PROJECT REPORT

Naan Mudhalvan

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COLLEGE NAME : K.C.S KASI NADAR COLLEGE OF ARTS & SCIENCE

CODE : UNM203
DEPARTMENT : COMPUTER SCIENCE
SEMESTER : V
PROJECT SUBMITTED TO: UNIVERSITY OF MADRAS / NAAN MUDALVAN
COURSE NAME : GENERATIVE AI WITH IBM

TEAM LEADER: **ASHOK .S**

MEMBERS:

1. **DILLI BABU .K**
2. **GOWTHAM PRAKASH .S**
3. **GOWTHAM .K**

GUIDED BY: MRS.R.PADMADEVI

SPOC NAME: Dr.K.LATHIKAMESHWARI

Citizen AI: Intelligent Citizen Engagement Platform

1. Introduction

Project Title: Citizen AI
Team Members:

- Ashok S (Team Lead)
- Dilli Babu K
- Gowtham Prakash S
- Gowtham K

Description:
Citizen AI is an intelligent AI-powered assistant built to facilitate citizen engagement in **City** ecosystems. It provides data-driven insights, real-time answers to civic queries, and supports improved governance through a seamless conversational interface. It is designed to empower both **citizens** and **administrators** by offering transparent, accessible, and intelligent interactions with public services.

2. Project Overview – Citizen ICEP

ICEP (Intelligent City Engagement Platform) is the development backbone of Citizen AI. It introduces automation, intelligence, and agility into the software lifecycle.

Key Aspects:

- **AI Integration at Each Stage**: Uses AI models for documentation, testing, and adaptive feedback.
- **Faster Development Cycles**: Rapid prototyping reduces development time.
- **Quality by Design**: Emphasizes automated testing and continuous improvement.
- **LLM-Augmented Workflows**: Automates repetitive development tasks using large language models.

3. Project Overview – City Assistant

The **City Assistant** is the main functional arm of Citizen AI. It is divided into two core modules:

A. City Analysis

Provides insights into:

- Crime indices
- Urban safety statistics
- Traffic and accident hotspots
- City-wide safety ratings and alerts

B. Citizen Services

Supports citizen engagement by:

- Answering questions about government schemes, services, or complaints
- Helping with processes (e.g., applying for birth certificates, water connections)
- Handling frequently asked questions

4. Features – Citizen (ICEP)

- **AI-driven Documentation**: Automatically creates technical documentation, change logs, and requirement summaries.
- **Automated Test Case Generation**: Generates test cases based on code logic and user stories.
- **Continuous Feedback Integration**: Collects user feedback and uses it to improve services.
- **Rapid Prototyping**: Integrates pre-built AI modules for faster MVP development.

5. Features – City Assistant

- **City Analysis Tab**:
  - Displays safety data using visual summaries.
  - Predictive analytics on accident-prone zones.
- **Citizen Services Tab**:
  - Provides an AI chat bot for civic queries.
  - Connects citizens with the right department/service.
- **Conversational AI**:
  - Natural language understanding for easy communication.
- **User Interface**:
  - Built with G radio for rapid web deployment.

6. System Architecture

1. **Frontend**: G radio or Stream lit interface for user interaction.
2. **Backend**: Python application.
3. **LLM Modules**:
   - Used for automating documentation and test creation.
   - Integrates with do workflows to enhance productivity.

7. System Architecture - Google Colab

1. **Frontend**: G radio-based chat bot and dashboard.
2. **Backend**: Flask/Fast API with Python.
3. **LLM**: IBM Granite for natural language processing.
4. **Vector Database**: For fast, structured query retrieval on city data.
5. **ML Modules**: Perform crime trend analysis, traffic prediction, and anomaly detection.

8. Setup Instructions

Prerequisites:

- Python 3.9+
- pip
- Internet access
- Required Python libraries: `transformers`, `torch`, `g radio`

Steps to Run:

```
git clone <repo-url>
cd citizen a
pip install -r requirements.txt
python app.py
```

9. Authentication

Currently runs in **demo mode**. For secure deployment:

- **Hugging Face Authentication**
- **Role-Based Access Control** (Admin, Citizen, Analyst)
- **Secure Endpoints** via HTTPS

10. Testing & Future Enhancements

Testing Includes:

