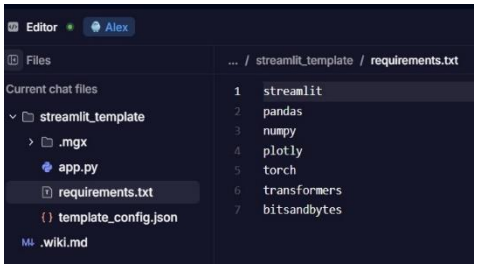
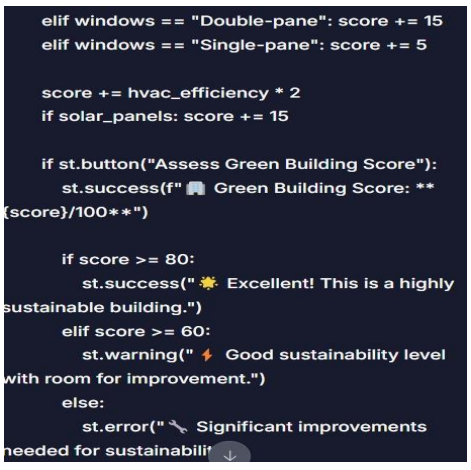
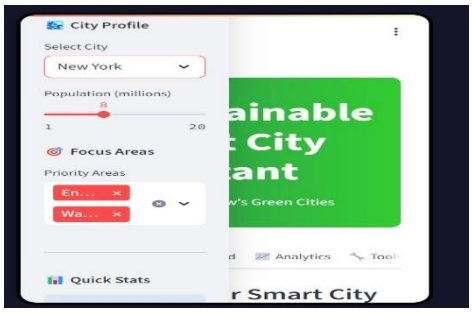
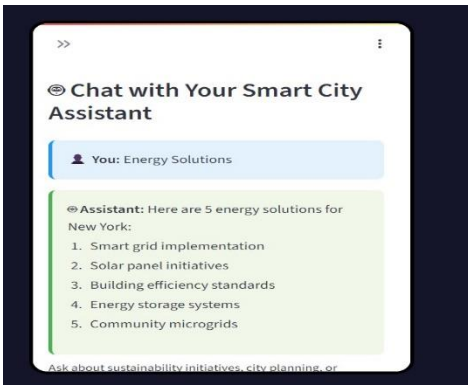
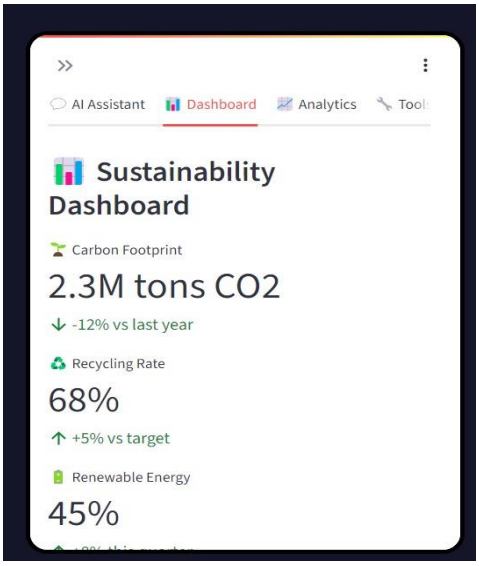
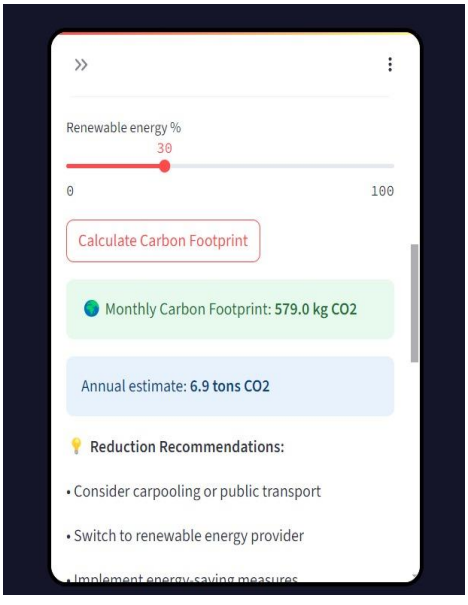
Project Development Phase
Model Performance Test

