**🧙‍♂️ Hogwarts Knowledge Vault**

**Overview**

"Hogwarts Knowledge Vault" is an interactive question-answering system that allows users to query a Harry Potter knowledge base.  
Powered by **semantic PDF retrieval** and **agent-based character modeling**, it answers your questions *in the voice of different Harry Potter characters*.

* 🪄 **Semantic Search**: Extracts relevant context from the Harry Potter book.
* 🧠 **Character Analysis**: Adapts responses based on the selected character's style.
* ✍️ **Response Generation**: Final answers are personalized and maintain memory across conversations.

The app is built using:

* 🧠 **CrewAI**: Agent orchestration
* 📚 **FAISS**: Vector search for semantic retrieval
* 🧩 **Streamlit**: Clean, themed UI for interactions
* 📄 **YAML Configs**: Modular agent and task design

**Folder Structure**

pgsql

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data/

harry\_potter.pdf ← Source Knowledge Base

faiss\_index/

(vector storage)

src/

agents/

config/

agents.yaml ← Agent configurations

tasks.yaml ← Task configurations

harry\_potter\_crew.py ← Main Crew class (HarryPotterRAGCrew)

utils/

pdf\_processor.py ← PDF chunking + vector creation

tools.py ← Custom PDF search tool

app.py ← Streamlit frontend

requirements.txt ← Python dependencies

Readme.md ← Project documentation

**Backend Architecture**

**Agents**:

* retrieval\_agent: Performs **semantic search** inside the PDF.
* character\_analysis\_agent: Analyzes **character style** for answering.
* response\_generation\_agent: **Composes** the final user-facing response.

**Tasks**:

* retrieve\_context: Search for relevant content chunks.
* analyze\_character: Understand the selected character’s tone and style.
* generate\_response: Generate the final, stylistic answer.

**Crew Management**:

* Agents are coordinated in a **sequential** process using CrewAI’s Process.sequential.

**Frontend (Streamlit UI)**

**Features**:

* 📜 **Ask any question** about the Harry Potter universe.
* 🧙‍♂️ **Select a character** to answer in their "voice" (e.g., Dumbledore, Hermione).
* 💬 **Chat interface** with scrolling history.
* 🔄 **Clear conversations** anytime with a button.
* 🎨 **Custom Harry Potter-inspired theme** (Cinzel & Garamond fonts, dark Hogwarts-like look).

