

Pipeline 2.0

A brief intro to the Pipeline that we have created

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README

This project provides an interactive pipeline for generating requirements from a PDF, reviewing them, automatically generating implementation details, iteratively refining code, and finally generating documentation. The application is built with Streamlit, incorporates several agents for processing, and offers a live preview via an embedded HTTP server.

The documentation is divided into multiple topics:

- Installation and Setup ([Installation and Setup](#))
- Running the Pipeline ([Running the Pipeline](#))

Known Bugs

- Do the iteration of coding agent till the maximum time allowed (i.e. 3) else, the Documentation Agent will not work as expected. We are trying to fix it ASAP.
- We are not storing the Documentation Agent in a file but, just showing in the UI for demo purposes.

Installation and Setup

This document describes the steps to set up and configure the Interactive Pipeline UI.

Prerequisites

- **Python 3.11:** Ensure you have Python installed. We tested on 3.11.9. Download it from python.org (<https://www.python.org/downloads/>).
- **Pip:** Python package installer (usually included with Python).
- **Streamlit:** Used to run the interactive UI.
- **Other Dependencies:** Additional packages are required (see below).

Environment Setup

1. Download the Code

Download the code from the One Drive Link (https://iiithydreresearch-my.sharepoint.com/:f:/g/personal/george_rahul_research_iiit_ac_in/EpfAWGEoSUdMsiaOd9N6Ok8BFLC1a_inkScN4xKkaKANuw?e=V1zI04).

2. Create and Activate a Virtual Environment

It is recommended to use a virtual environment.

```
python -m venv venv
# On Windows:
venv\Scripts\activate
# On macOS/Linux:
source venv/bin/activate
```

3. Install the Required Packages

Install dependencies by running:

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

4. Configure the Environment Variables

- First, create the `.env` file in case it doesn't exist:

```
touch .env
```

- Now, open the `.env` file and add the following variables:

```
GOOGLE_API_KEY=Your_Google_API_Key_Here
```

Running the Pipeline

This topic covers the procedures to start the application and see how the pipeline functions interactively.

Start the Streamlit Application

To run the interactive user interface:

1. **Launch the Application** Open a terminal in your project directory and execute:

```
streamlit run ui.py
```

2. **Opening in Web Browser** After running the command, a new tab will open in your default web browser. If it doesn't, you can manually navigate to the website shown in the console/terminal.

Various Elements

1. Requirements Generation

- Click "Generate Requirements" to extract and display requirements from the PDF.
- The output is shown in a text area for further review.
- You can either drag and drop the PDF file to it or use the Button to search for the file using the system file explorer.

2. Human Review for Requirements

- Input your review or feedback in the provided text field.
- Submit your review to update and refine the requirements.

3. Implementation Generation

- Upon reviewing the requirements, click the "Generate Implementation" button.

- The application then produces implementation details based on the reviewed requirements.

4. Iterative Code Generation and Review

- Enter your code review feedback, then click "Generate/Refine Code" for iterative improvements.
- The code output is displayed and highlighted.
- A link is provided that opens a live preview (served locally at port 8000).

5. Documentation Generation

- After confirming the code, generate documentation to explain and complement the code.

Live Code Preview

- **Automatic Server Startup:** When code is generated, the script automatically starts a local HTTP server if not already running.
- **Opening in Browser:** The generated URL (e.g., `http://localhost:8000/code.html`) is launched in your default browser, offering immediate visual feedback.
- **Manual Navigation:** If the browser does not open automatically, scroll down and copy and paste the URL into your browser manually.



Please do not spam the buttons. This might just cause a lot of requests together and you might be rate-limited by Google. Normally the application should be able to handle the requests and you should not have to click the buttons multiple times.