Project Report

1. INTRODUCTION:

1.1 Project Overview:

The Citizen AI Engagement Platform is a cutting-edge solution designed to foster meaningful interactions between citizens and government institutions. By harnessing the power of AI, this platform enables personalized communication, streamlines feedback mechanisms, and promotes inclusive decision-making processes.

1.2 Purpose:

1. Enhance Citizen Participation: Encourage active engagement and participation from citizens The purpose of this platform is to:

in governance processes.

- 2. Improve Transparency: Provide clear and accessible information, ensuring citizens are informed and empowered.
- 3. Foster Trust: Build trust between citizens and government institutions through responsive and effective communication.
- 4. Drive Inclusive Decision-Making: Ensure that diverse perspectives and needs are considered in policy-making processes.

2. IDEATION PHASE:

2.1 Problem Statement:

Define the Problem Statements

Customer Problem Statement Template:

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Project Name	Citizen Ai - intelligent citizen engagement platform
Maximum Marks	

Create a problem statement to understand your citizen's point of view. The Citizen Problem Statement Template helps civic teams and government bodies focus on what truly matters to create public services and digital experiences that people trust and engage with.

A well-defined citizen problem statement enables your team to identify the right solutions for the real challenges that citizens face. Through this approach, you build empathy with citizens and gain a deeper understanding of how they interact with and perceive public services enabled by the Citizen AI Platform.

l am	Describe the citizen and their attributes here	CITIZENAI INTELLIGENT CITIZEN ENGAGEMENT PLATFORM		
I'm trying	List the thing they are trying to accomplish here			
but	Describe the obstacles or barriers that get in the way here			
because	Describe the reason the obstacles or barriers exist			
which mak me feel	Describe the emotions that result from experiencing the obstacles or barriers			

Example:



2.2 Empathy Map Canvas:

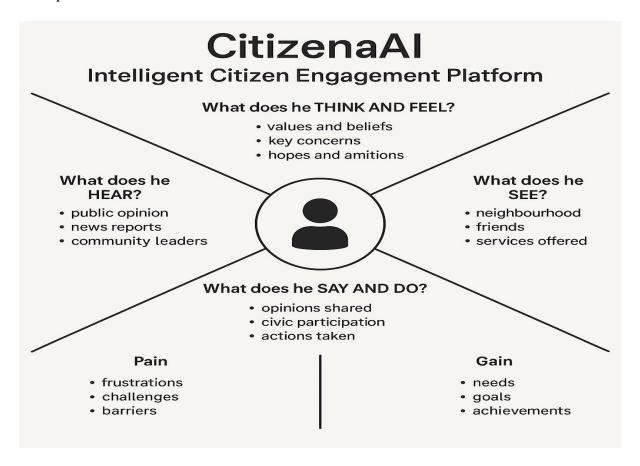
Ideation Phase

Empathize & Discover

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An Empathy Map is a clear, concise visual tool designed to capture insights about citizens' behaviors, feelings, and needs. In the context of Citizen AI, it enables public service teams and AI developers to deeply understand the people they serve—their lived experiences, goals, and frustrations.

Example:





Creating truly impactful AI-driven civic solutions requires deep empathy with citizens. The Empathy Map helps teams step into the shoes of the citizen to uncover the real, often unmet, needs behind their interactions with public systems.

2.3 Brainstorming:

Ideation Phase

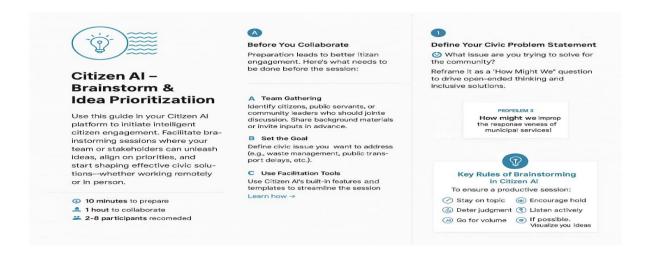
Brainstorm & Idea Prioritization Template:

