

INTRODUCTION

Project Title: Sustainable Smart City Assistant Using IBM Granite LLM

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Project Overview:

The **Sustainable Smart City Assistant** is an intelligent AI-powered platform designed to support cities in becoming more **sustainable, efficient, and citizen-friendly**. Built using modern machine learning, natural language processing, and scalable web technologies, the assistant acts as a central hub for city administrators, planners, and residents to interact with and make sense of urban data.

By leveraging **IBM Watsonx's Granite LLM**, the assistant provides human-like understanding and generation of language, making it ideal for summarizing dense policy documents, engaging in contextual conversations, and delivering tailored environmental advice. This is integrated with a modular **FastAPI backend** and an intuitive **Streamlit dashboard**, ensuring ease of access and responsiveness for both technical and non-technical users.

The system is **modular by design**, supporting a wide array of functions relevant to modern smart cities, including:

- **Document summarization** for simplifying government reports and policies
- **KPI forecasting** using machine learning to anticipate future trends in resource usage
- **Citizen feedback management** for streamlined issue reporting and classification

- **Eco-advice generation** for promoting sustainable living
- **Anomaly detection** in utility data to catch unexpected behaviour or misuse
- **Semantic policy search** with Pinecone to retrieve and understand relevant documents
- **Interactive AI chat assistant** for real-time information and suggestions

Purpose of the Project:

The purpose of the **Sustainable Smart City Assistant** project is to empower urban stakeholders—such as citizens, planners, and administrators—with AI-driven tools that promote **sustainability, efficient governance, and proactive civic engagement**. By integrating IBM Watsonx's Granite LLM with smart data processing technologies, the assistant provides actionable insights, real-time decision support, and automated services tailored to the evolving needs of modern cities.

Key Objectives:

- **Enhance urban sustainability** through data-driven forecasting, anomaly detection, and eco-friendly guidance.
- **Simplify governance workflows** by summarizing complex policies, analyzing KPIs, and organizing feedback.
- **Boost citizen engagement** with accessible AI tools that allow for easy reporting, inquiry, and education.
- **Accelerate decision-making** by leveraging powerful language models and machine learning to turn raw data into insights.
- **Create a modular and scalable smart city platform** that integrates seamlessly with various data formats and interfaces.

In essence, the project aims to **bridge the gap between city data and actionable intelligence**, helping urban environments become more **resilient, efficient, and people-centric**.