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TEAM LEADER: HARINI S

**TEAM MEMBERS: MONICA G, NANDHINI K,
LOGESHWARI D**

DEPARTMENT: BCA – III ‘A’

**COLLEGE NAME: CHEVALIER T. THOMAS
ELIZABETH COLLEGE FOR WOMEN**

BATCH: 2023-2026

**PROJECT NAME: SUSTAINABLE SMART CITY
ASSISTANT USING IBM GRANITE LLM**

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SUSTAINABLE SMART CITY ASSISTANT

DOCUMENTATION

This document provides a comprehensive overview of the Sustainable Smart City Assistant project, a generative AI solution built using IBM Granite LLM. The project aims to improve city management and citizen interaction by providing quick, AI-powered tools.

PROJECT OVERVIEW

The **Sustainable Smart City Assistant** is an AI-powered platform designed to support urban sustainability, governance, and citizen engagement³. It leverages IBM Watson's Granite LLM and modern data pipelines to integrate several key modules, including a **City Health Dashboard**, a **Citizen Feedback** system, **Document Summarization**, **Eco-Advice**, **Anomaly Detection**, and a **Chat Assistant**. The platform uses a modular Fast API backend and a Streamlit-based frontend dashboard.

KEY FEATURES AND USE CASES

The assistant includes several quick tools to enhance urban management and citizen services.

- **Policy Search & Summarization:** Municipal planners can upload complex policy documents. The assistant then summarizes these documents into concise, citizen-friendly versions, enabling quick interpretation of key points and informed decision-making.
- **Citizen Feedback Reporting:** Residents can report issues like a burst water pipe directly through a feedback form. The issue is instantly logged with category tagging (e.g., "Water"), making it easy for city administrators to review.
- **Eco Tips:** Provides quick tools for eco tips.
- **City Health Dashboard:** Offers a dashboard for monitoring city health.

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PROJECT WORKFLOW & IMPLEMENTATION

This section details the step-by-step process for setting up and deploying the project.

PREREQUISITES

To get started with the project, you'll need a basic understanding of the following tools and concepts:

- **Gradio Framework:** For building the user interface.
- **IBM Granite Models:** Accessible via Hugging Face.
- **Python Programming:** Proficiency in Python is required.
- **Version Control with Git:** For managing and uploading the project code.
- **Google Colab's T4 GPU:** The project is deployed on Google Colab, leveraging its T4 GPU for smooth performance.

IMPLEMENTATION STEPS

The project workflow is divided into four main activities.

ACTIVITY 1: EXPLORING THE PORTAL

1. Search for and navigate to the "Naan Mudhalavan Smart Internz" portal.
2. Log in to your account.
3. Go to the "Projects" section and select the "Sustainable Smart City Assistant Using IBM Granite LLM" project.
4. Click "Access Resources" and then "Guided Projects" to view the project details.
5. Click "Go to workspace" to find the project overview and details.

ACTIVITY 2: CHOOSING AN IBM GRANITE MODEL

1. Navigate to the Hugging Face website and create an account.
2. Use the search bar to find

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"IBM-granite models".

3. For this project, the

The Granite-3.2-2b-instruct model is recommended, as it's a lightweight and fast 2-billion-parameter model fine-tuned for reasoning tasks.

ACTIVITY 3: RUNNING THE APPLICATION IN GOOGLE COLAB

1. Go to

Create a new notebook on Google Colab.

2. Change the notebook's runtime type to

T4 GPU by going to Runtime > Change Runtime Type and selecting T4 GPU from the hardware accelerator.

3. Install the necessary libraries by running the following command in the first cell:
4. Copy the provided project code into a new cell and run it. This will download the model and launch the application. A public URL will be generated to access the Gradio application.

ACTIVITY 4: UPLOADING THE PROJECT TO GITHUB

1. Go to **GitHub** and create an account or sign in.
2. Create a new repository, giving it a name (e.g., "IBM-Project") and turning on the "Add a README" file option.
3. In Google Colab, download your project code by clicking

File > Download > Download .py.