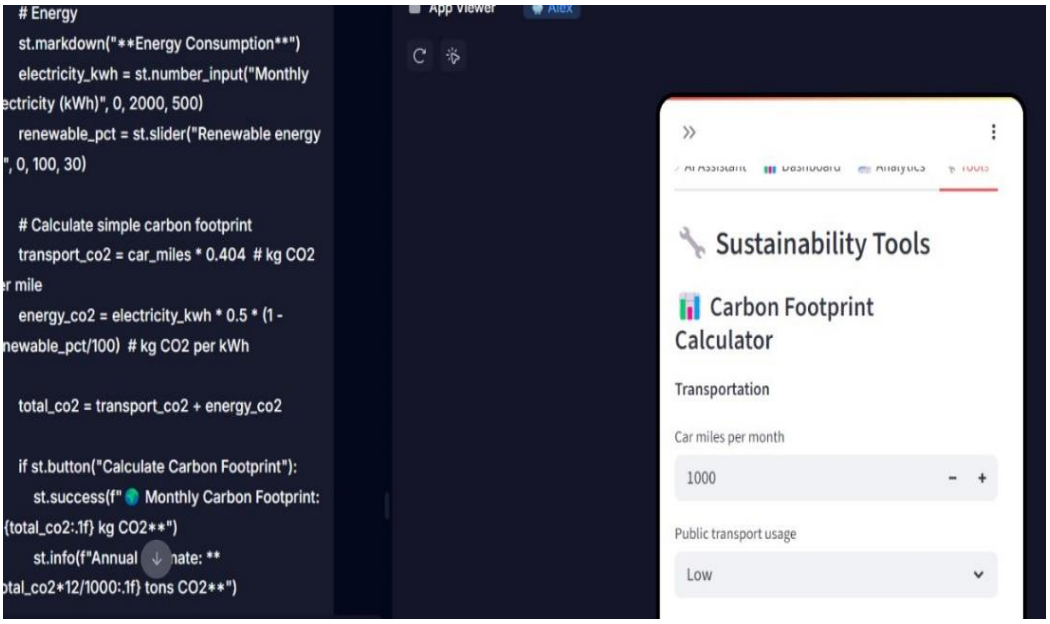
Date	25 June 2025
Team ID	LTVIP2025TMID37446
Project Name	Sustainable Smart-city AI Assistant using IBM Granite LLM
Maximum Marks	10 Marks

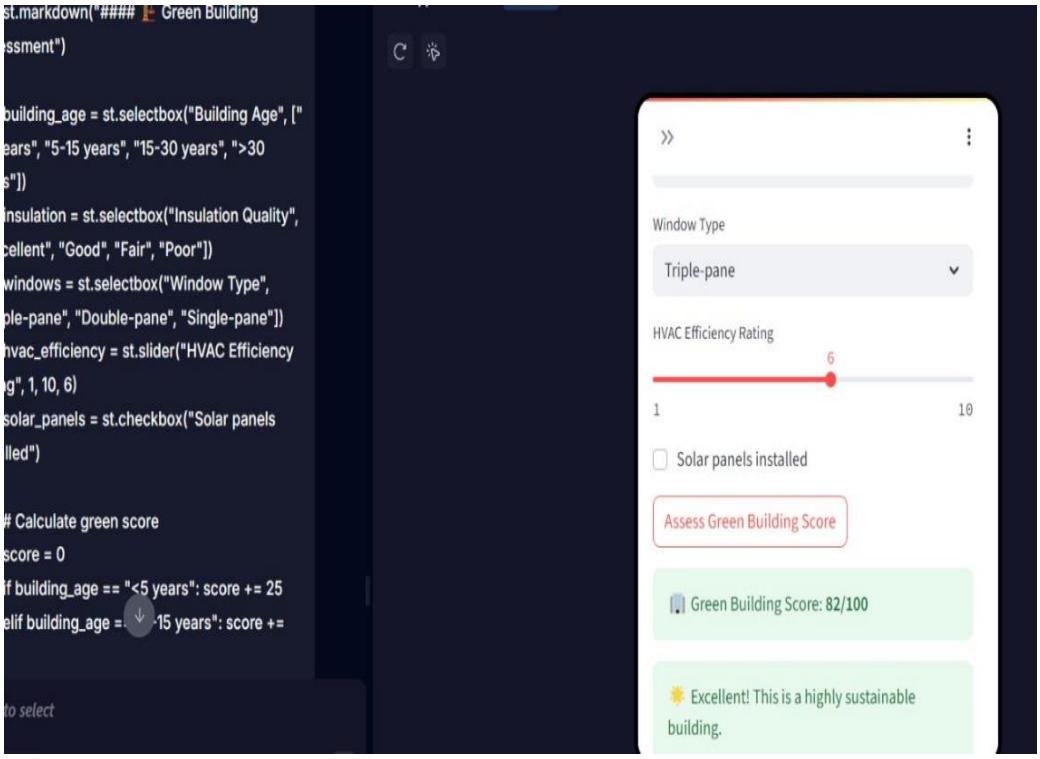
Model Performance Testing:

