**Harry Potter ChatBOT Document (LangChain + Groq)**

**Overview:**

This project is an **interactive question-answering system** that allows users to ask questions about the content of a **PDF document**. The system retrieves relevant information from the document using **semantic search (FAISS)** and generates answers using **Groq’s Llama 3 language model** via **LangChain**.

**Features:**

* Load and process any **PDF document**.
* Split text into manageable chunks for efficient search.
* Generate text embeddings using **Hugging Face sentence-transformers**.
* Store embeddings in a **FAISS vector database** for fast retrieval.
* Use **Groq's Llama 3 model** to answer questions based on document content.
* Interactive chat interface to ask questions and get AI-generated answers.

**Technology Stack:**

* **LangChain**
* **Groq LLM (langchain-groq)**
* **FAISS**
* **Hugging Face Sentence-Transformers**
* **PyPDF**
* **Google Colab**

**How to Use:**

1. **Open the Google Colab Notebook:**
   * Use the provided link or upload the notebook to Google Colab.
2. **Install Required Libraries:**

!pip install -q langchain groq faiss-cpu sentence-transformers pypdf

1. **Set Groq API Key:**

from getpass import getpass

import os

os.environ["GROQ\_API\_KEY"] = getpass("Paste Groq API Key: ")

1. **Upload PDF Document:**

from google.colab import files

uploaded = files.upload()

* Select the PDF file you wish to use.

1. **Run the System:**
   * The system will load the PDF, split the text, create embeddings, store them in FAISS, and set up the Groq language model.
   * Start the interactive Q&A session.
2. **Ask Questions:**
   * Type any question related to the document's content.

Example:

**Question:** Who is Harry Potter's best friend?  
**Answer:** Harry Potter's best friends are Ron Weasley and Hermione Granger.

**Important Notes:**

* The PDF file is uploaded temporarily in Colab's environment and needs to be uploaded again each time the notebook is run.
* The Groq API key must also be provided in each new session.
* The system is designed for demonstration and educational purposes.

**Credits:**

* LangChain
* Groq
* FAISS
* Hugging Face Sentence-Transformers
* PyPDF

**Conclusion:**

This project demonstrates how to build a powerful document-based question-answering system using semantic search and large language models. It provides an efficient way to retrieve information from documents and generate context-aware answers, making it suitable for applications like knowledge bots, document assistant