

GitHub Project Generator – Detailed Documentation

The GitHub Project Generator is a full-stack AI-powered application that automates the analysis of GitHub repositories. It fetches repository metadata, parses README files using a locally hosted Large Language Model (LLM) via Ollama, and generates structured project summaries through a FastAPI backend and Streamlit frontend.

System Architecture

The application follows a layered and modular architecture to ensure scalability, maintainability, and separation of concerns.

- Streamlit Frontend for user authentication and project visualization.
- FastAPI Backend for API routing, business logic, and orchestration.
- Ollama-based AI Layer for local LLM inference and README parsing.
- SQLite Database for persistent storage of users, repositories, and generated projects.

Prerequisites

- Python 3.8 or higher
- Git for repository cloning
- Ollama for running LLMs locally
- Active internet connection for GitHub API access

Installation & Setup

Clone the Repository

```
git clone <repository-url>
cd <repository-folder>
```

Create and Activate Virtual Environment

```
# Windows
python -m venv .env
.venv\Scripts\activate

# macOS / Linux
python3 -m venv .env
source .venv/bin/activate
```

Install Dependencies

```
pip install -r requirements.txt
```

Ollama & AI Model Setup

Ollama is used to run open-source LLMs locally, ensuring privacy and reduced dependency on cloud-based AI services.

```
ollama pull llama3.2:latest
```

Environment Configuration

Create a .env file in the project root directory and configure the following variables:

```
DATABASE_URL=sqlite:///./app.db  
  
OLLAMA_API_URL=http://localhost:11434/api/generate  
OLLAMA_MODEL=llama3.2:latest  
OLLAMA_TIMEOUT=300.0
```

Running the Application

Start Backend Server

```
uvicorn app.main:app --reload
```

Start Frontend Interface

```
streamlit run frontend/streamlit_app.py
```

Application Usage Flow

- Open the Streamlit application in the browser.
- Authenticate using a GitHub Personal Access Token.
- Fetch and display user repositories.
- Select a repository for analysis.
- Parse README content using the local AI model.
- Generate and display structured project summaries.