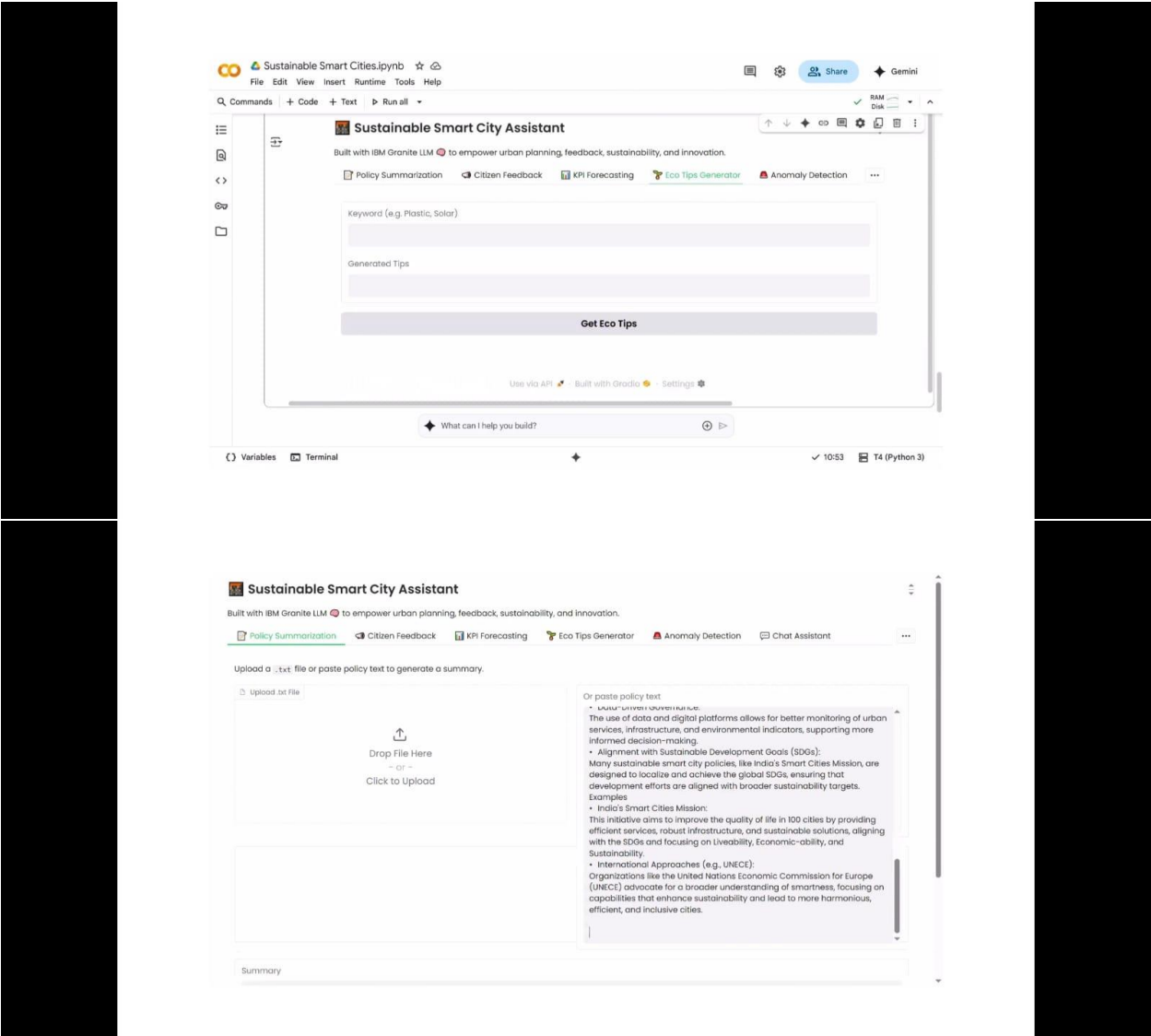
4. In your new GitHub repository, click on

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"Add file" and then "Upload files".

5. Choose the downloaded

OUTPUT OF THE PROJECT



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Drop File Here

Click to Upload

The use of data and digital platforms allows for better monitoring of urban services, infrastructure, and environmental indicators, supporting more informed decision-making.

- Alignment with Sustainable Development Goals (SDGs): Many sustainable smart city policies, like India's Smart Cities Mission, are designed to localize and achieve the global SDGs, ensuring that development efforts are aligned with broader sustainability targets.

Examples

- India's Smart Cities Mission: This initiative aims to improve the quality of life in 100 cities by providing efficient services, robust infrastructure, and sustainable solutions, aligning with the SDGs and focusing on Liveability, Economic-ability, and Sustainability.
- International Approaches (e.g., UNICEF): Organizations like the United Nations Economic Commission for Europe (UNICEF) advocate for a broader understanding of smartness, focusing on capabilities that enhance sustainability and lead to more harmonious, efficient, and inclusive cities.

Summary

A sustainable smart city policy aims to use technology to create eco-friendly, economically viable, and socially inclusive urban environments. This is achieved through implementing smart grids, efficient transportation, resource management, and citizen engagement while ensuring alignment with global sustainability goals like the United Nations' Sustainable Development Goals (SDGs). Examples include India's Smart Cities Mission, which targets improving city quality of life, and international initiatives

Summarize

Use via API - Built with Gradio - Settings

Sustainable Smart Cities.ipynb

Gradio

colab.research.google.com/drive/1zbRDOzHuaioZ96UXRvNAsP1W5Uhp-ps7authuser=3

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Sustainable Smart Cities.ipynb

File Edit View Insert Runtime Tools Help

Q Commands + Code + Text + Run all

RAM Disk

RAM 2/2 [03:44+00:00, 224.45%/s]

model-00002-cl-00002 safetensors: 100% 67.1MB/7.1M [00:01+00:00, 52.9MB/s]

model-00001-cl-00002 safetensors: 100% 5.00G/5.00G [03:43+00:00, 316MB/s]

Loading checkpoint shards: 100% 2/2 [00:16+00:00, 6.77%/s]

generation_config.json: 100% 132/132 [00:00+00:00, 12.0kB/s]

Device set to use cuda:0

Colab notebook detected. To show errors in colab notebook, set debug=True in launch()

* Running on public URL: <https://c867b58e6d7c45486d3.wsls.live>

This share link expires in 1 week. For free permanent hosting and GPU upgrades, run 'gradio deploy' from the terminal in the working directory to

Sustainable Smart City Assistant

Built with IBM Granite LLM to empower urban planning, feedback, sustainability, and innovation.

Policy Summarization

Citizen Feedback

KPI Forecasting

Eco Tips Generator

Anomaly Detection

What can I help you build?

Upload a .txt file or paste policy text to generate a summary.

Variables Terminal

10:53 T4 (Python 3)

Type here to search 10:56 AM 17-09-2025