SmartSDLC - AI-Enhanced Software Development Lifecycle

🚀 Project Overview

SmartSDLC aims to enhance the software development lifecycle by integrating AI models for automation and efficiency. The project utilizes IBM Watsonx AI and Granite models to streamline SDLC tasks using modern tools like FastAPI and Streamlit.

🧰 Prerequisites

* Python
* FastAPI
* Streamlit
* IBM Watsonx AI & Granite Models

Install dependencies:

pip install -r requirements.txt

🧱 Project Architecture

SmartSDLC-AI/  
├── docs/ # Documentation and PPTs  
├── src/ # Source Code  
│ ├── backend/ # FastAPI backend  
│ ├── frontend/ # Streamlit frontend  
│ └── models/ # AI integration  
├── tests/ # Unit tests  
├── deployment/ # Deployment files  
├── README.md  
├── LICENSE  
└── requirements.txt

📊 Milestones and Activities

✅ Milestone 1: Model Selection & Architecture

* **1.1**: Research and select the appropriate generative AI model
* **1.2**: Define the architecture of the application
* **1.3**: Set up the development environment

✅ Milestone 2: Core Functionalities Development

* **2.1**: Develop the core functionalities
* **2.2**: Implement FastAPI backend for routing and input processing

✅ Milestone 4: Frontend Development

* **4.1**: Design and develop the user interface
* **4.2**: Create dynamic interaction with backend

✅ Milestone 5: Deployment

* **5.1**: Prepare the application for local deployment
* **5.2**: Test and verify local deployment

✅ Milestone 6: Conclusion

* Finalize and document all outcomes for presentation and evaluation

🌐 Running the Application

**Backend (FastAPI)**

cd src/backend/fastapi\_app  
uvicorn main:app --reload

**Frontend (Streamlit)**

cd src/frontend/streamlit\_ui  
streamlit run app.py

📦 Deployment

Use Docker or deployment tools provided in deployment/ folder. For quick local testing:

streamlit run src/frontend/streamlit\_ui/app.py

🧪 Testing

Run backend tests:

pytest tests/

🙌 Contribution

Feel free to fork this repository, submit issues, and create pull requests. Contributions are highly appreciated!