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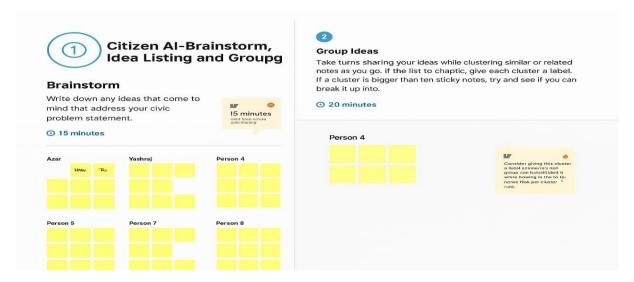
Brainstorm & Idea Prioritization Template:

Citizen AI Intelligent Citizen Engagement Platform: Idea Generation & Prioritization Just as traditional brainstorming fosters an open environment for creative problem-solving, a Citizen AI Intelligent Citizen Engagement Platform provides a dynamic space where every citizen can actively participate in shaping their community. This platform encourages the free flow of ideas, prioritizing the volume of diverse input over initial perceived value. Out-of-the-box suggestions are welcomed and, through the power of AI, can be built upon and refined. The platform facilitates collaboration, allowing citizens and AI to work together to develop a rich array of creative solutions for civic challenges.

Step-1: Team Gathering, Collaboration and Select the Problem Statement:



Step-2: Brainstorm, Idea Listing and Grouping:



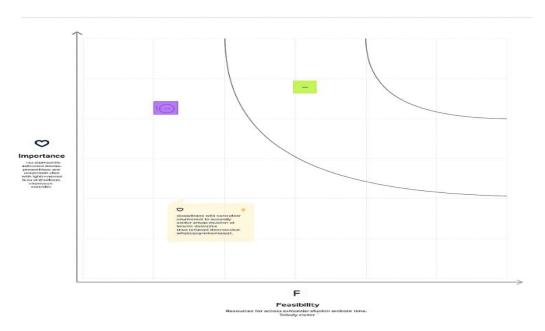
Step-3:Idea-Prioritization:



Prioritize

Team alignment is vital to determine whilch ideas will most effectively serve the public interest.

© 20 minutes



3. REQUIREMENT ANALYSIS:

3.1 Customer Journey Map:

BMAR

itizen Al Intelligent Engagement Platform



						<u> </u>		(a)		
ntice		Enter			Engage		Exit		Extend	
ve users to Provide a sermic-sam registration process		Enable users to ntet: and share information		Allow for easay deactivation of accounts		Give users reason to retum and en gage				
Staft gistration	Submit registration email	Submit confirmation email	Roceive confirmation email	Search for content	Create new posts	Respond tornp- duact is	Find account settings	Confirm account deactivation	Simple self process	Receive relationship
Start gistration	Choose registration method	Enter personal information	Chock-in for confirma- tion	Search for specific topics	Read and engage I+ via posts	Receive responses notfications	Go-to settings request	Submit desevation request	Simple seir process	Gathere feedbact at emails
mpelling essaging	Easy messaging	Easy to find relevant content	Easy to reivial informatier	Publish, successful content	Publish successful content	View moderation reedback	Simple process	Gather reedback at emails	Value content in updates	Incentivize repeat engagemen
iversitly motional hanneis	Carar-quat algorithm		Carar-quat algorthim	Easy to find relevant content	Highlight informal content	Highlight rellavable content	Value contentin updates	Interest in new posts	Incentivize repeat engagement	

3.2 Solution Requirement:

Project Design Phase-II

Solution Requirements (Functional & Non-functional):

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Functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirem	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedN
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3		
FR-4		
FR-6		,

Functional Requirements:

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description	
NFR-1	Usability	Useriity	
NFR-2	Security	Reliabllity	

3.3 Data Flow Diagram:

Project Design Phase-II

Data Flow Diagram & User Stories:

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intelligent citizen engageemennt platform

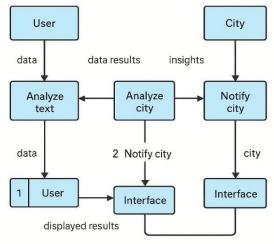
USER BOT EXTERNAL USER CHATBOT TEXT ANAI-SIS MODEL

- 1. User uploads text data for processing.
- 2. Chatbot forwards data to text analysis model
- 3. Text is parsed and analyzed to detect topics and sentiment
- 4. Insights are generated and forwarded to the city
- 5. Results are shown in the user interface