**Installation Instructions**

bash

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# Clone the repo

git clone <your-repo-url>

# Install dependencies

pip install -r requirements.txt

# Launch the app

streamlit run app.py

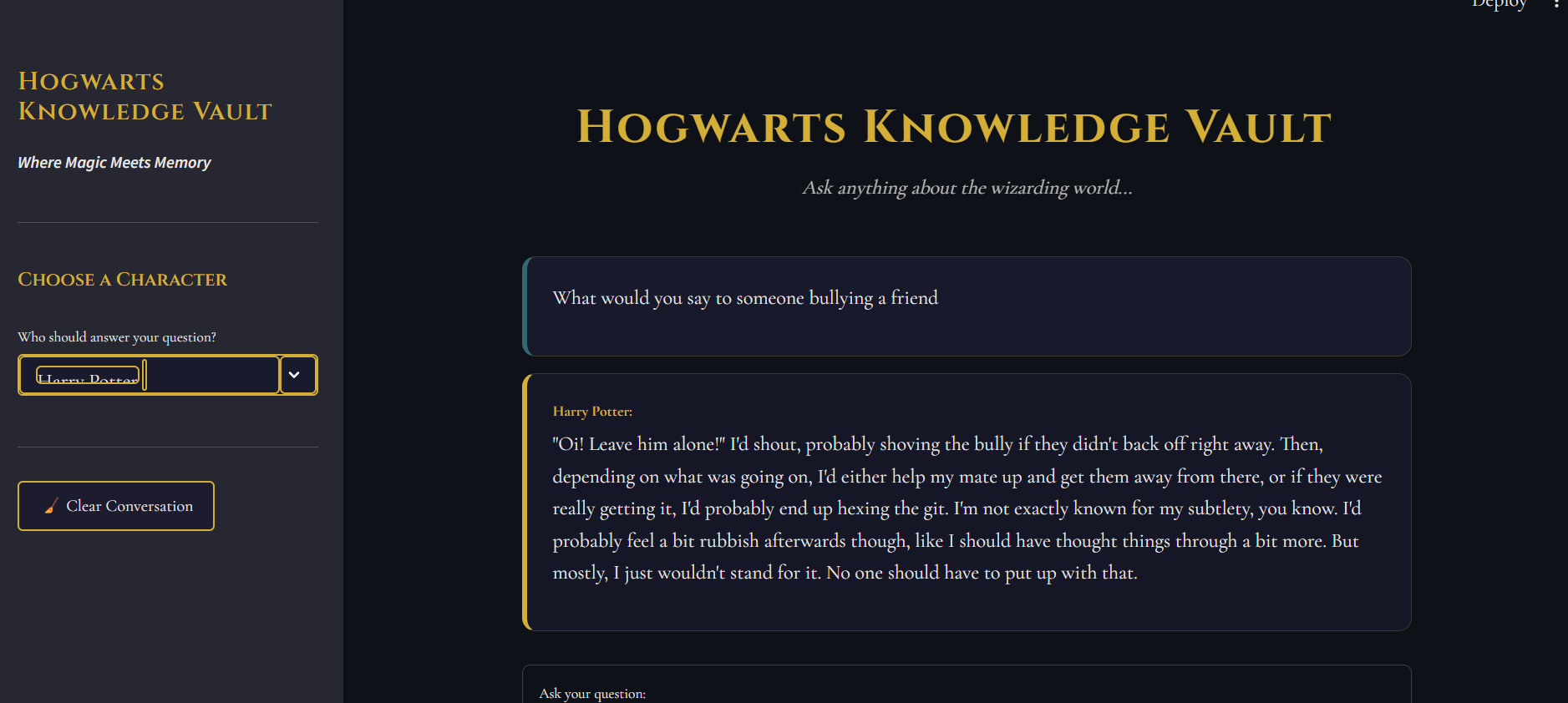
**Current Limitations**

* Memory is **not yet persistent** across long conversations.
* Works on a **single PDF** — only "Harry Potter" for now.
* No **user authentication** or **history saving**.

**Future Scope 🚀**

1. **Memory Management per Character**
   * Each character can develop a **personal memory**.
   * Example: If you ask Dumbledore about "Horcruxes" multiple times, he recalls past answers.
   * Use memory modules like:
     + CrewAI Memory
     + LangChain BufferMemory
     + or custom dictionaries based on character\_name.
2. **Upload New Books**
   * Allow users to **upload their own PDFs** to build new semantic vaults (other fantasy books?).
3. **Fine-tuning Character Personas**
   * Improve character\_analysis\_agent using **few-shot learning** or **style templates**.
   * Adjust vocabulary, humor, and tone depending on the character.
4. **Conversation Summarization**
   * Summarize past conversations into "Daily Prophet" style headlines! 📜
5. **UI Improvements (Light)**
   * Save chat history.
   * Add avatar icons (Dumbledore, Harry, etc).
   * Speech-to-text input.
   * Multi-question "Quizzes" based on Hogwarts lore.

**Visuals**



**Questions**

* **What would you say to someone bullying a friend ?**

**Harry Potter:** "Oi! Leave him alone!" I'd shout, probably shoving the bully if they didn't back off right away. Then, depending on what was going on, I'd either help my mate up and get them away from there, or if they were really getting it, I'd probably end up hexing the git. I'm not exactly known for my subtlety, you know. I'd probably feel a bit rubbish afterwards though, like I should have thought things through a bit more. But mostly, I just wouldn't stand for it. No one should have to put up with that.

* **“What’s your plan to win a Quidditch match?**

**Draco Malfoy:**  Win a Quidditch match? Simple, really. Superior players, superior strategy. Unlike some... \*cough\* Potter \*cough\*... we Slytherins rely on finesse, not brute force. We'll use superior broomsticks, naturally – the best money can buy, unlike some... \*cough\* \*cough\*. And then, of course, a bit of strategic fouling here and there. A well-placed bludger to the head... nobody notices, right? Besides, Crabbe and Goyle will take care of any... \*unpleasantness\*. Potter's just lucky, he's got his little band of Gryffindor heroes. We don't need that. We have superior skill, and Father's connections. It's really quite elementary, wouldn't you agree?

**🌟 Conclusion**

**Hogwarts Knowledge Vault** is not just a chatbot. It's a magical, character-driven retrieval-augmented assistant — setting the stage for even richer interactive fantasy worlds in the future!