**Technology Stack**

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| 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

