

# AI Assignment Report

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Project Title: Chatbot for PDF using Mistral-7B (OpenRouter)

## 1. Introduction

In this project, I created a chatbot that can answer questions from a PDF file. It finds the most related part of the document and gives the answer using a model called Mistral-7B. This model was used through OpenRouter, and the answers are shown word-by-word like live typing.

## 2. PDF Processing and Chunk Creation

I used PyPDF2 to read the PDF file. Then I divided the content into 87 small parts called 'chunks' using LangChain. These chunks were saved to use later while answering.

## 3. Making the Chatbot Smart

To make the chatbot understand questions, I converted all chunks into numbers using MiniLM model. These were saved in FAISS which helps to find similar chunks when a question is asked. The best 2 chunks are picked every time a question is asked.

## 4. Answering Questions

I used Mistral-7B model to write answers. I gave it the selected chunks and the question. It gave me the answer step by step using streaming so the answer looks like typing.

▲ Streaming answer GIF is added separately.

## 5. Chat UI and Input Check

The chatbot has a clean interface made in Streamlit. It shows the model name and chunk count on the left. If someone types random input like 'asdf', the chatbot shows a warning and stops.

▲ Screenshot of invalid input warning shown below.

## 6. Testing the Chatbot

Question	Result	Chunks Used
What is the refund policy?	Answer was correct	2
What are the deliverables?	Answer was correct	2
What is the capital of France?	Answer was correct, but said not in document	0
asdf	Blocked with warning	—

asdfgh123#\$%

Still answered (will improve later) Weak

## 7. What I Observed

- The chatbot gives good answers when the question is from the document.
- Answers come as a stream, which looks nice.
- Chunk sources are shown to explain where the answer came from.
- Wrong or silly input is blocked (like 'asdf').
- Some random input like 'asdfgh123#\$%' still gives answer because FAISS returns some match anyway.

## 8. Conclusion

I was able to build the chatbot fully. It finds related text, makes a prompt, and gets an answer using Mistral-7B. All steps are working well. Streaming, chunk display, and input check are included. Some small issues may be fixed in future like better handling for random inputs.