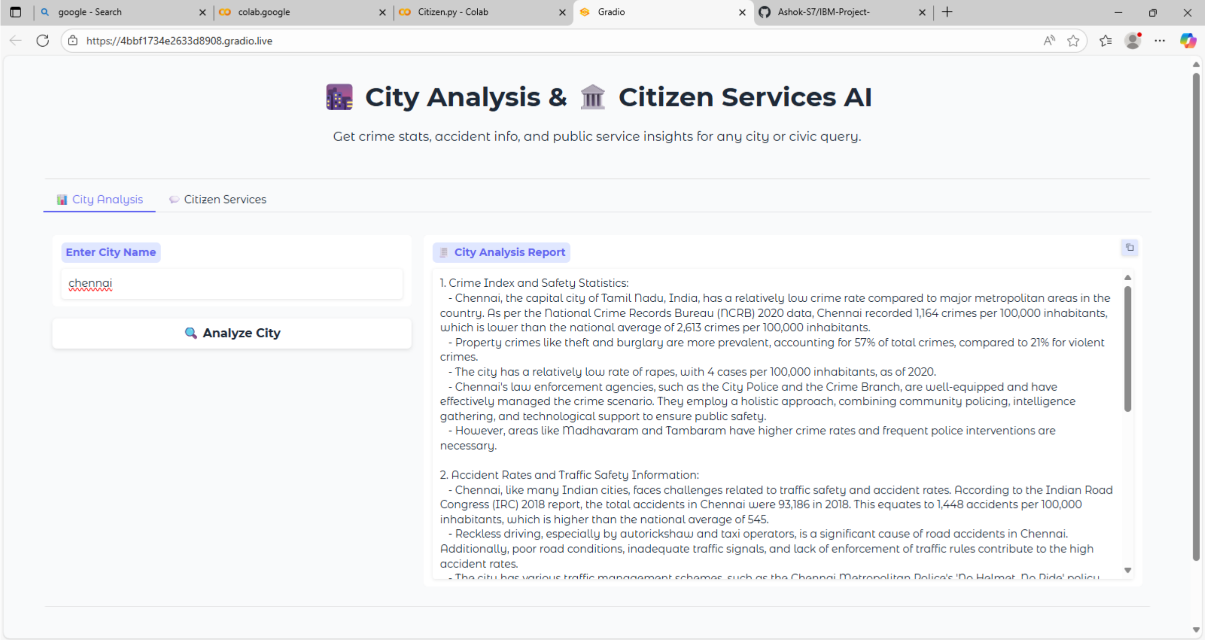
- Unit testing of AI logic and model responses
- Manual verification of city analysis insights
- Data validation of safety and traffic reports

Future Enhancements:

- Support for regional and international languages
- Dedicated mobile app (Android/ I OS)
- Direct integration with municipal & government databases
- Live dashboards for public display or city officials

11. Screenshot

(Placeholder for G radio UI with two main tabs: "City Analysis" and "Citizen Services")



🌆 City Analysis & 🏛️ Citizen Services AI

Get crime stats, accident info, and public service insights for any city or civic query.

