
Project Overview

We built an interactive chatbot that answers questions from the “Indian Constitution at Work” Class 11 PDF. This bot uses local models and LangChain for document-based Q&A, and Streamlit for a user-friendly interface.

Tools and Libraries Used

- **LangChain:** Framework to manage document ingestion, vector embedding, and Q&A.
 - **Streamlit:** Used to create a chat-like web app interface.
 - **PyPDFLoader:** Extracts text from the input PDF.
 - **FAISS:** Local vectorstore to store document embeddings for similarity search.
 - **SentenceTransformer:** Generates sentence embeddings.
 - **Flan-T5-base** (from HuggingFace, run locally): Language model used to generate long-form answers from retrieved content.
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Folder Structure

```
constitution_bot_project/  
├── main.py  
├── Indian Constitution At Work.pdf  
└── requirements.txt
```

main.py: Streamlit Interface Code

```
import streamlit as st  
from constitution_qa import load_docs, create_vectorstore, search_answer  
  
def main():  
    st.title("📖 Constitution QA Bot ")  
    st.markdown("Ask a question, and get accurate, long answers from the  
actual PDF!")  
  
    if "chat_history" not in st.session_state:  
        st.session_state.chat_history = []  
  
    pdf_path = "Indian Constitution At Work.pdf"  
    docs = load_docs(pdf_path)  
    vectorstore = create_vectorstore(docs)  
  
    user_query = st.text_input(" Ask a question about the Constitution:")
```

```
if user_query:
    with st.spinner("Searching the book..."):
        answer = search_answer(vectorstore, user_query)
        st.session_state.chat_history.append(("You", user_query))
        st.session_state.chat_history.append(("Bot", answer))

for speaker, message in st.session_state.chat_history:
    st.markdown(f"**{speaker}**: {message}")
```

How to Run the Project

1. Install dependencies:

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

2. Run Streamlit app:

```
streamlit run main.py
```

3. Ask any Constitution-based question and get detailed answers!
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Features

- Local-only: No API keys or external calls
 - Long-form, accurate answers from textbook
 - User-friendly UI with chat history
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Output Example

User: What is fundamental rights? **Bot:** Fundamental Rights are protected and guaranteed by the Constitution... (long answer from the actual book)

Future Enhancements

- Replace Flan-T5 with larger local models like Mistral 7B if you need even more context.
 - Add subject tagging, highlight references.
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