

Automated Document Summarizer using Gemini AI

1. Abstract

This project is a web-based tool built with Streamlit that leverages Google's Gemini AI to summarize PDF documents and provide contextual question-answering functionality. Users can upload documents, receive intelligent summaries, and interact with the contents to clarify or explore further, making it an effective tool for students, researchers, and professionals.

2. Modules Used

- streamlit: For the frontend and UI development
- google-generativeai: To interact with Gemini AI APIs
- dotenv: To manage environment variables securely
- tempfile & pathlib: For handling temporary PDF file storage
- os: For accessing system environment variables

3. Project Flow

1. User uploads a PDF document.
2. The PDF is saved temporarily and uploaded to Gemini's File API.
3. Gemini AI generates a summary using the uploaded file.
4. Summary is displayed in the UI.
5. User can ask questions, which are answered using Gemini with context from the summary.

4. User Interface

The application uses a simple, intuitive Streamlit UI. Users can:

- Upload PDFs
- Click a button to generate summaries
- View summaries directly on the page
- Ask questions and receive AI-generated answers

5. How to Run

1. Clone the repository

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2. Create and activate a virtual environment
3. Install dependencies via requirements.txt
4. Add a .env file with your GEMINI_API_KEY
5. Run the app using: streamlit run app.py

6. API Key Integration

The Gemini API key is stored securely in a `.env` file and loaded using the `dotenv` library.

This avoids hardcoding sensitive information in the codebase.

7. Error Handling

The application handles API errors and file upload issues gracefully by wrapping critical logic in try-except blocks. Users are notified of any errors with clear messages.

8. Use Cases

- Academic research: Summarize papers, articles
- Business reports: Extract key insights from lengthy documents
- Legal: Quickly understand long legal contracts
- Personal use: Summarize ebooks, guides

9. Limitations

- Requires an internet connection
- Dependent on the stability and quota of Gemini API
- Currently only supports PDFs (no DOCX or TXT files yet)

10. Future Enhancements

- Support for more file formats like DOCX or TXT
- Ability to download summaries
- Add authentication for users
- Track query history for each document

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11. Conclusion

This project demonstrates the power of integrating advanced language models with user-friendly interfaces. With minimal setup, users can gain insights from complex documents instantly, making this a powerful educational and professional tool.