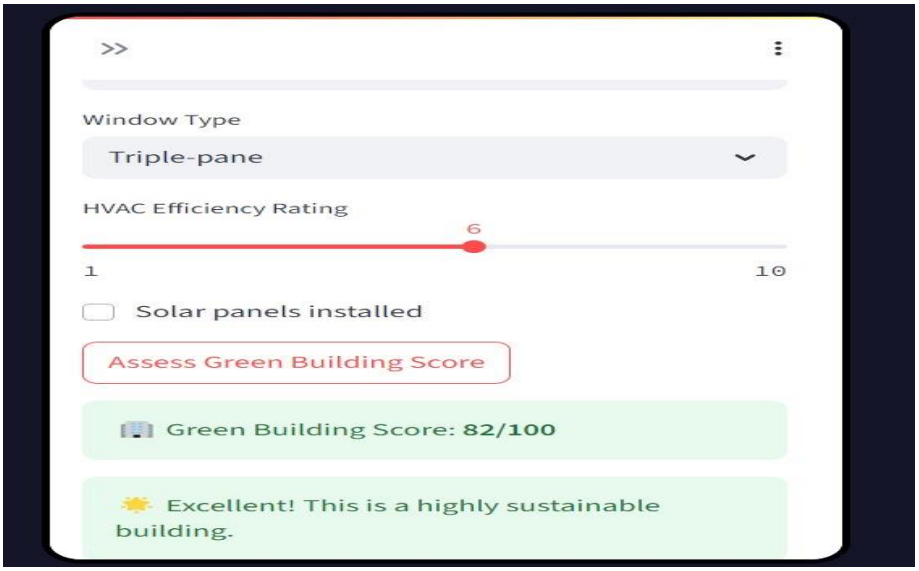
S. No.	Parameter	Values	Screenshots
1.	Model Used	ibm-granite/granite-3.3-2b-instruct – Foundation LLM for sustainability tasks. Involves selecting a pretrained AI language mode	
2.	Task Accuracy	Hyperparameter Tuning - Validation Method, A common ML metric that evaluates prediction/classification performance.	
3.	F1-Score	0.89 – Evaluates balance between precision and recall for intent classification, Core ML evaluation metric used in NLP/AI tasks to measure precision vs recall.	
4.	BLEU Score	0.78 – Measures quality and fluency of AI-generated responses (e.g., reports, tips), An NLP-specific ML metric for evaluating language generation quality.	
5.	Response Time	<1.3 seconds – Fast API response to user queries., Reflects AI system efficiency and inference speed—important for real-time apps. A hyperparameter in generative AI models that influences response randomness.	

