated by IBM Granite models from Hugging Face.

The system not only answers queries but also monitors public sentiment and provides dashboards that help government officials analyze citizen needs, concerns, and feedback. The solution is implemented in Google Colab, ensuring cost-effectiveness, and uses Gradio for building an interactive web-based interface. The code is version-controlled and hosted on GitHub for collaboration and future improvements.

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# 1. Introduction

Citizen AI is part of a new wave of generative AI applications designed for public service. Governments today handle a massive volume of citizen queries related to welfare schemes, policies, public grievances, and civic services. Traditional solutions like websites or helplines are often time-consuming, inefficient, or inaccessible to some users.

Citizen AI solves this problem by creating an AI-powered chatbot interface that citizens can interact with in simple natural language. The project uses the IBM Granite 3.2-2B Instruct model deployed from Hugging Face. With its lightweight and optimized design, it is capable of running in Google Colab with minimal infrastructure while still delivering fast and accurate responses.

## 2. Problem Statement

Many citizens face challenges when trying to access government information and services:

- Navigating portals requires technical knowledge.
- Information is scattered across multiple websites.
- Response times from officials are often delayed.
- Limited support for regional languages and inclusivity.

To overcome these issues, a citizen-first engagement platform powered by AI is required. Citizen AI aims to act as a bridge between citizens and government by providing conversational access to official information and feedback analysis.

## 3. Objectives

The main objectives of the Citizen AI project are:

- To provide citizens with instant, AI-driven responses about government services.
- To help officials track public sentiment and analyze civic issues effectively.
- To deploy a solution that is low-cost and efficient using Google Colab infrastructure.
- To demonstrate the practical application of IBM Granite Models in solving real-world problems.
- To encourage learners and developers to understand generative AI integration in real projects.

## 4. System Requirements

Hardware:

- Google Colab T4 GPU
- Stable internet connection

Software:

- Python 3.8+
- Hugging Face Transformers
- PyTorch
- Gradio (for user interface)
- GitHub (for version control and collaboration)

## 5. Pre-requisites

Before working on Citizen AI, users should be familiar with:

- Python programming and Jupyter notebooks
- Hugging Face platform and how to load pre-trained models
- Gradio framework for building interfaces
- GitHub for uploading, storing, and sharing project code

## 6. System Design / Architecture

The architecture of Citizen AI can be described in four stages:

1. User Input: The citizen asks a question or enters a query through the Gradio interface.
2. Model Processing: The IBM Granite model processes the input using natural language understanding.
3. Response Generation: The model generates a human-like, context-aware response.
4. Feedback Loop: Officials can monitor and analyze aggregated queries and responses for sentiment analysis.

This creates a closed loop of communication where citizens are informed, and officials receive valuable insights.

## 7. Project Workflow (Implementation)

### - Activity 1: Portal Setup

Access the Naan Mudhalvan SmartInternz Portal.

Navigate to the Citizen AI project workspace.

Review project resources and progress tracking dashboard.

### - Activity 2: Model Selection

Create an account on Hugging Face.

Search for IBM Granite models.

Select granite-3.2-2b-instruct → a lightweight, efficient model suitable for Google Colab deployment.

### - Activity 3: Running in Google Colab

Open Google Colab and create a new notebook.

Set runtime to T4 GPU.

Install required libraries:

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

Load the Granite model and implement chatbot code.

Run all cells → Launch Gradio app → Interact with chatbot in a browser tab.

### - Activity 4: Upload to GitHub

Create a new repository on GitHub (e.g., Citizen-AI).

Download project code from Colab as .py.

Upload to GitHub repository.

Commit changes → Make project available for collaboration and version tracking.

## 8. Results

The Citizen AI project successfully demonstrates how AI can improve civic engagement:

- Deployed chatbot in Google Colab using Hugging Face + Gradio.

- Citizens can interact and receive instant AI-driven responses.
- Project version controlled and shared via GitHub.
- Framework ready for enhancements such as dashboards and sentiment analysis.

## 9. Future Enhancements

To make Citizen AI more impactful, the following features can be added in the future:

- Multi-language support for regional inclusivity.
- Interactive dashboards for officials to view real-time citizen sentiment.
- Cloud deployment (IBM Cloud, AWS, GCP) for large-scale usage.
- Integration with databases to store and analyze citizen feedback historically.

## 10. Conclusion

Citizen AI successfully proves that Generative AI can be applied to real-world governance and citizen engagement. By leveraging IBM Granite models, it offers a scalable, efficient, and cost-effective platform that reduces barriers between citizens and government. The project sets the foundation for future innovations where AI becomes an integral tool in delivering transparent and accessible governance.

## 11. References

- Gradio Documentation: <https://www.gradio.app/guides/>
- IBM Granite Models: <https://huggingface.co/ibm-granite>
- Python Docs: <https://docs.python.org/3/>
- Git Docs: <https://git-scm.com/docs/git>
- Google Colab: <https://colab.research.google.com/>