Example: DFD Level 0

(Iriitsytonctss) (standard

Example: DFD Level 0 (Industry Standard)



Citizen AI Intelligent Engagement Platform User Stories:

Citizen Al Intelligent Engagement Platform User Stories

Use the below template to list he user stories for the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Login	USN-1	As a user, I can register for the enail cation by entering my emall password, and confirming my password	I can access my account / dashboard	High	Sprint-1
	Login	USN-2	As a user, I will receive confirmation email once I have registered for the abplication through email	I can receive confirmation email & click link	High	Sprint-1
Customer Care Executive Administrator	Ldl	USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	High	Sprint-1
Dashboard	USN-4	USN-4	As a user, I can log into the application by entering email & password	I can access my account / dashboard	High	Sprint-1
Customer	USN-5	USN-5	As an admin, I can view the	_	_	

3.4 Technology Stack:

Project Design Phase-II

Technology Stack (Architecture & Stack):

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Technical Architecture:

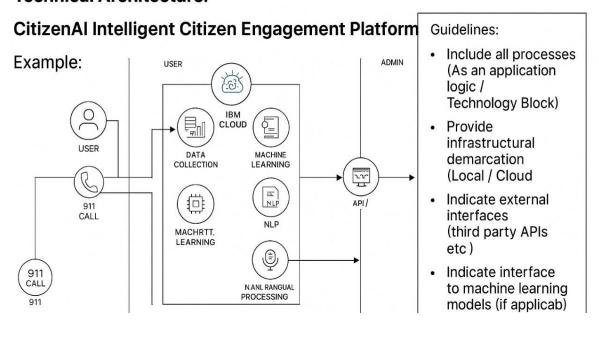


Table 1:

Citizen Al Intelligent Engagement Platform

S.No	Component	Description	Technology
1	User Interface How user ineracts with applicati		User web App, Chatbot etc.
2	Application Logic1	Logic for a process in application	Java / Python
3	Application Logic2	Logic for a process in application	IBM Watson STT service
4	Application Logic3	Logic for a process in application	IBM Watson Assistant
5	External Database	Data Type, Configurations etc.	SQLite
6	Cloud Database	Database Service on Cloud	Database Service on Cloud
7	File Storage	File storage requirements	IBM Block Storage or Other Storage Service
8	External API-1	Purpose of External API e.g. Unique Identification	Aadhar API
9	External API-2	Purpose of External API e.g. Object Recognition	Object Recognition API
10	Machine Learning Model	Purpose of Machine Learning Model	ML framework, Models etc.
11	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Cloud Server Configuration:	Local, Cloud Foundry, Kubernetes etc.

4. PROJECT DESIGN:

4.1 Problem Solution Fit:

Project Design Phase

Problem – Solution Fit Template:

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Problem-Solution Fit Template:

The Problem-Solution Fit is a powerful tool that ensures you've identified a genuine pain point for your customers and crafted a solution that truly addresses their needs. This template empowers entrepreneurs, innovators, and marketers to:

- Solve with Empathy: Tackle complex problems in a way that resonates with your customers' behaviors and preferences.
- Accelerate Success: Leverage existing habits and channels to boost solution adoption and achieve faster results.
- Build Trust: Identify the right problem-behavior fit and deliver solutions that alleviate frustrations, urgent needs, or costly issues.

• Understand and Improve: Gain a deep understanding of your target group's situation and create meaningful improvements that make a lasting impact

Template:

Citizen Al Intelligent Citizen Engagement Platform					
CA ALDRIVEN AL CA	C CITIZENS	D DATA SOURCES			
An autonomous Al agent that interacts with citizens in a person alized and human-like manner	Individuals within communities, seexking assistance, information, or engagement	Open government data and APIs that provids real-time information relevant to citizen ne-eds			
J JOBS-TO-BE-DONE/ NEEDS	R RESPONSE CONTEXT	B BEHAVIOR			
Understand and address needs. issues, and concerns of citizens in a proactive and efficient	Crafting contextual, accurate, and policy- compliant responses based on available data ard previous interactions	Engages with citizens in conversational and empathetic way to provide support and information			
T TRIGGERS	S INTELLIGENT RESPONSE	CH CHANNELS OF			
A citizen reaches out with a question, issue, or request through a designated digital channel	The AI essistant provides information, resolves issues or escalates to human agents if needed	Text/SMS, mobile apps, web portals, and other accessible channels where citizens can engage with Al assistant			
1-2201-02-2110 offic an-Casidva Commons acceedi	ng in andeer 3lth valuations at B19-5A-40	AMALTAM			