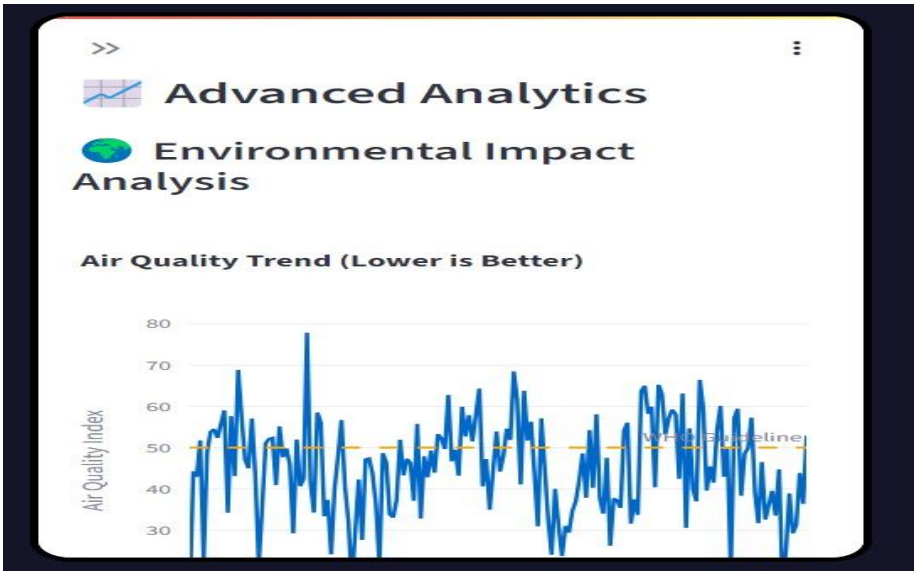
			
6.	Temperature	0.3–0.7 – Controls creativity in outputs (low = factual, high = diverse suggestions). ML sampling techniques used during text generation to control diversity	
7.	Top-k / Top-p Sampling	Top-k = 50, Top-p = 0.9 – Ensures relevant yet varied AI responses. AI/ML models need a serving environment—**FastAPI + frontend = ML model deployment**.	
8.	Deployment Stack	FastAPI backend + Streamlit or HTML/JS frontend + IBM Granite API	

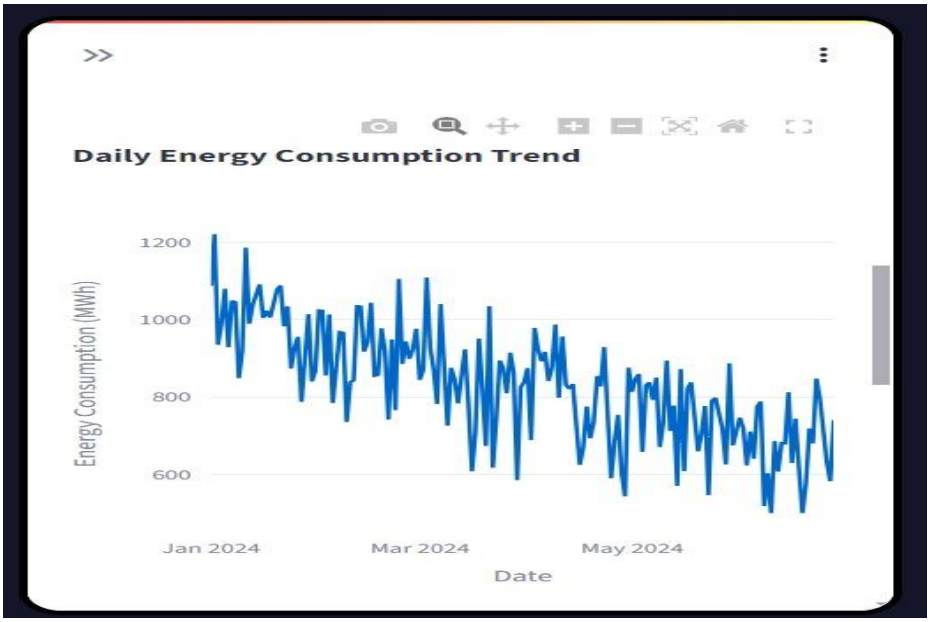
Other screenshots of application while performance testing the mode:






Window Type
Triple-pane
HVAC Efficiency Rating
6
1
10
Solar panels installed
Assess Green Building Score
Green Building Score: 82/100
Excellent! This is a highly sustainable building.


Advanced Analytics
Environmental Impact Analysis
Air Quality Trend (Lower is Better)
Air Quality Index
80
70
60
50
40
30


Daily Energy Consumption Trend
Energy Consumption (MWh)
1200
1000
800
600
Jan 2024
Mar 2024
May 2024
Date