

# Technology Stack

Date	30 June 2025
Team ID	LTVIP2025TMID38464
Project Name	Sustainable Smartcity Assistant Using IBM Granite LLM
Maximum Marks	

## 1 Backend Technologies

- **FastAPI:** Modern web framework for building APIs
- **Python 3.8+:** Core programming language
- **Pydantic:** Data validation and settings management
- **Uvicorn:** ASGI server for FastAPI

## 2 Frontend Technologies

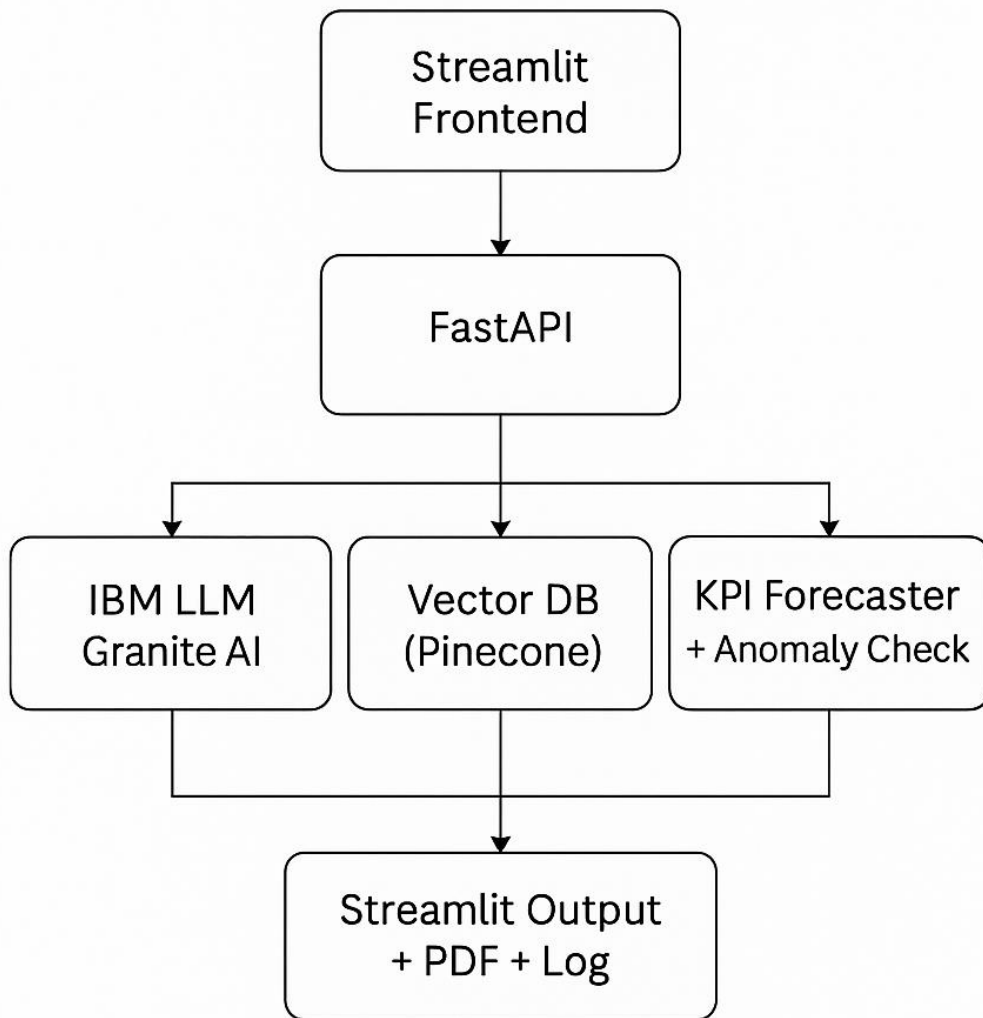
- **Streamlit:** Interactive web application framework
- **Streamlit-Option-Menu:** Enhanced navigation components
- **Custom CSS:** Styling and UI enhancements

## 3 AI and ML Technologies

- **IBM Granite With HuggingFace:** Enterprise-grade AI platform
- **Granite LLM:** Large language model for text generation
- **Sentence Transformers:** Text embedding generation
- **Scikit-learn:** Machine learning algorithms
- **Pandas:** Data manipulation and analysis

## 4 Database and Storage

- **Pinecone:** Vector database for semantic search
- **File System:** Local storage for documents and data
- **In-Memory Storage:** Session-based data management



**Component Interaction Flow**