PDF Document: Project Overview

Overall Approach

The Wine Business ChatBot is designed to provide quick and relevant answers to user inquiries based on a predefined corpus of text extracted from a PDF. By leveraging advanced language models, the chatbot can process user questions and deliver concise responses.

Frameworks/Libraries/Tools Used

- **Streamlit**: Used for creating the web application interface that allows user interaction.
- **LangChain**: Facilitates the integration of language models into the application, providing tools to build chains and manage memory.
- **PyPDF2**: Utilized for reading and extracting text from the PDF containing the business information.
- **Google Generative AI**: Powers the chatbot's responses, using the `gemini-1.5-pro` model.

Challenges Faced and Solutions

1. **PDF Text Extraction Issues**:
   - **Problem**: Some PDFs may contain text in formats that are difficult to extract properly.
   - **Solution**: Used `PyPDF2` for reliable text extraction. If issues persist, consider using alternative libraries like `pdfplumber`.
2. **API Integration**:
   - **Problem**: Ensuring proper integration with Google Generative AI can lead to errors if the API key is incorrect or improperly configured.
   - **Solution**: Verified the API key and implemented error handling to manage potential API call failures.
3. **User Input Handling**:
   - **Problem**: Ensuring the chatbot only responds with information from the corpus.
   - **Solution**: Implemented checks in the response logic to guide users if their questions fall outside the provided corpus.

Future Scope

The chatbot can be enhanced with the following features:

1. **Improved NLP Capabilities**: Implement more advanced NLP techniques to better understand and respond to user queries.
2. **Multi-Document Support**: Allow the chatbot to read from multiple documents or formats, increasing the scope of information it can provide.
3. **User Context Tracking**: Introduce user session memory to track conversation context for more personalized interactions.
4. **Feedback Mechanism**: Implement a feedback system for users to report unsatisfactory answers, helping improve the model's accuracy over time.
5. **Deployment Options**: Explore deployment on cloud platforms to enhance accessibility and scalability.