Voice - activated AI chatbot

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1. Project Overview

The Voice-Activated AI Chatbot is a Python-based assistant that listens to voice commands and performs tasks like searching Wikipedia, opening websites, fetching system information, and responding through speech. This project demonstrates the integration of Speech Recognition, Text-to-Speech (TTS), and Natural Language Processing (NLP) for intelligent human–computer interaction.

2. Objectives

- Develop an intelligent voice-based chatbot capable of understanding and executing user commands.
- Demonstrate integration of Speech Recognition and Text-to-Speech modules.
- Automate basic system-level and online tasks using voice commands.
- Provide a foundation for building advanced personal AI assistants.

3. Methodology

The chatbot captures audio input, processes it into text, and matches it with predefined commands. Depending on the command, it executes actions such as web search, Wikipedia lookup, time announcement, or system commands. It responds using pyttsx3 for speech output.

4. Key Features

- Voice Recognition
- Speech Output
- Web Search
- Wikipedia Integration
- System Commands
- Custom User Commands
- Error Handling

5. Testing and Results

The chatbot was tested under various conditions. It successfully executed commands like opening websites, fetching Wikipedia data, and reporting time.

6. Advantages

- Real-time interaction
- Offline TTS support
- Customizable commands
- Demonstrates AI integration

7. Limitations

- Internet required for online searches
- Sensitive to background noise
- Limited NLP understanding

8. Conclusion

The project demonstrates how Speech Recognition, Text-to-Speech, and Python automation can create an efficient AI voice assistant. It highlights the potential of natural language interfaces and forms a base for future intelligent personal assistants.