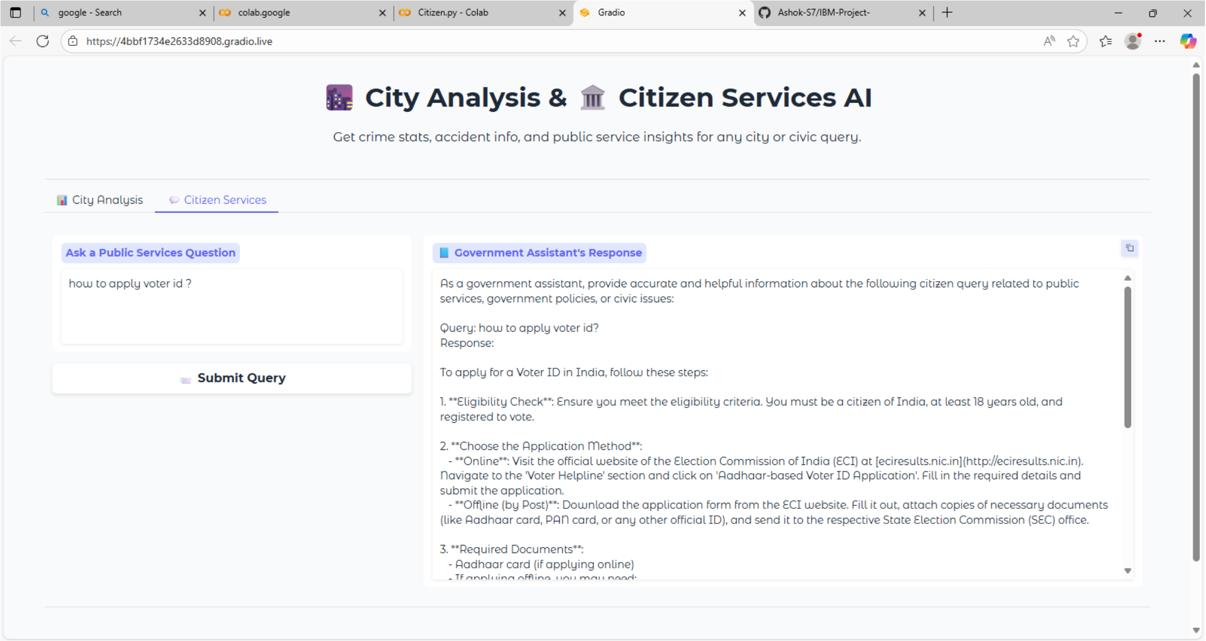
Enter City Name

chennai

City Analysis Report

1. Crime Index and Safety Statistics:
   - Chennai, the capital city of Tamil Nadu, India, has a relatively low crime rate compared to major metropolitan areas in the country. As per the National Crime Records Bureau (NCRB) 2020 data, Chennai recorded 1,164 crimes per 100,000 inhabitants, which is lower than the national average of 2,613 crimes per 100,000 inhabitants.
   - Property crimes like theft and burglary are more prevalent, accounting for 57% of total crimes, compared to 21% for violent crimes.
   - The city has a relatively low rate of rapes, with 4 cases per 100,000 inhabitants, as of 2020.
   - Chennai's law enforcement agencies, such as the City Police and the Crime Branch, are well-equipped and have effectively managed the crime scenario. They employ a holistic approach, combining community policing, intelligence gathering, and technological support to ensure public safety.
   - However, areas like Madhavaram and Tambaram have higher crime rates and frequent police interventions are necessary.

2. Accident Rates and Traffic Safety Information:
   - Chennai, like many Indian cities, faces challenges related to traffic safety and accident rates. According to the Indian Road Congress (IRC) 2018 report, the total accidents in Chennai were 93,186 in 2018. This equates to 1,448 accidents per 100,000 inhabitants, which is higher than the national average of 545.
   - Reckless driving, especially by autorickshaw and taxi operators, is a significant cause of road accidents in Chennai. Additionally, poor road conditions, inadequate traffic signals, and lack of enforcement of traffic rules contribute to the high accident rates.
   - The city has various traffic management schemes, such as the Chennai Metropolitan Police's 'No Helmet, No Ride' policy



🌆 City Analysis & 🏛️ Citizen Services AI

Get crime stats, accident info, and public service insights for any city or civic query.

Ask a Public Services Question

how to apply voter id ?

Government Assistant's Response

As a government assistant, provide accurate and helpful information about the following citizen query related to public services, government policies, or civic issues:

Query: how to apply voter id?
Response:

To apply for a Voter ID in India, follow these steps:

1. **Eligibility Check**: Ensure you meet the eligibility criteria. You must be a citizen of India, at least 18 years old, and registered to vote.

2. **Choose the Application Method**:
   - **Online**: Visit the official website of the Election Commission of India (ECI) at eciresults.nic.in. Navigate to the 'Voter Helpline' section and click on 'Aadhaar-based Voter ID Application'. Fill in the required details and submit the application.
   - **Offline (by Post)**: Download the application form from the ECI website. Fill it out, attach copies of necessary documents (like Aadhaar card, PAN card, or any other official ID), and send it to the respective State Election Commission (SEC) office.

3. **Required Documents**:
   - Aadhaar card (if applying online)
   - If applying offline, you may need:

12. Known Issues

- AI model responses may not always be accurate.
- Inference time is high on CPU; requires GPU for smooth performance.
- Limited real-time data integration (e.g., traffic, weather).
- Some city data sources may be outdated or inconsistent.

13. Planned Enhancements

- **Smart Traffic & Emergency Services**:
  - Real-time updates on traffic jams, roadblocks, and emergency alerts.
- **Io T Integration**:
  - Collect data from smart cameras, air quality sensors, etc.
- **Voice Assistant Integration**:
  - Enable citizens to interact using voice commands (e.g., Google Assistant, Alexa).
- **Enhanced Visualization**:
  - Use maps, heat maps, and charts for better insights on city metrics.

14. Real-World Use Cases

- A citizen asks: *"Is it safe to go out in Anna Nagar after 10 PM?"*
  - The assistant uses local crime data to provide a risk assessment.
- A user asks: *"How to apply for a driving license?"*
  - The assistant gives step-by-step instructions and links to the relevant government portal.
- A municipal officer queries: *"Show me accident-prone zones in the last 6 months"*
  - The assistant provides a visual report using ML insights.