

# Multilingual AI Assistant: AI-Powered Query Processing

Streamlit App with Bilingual Responses and Audio Output

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# Introduction

- **Purpose:** Automate query processing with bilingual (Hindi-English) responses and audio output.
- **Context:** Enhances user interaction for diverse audiences, especially in India.
- **Technology:** Powered by Google Gemini 1.5 Flash and Streamlit.
- **Key Features:**
  - Supports PDF uploads for document-based queries.
  - Accepts voice and text inputs.
  - Provides Hindi and English responses with audio playback.
  - Modern, user-friendly UI with custom CSS.

# Key Features

- **Input Flexibility:**

- Upload PDF files for document analysis.
- Voice input for hands-free queries.
- Text input for typed questions.

- **Bilingual Output:**

- Responses in English and Hindi (हिंदी).
- Audio playback for both languages.

- **User-Friendly UI:**

- Styled with CSS (light gray background, blue buttons).
- Card containers for responses.
- Downloadable text and audio outputs.

- **Functionality:**

- Stores PDFs in a database.
- Robust error handling for inputs and processing.

# How It Works

- 1 **Input Query:**
  - Upload a PDF file (stored in database).
  - Enter text query or use voice input.
- 2 **Process Query:** Gemini 1.5 Flash generates Hindi and English responses.
- 3 **Generate Audio:** Convert responses to speech for playback and download.
- 4 **Output:** Display responses in styled card containers (Hindi and English).
- 5 **Download:** Save text responses and audio files (.mp3).

# Technical Details

- **AI Model:** Google Gemini 1.5 Flash
  - Multimodal, fast, cost-effective.
  - Used for query processing and bilingual responses.
- **Framework:** Streamlit (Python-based web app).
- **Dependencies:**
  - `streamlit`, `google-generativeai`, `pillow`, `python-dotenv`.
  - Custom `src.helper` module for voice input, LLM, text-to-speech, and DB storage.
- **Styling:** Custom CSS (light gray background, blue buttons, card containers).
- **Output:** Plain text and audio in Hindi and English.
- **Error Handling:** Robust handling for API, file, and audio issues.

# Usage Demo

## Input Example:

- Text Input: "Best apps for Hindi typing."
- Voice Input: Spoken query in Hindi or English.
- PDF Upload: Document with related content.

## Output Example (English):

The best apps for Hindi typing include Google Indic Keyboard and Microsoft SwiftKey.

**Output Example (Hindi):** हिंदी टाइपिंग के लिए सर्वश्रेष्ठ ऐप्स में `Google Indic Keyboard` और `Microsoft SwiftKey` शामिल हैं। **Audio Output:** Playable and downloadable .mp3 files for both languages.

# Benefits

- **Efficiency:** Automates query processing, reducing manual effort.
- **Accessibility:** Bilingual output (Hindi, English) for Indian users.
- **Flexibility:** Supports PDF, voice, and text inputs.
- **User-Friendly:** Modern UI with styled cards, audio playback, and downloads.
- **Interactivity:** Voice input enables hands-free operation.
- **Cost-Effective:** Uses Gemini 1.5 Flash for fast processing.

# Conclusion

- **Summary:** The Multilingual AI Assistant streamlines query processing with AI-driven bilingual responses, audio output, and a modern UI.
- **Value:** Enhances accessibility, saves time, and improves user experience.