4.2 Proposed Solution:

Project Design Phase

Proposed Solution Template:

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Project Name	Citizen Ai - intelligent citizen engagement platform
Maximum Marks	

Proposed Solution Template:

Project team shall fill the following information in the proposed solution template



Proposed Solution Template:

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	
2.	Idea / Solution description	
3.	Novelty / Uniquenesss	
4.	Social Impact / Customer Satisfaction	
5.	Business Model (Revenue Model)	

4.3 Solution Architecture:

Project Design Phase

Solution Architecture:

Proposed Solution Template:

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Maximum Marks	

Solution Architecture:

Solution architecture for Citizen AI – Intelligent Citizen Engagement Platform is a structured and strategic process that connects civic challenges with innovative AI-driven technological solutions. It acts as a bridge between citizen needs and smart governance systems, ensuring effective public engagement and service delivery.

- Identify the Optimal AI-driven Solution
- Design a Transparent and Scalable System
- Detail Functionalities and Development Roadmap
- Establish Technical and Operational Standards

Example - Solution Architecture Diagram:

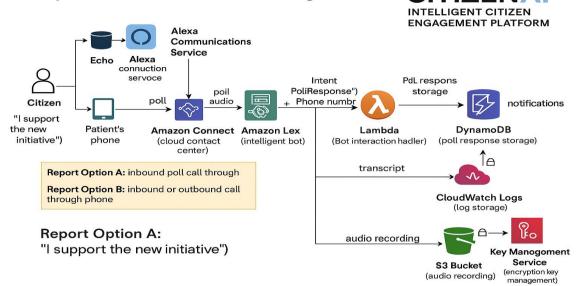


Fig: Architecture and data flow of the voice patient diary sample application

5. PROJECT PLANNING & SCHEDULING:

5.1 Project Planning:

Project Planning Phase

Project Planning Template (Product Backlog, Sprint Planning, Stories, Story points)

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Maximum Marks	

Use the below template to create product backlog and sprint schedule:

CitizenAl Intelligent Citizen Engagement Platform

Sprint	Functional Requirement	lleer Story / Tack		Priority	Team Members
Sprint-1	Registration	As a user, I can register for the application by entering my email, password, and confirming my pavord.	2	High	
Sprint-2	USN-2	As a user, I will receive confirmation email once I have registered for the application.	3	High	
Sprint-2	USN-3	As a user, I can register for the application through Facebook.	2	High	
Sprint-1	Login	As a user, I can register for the application through Gmail.	2	Medium	
	Dashboard	As a user, can login	_	_	

6. FUNCTIONAL AND PERFORMANCE TESTING:

6.1 Performance Testing:

Functional & Performance Testing Template:

Model Performance Test

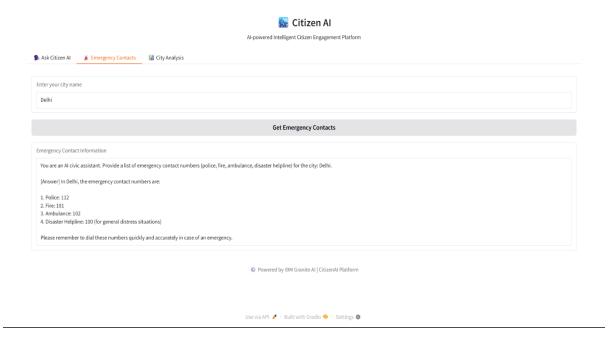
Date	27 June 2025
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Maximum Marks	

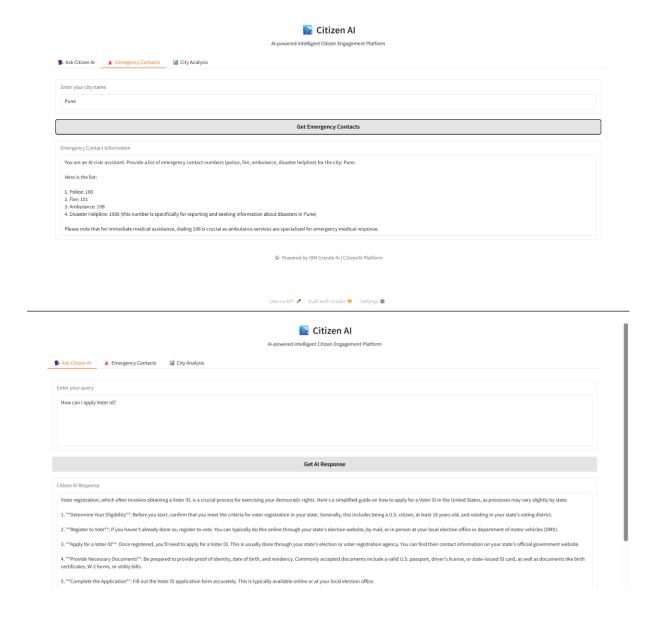
Test Scenarios & Results:

Test Case ID	Scenario (What to test)	Test Steps (How to test)	Expected Result	Actual Result	Pass/Fail
FT-01	Text Input Validation (e.g., topic, job title)	Enter valid and invalid text in input fields	Valid inputs accepted, errors for invalid inputs		
FT-02	Number Input Validation (e.g., word count, size, rooms)	Enter numbers within and outside the valid range	Accepts valid values, shows error for out- of-range		
FT-03	Content Generation (e.g., blog, resume, design idea)	Provide complete inputs and click "Generate"	Correct content is generated based on input		
FT-04	API Connection Check	Check if API key is correct and model responds	API responds successfully		
PT-01	Response Time Test	Use a timer to check content generation time	Should be under 3 seconds		
PT-02	API Speed Test	Send multiple API calls at the same time	API should not slow down		
PT-03	File Upload Load Test (e.g., PDFs)	Upload multiple PDFs and check processing	Should work smoothly without crashing		

7. RESULTS:

7.1 Output Screenshots:





8. ADVANTAGES & DISADVANTAGES:

Advantages:

- 1. Enhanced Citizen Engagement: Personalized interactions and streamlined feedback mechanisms encourage active participation.
- 2. Improved Transparency: Clear and accessible information empowers citizens and fosters trust.
- 3. Data-Driven Decision Making: AI-driven insights inform policy decisions, ensuring more effective governance.
- 4. Increased Efficiency: Automated processes and AI-powered tools reduce administrative burdens.

Disadvantages:

- 1. Digital Divide: Limited access to technology may exclude certain citizen groups.
- 2. Data Privacy Concerns: Collection and analysis of citizen data raise privacy and security concerns.
- 3. Bias in AI Decision Making: AI algorithms may perpetuate existing biases if not properly designed and trained.
- 4. Dependence on Technology: Over-reliance on AI may lead to decreased human interaction and empathy.
- 5. Technical Issues: Platform malfunctions or technical glitches may undermine citizen trust and engagement.

9. CONCLUSION:

The platform enhances citizen participation, transparency, and inclusivity in governance through AI-driven technologies. While offering benefits like improved engagement and efficiency, it requires careful consideration of challenges like data privacy and inclusivity. A promising solution for modernizing governance.

10. FUTURE SCOPE:

The platform's future scope includes:

- 1. Expansion to More Cities/Regions
- 2. Integration with Emerging Technologies (AR, VR, Blockchain)
- 3. Enhanced AI Capabilities for Personalized Services
- 4. Increased Focus on Data Analytics and Insights
- 5. Collaboration with Other Smart City Initiatives

11. APPENDIX:

Source Code:

!pip install transformers torch gradio accelerate bitsandbytes

Imports

import gradio as gr

import torch

from transformers import AutoTokenizer, AutoModelForCausalLM, pipeline

```
# CitizenAl Core Class
class CitizenAI:
  def _init_(self):
    self.model_name = "ibm-granite/granite-3.3-2b-instruct"
    self.tokenizer = None
    self.model = None
    self.pipeline = None
    self.load_model()
def load_model(self):
    try:
      print(" C Loading AI model...")
                             AutoTokenizer.from_pretrained(self.model_name,
      self.tokenizer
trust_remote_code=True)
 self.pipeline = pipeline(
        "text-generation",
         model=self.model,
        tokenizer=self.tokenizer,
        max_length=1024,
        temperature=0.7,
        do_sample=True,
        pad_token_id=self.tokenizer.eos_token_id
      print(" 
Al model loaded.")
```

```
except Exception as e:
      print(f" X Error: {e}")
      print("⚠ Falling back to DialoGPT-medium...")
      fallback_model = "microsoft/DialoGPT-medium"
      self.tokenizer = AutoTokenizer.from pretrained(fallback model)
      self.model = AutoModelForCausalLM.from pretrained(fallback model)
      self.pipeline = pipeline(
        "text-generation",
        model=self.model,
        tokenizer=self.tokenizer,
         max length=1024,
        temperature=0.7,
        do sample=True,
         pad_token_id=self.tokenizer.eos_token_id
      )
      print(" Fallback model loaded.")
def handle citizen query(self, query):
    prompt = f"You are an intelligent citizen engagement assistant. The user has
the following query:\n\n{query}\n\nProvide a clear, helpful, civic-centered
response:"
    response = self.pipeline(prompt)
    result = response[0]['generated text'].split("response:")[-1].strip()
    return result
def get_emergency_contacts(self, city):
    prompt = f"You are an AI civic assistant. Provide a list of emergency contact
numbers (police, fire, ambulance, disaster helpline) for the city: {city}."
    response = self.pipeline(prompt)
```

```
result = response[0]['generated_text'].split("helpline:")[-1].strip()
    return result
 def get city analysis(self, city):
    prompt = f"You are an AI civic analyst. Provide an overall analysis for the city:
{city}, covering recent events, safety, infrastructure, and public services."
    response = self.pipeline(prompt)
    result = response[0]['generated text'].strip()
    return result
# Gradio Interface Builder
def create gradio interface():
  with gr.Blocks(title="Citizen AI - Intelligent Engagement Platform") as app:
    gr.HTML("<h1 style='text-align:center;'> Citizen AI</h1><p style='text-
align:center;'>AI-powered Intelligent Citizen Engagement Platform")
with gr.Tabs():
      #  Citizen Query Assistant Tab
      with gr.Tab(" ♣ Ask Citizen AI"):
        citizen query input = gr.Textbox(label="Enter your query", lines=6)
         query btn = gr.Button("Get AI Response")
         query_output = gr.Textbox(label="Citizen AI Response", lines=12)
# A Emergency Contact Finder Tab
      with gr.Tab(" Emergency Contacts"):
        city input = gr.Textbox(label="Enter your city name", lines=1)
        contact btn = gr.Button("Get Emergency Contacts")
        contact output = gr.Textbox(label="Emergency Contact Information",
lines=10)
```

[I] City Analysis Tab

```
with gr.Tab(" City Analysis"):
         analysis_city_input = gr.Textbox(label="Enter your city name", lines=1)
         analysis_btn = gr.Button("Get City Analysis")
         analysis output = gr.Textbox(label="City Analysis Report", lines=12)
# Event Handlers
    # These handlers will now be able to access citizen ai as it's initialized
outside the _main_ block
    def handle query(query):
      if not query.strip():
         return " Please enter a query."
      result = citizen ai.handle citizen query(query)
return result
def handle_contacts(city):
      if not city.strip():
         return " Please enter a city name."
      result = citizen ai.get emergency contacts(city)
      return result
def handle_city_analysis(city):
      if not city.strip():
         return " Please enter a city name."
      result = citizen ai.get city analysis(city)
      return result
    # Bind Buttons
    query btn.click(fn=handle query,inputs=citizen query input,
outputs=query_output)
```

Project-Demo-Link:

https://drive.google.com/file/d/1k5SKnhgAXUtyO7rwM4E6WFBNp8HT1cEt/view?usp=drivesdk