The Smart Scheduler AI Agent

A Voice-Based Gemini-powered Meeting Scheduling Assistant

Objective

To build a free and intelligent AI voice agent that helps users schedule meetings through a natural back-and-forth voice-based conversation, while integrating Google Calendar to check real-time availability.

The project tests multi-turn dialogue management, tool integration, and reasoning capabilities of modern LLMs.

Key Features

- Conversational AI using Gemini 1.5 Flash
- Google Calendar API v3 integration to check actual time slots
- Voice input using SpeechRecognition (STT)
- Voice response using pyttsx3 (TTS)
- Maintains memory of meeting duration and time preference
- Fully local and free to run — no paid services
- Ignores vague inputs or suggests clarification
- Terminal/CLI-based working prototype

Tools & Stack

Component	Tool / API
Language Model	Google Gemini 1.5 Flash
Calendar Access	Google Calendar API v3
Text-to-Speech (TTS)	pyttsx3 (offline)
Speech-to-Text (STT)	Speech Recognition (CMU Sphinx / Google STT)
Programming Language	Python 3.10+
Auth & Secrets	OAuth2 + dotenv

Sample Conversation

You: I want to schedule a meeting

Agent: How long should the meeting be?

You: 1 hour

Agent: Which day and time do you prefer?

You: Tuesday afternoon

Agent: I found these available slots:

- 12:00 PM
- 3:30 PM

You: Let's go with 3:30 PM

Agent: Great. I'll save it to your calendar.

Architecture Overview

User ↔ [Voice Input] → SmartScheduler Agent ↔ Gemini API

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Google Calendar API ← Available Slots

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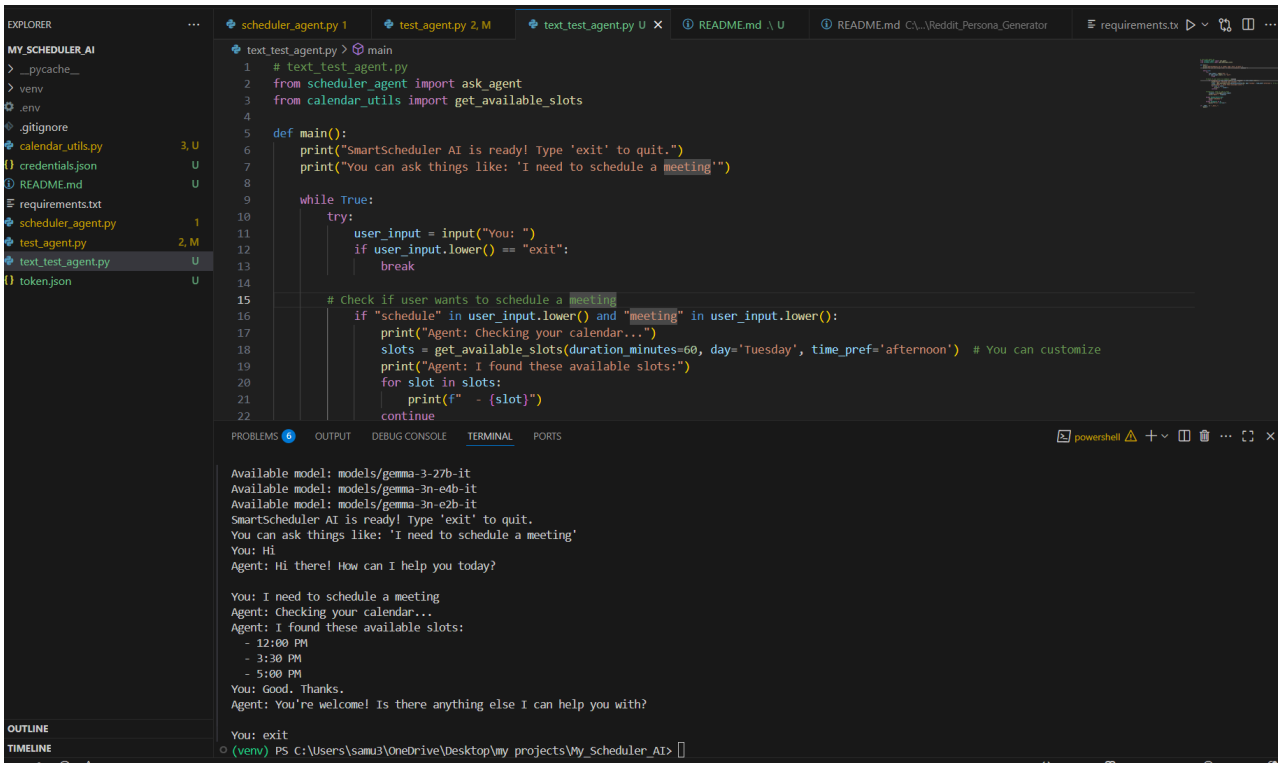
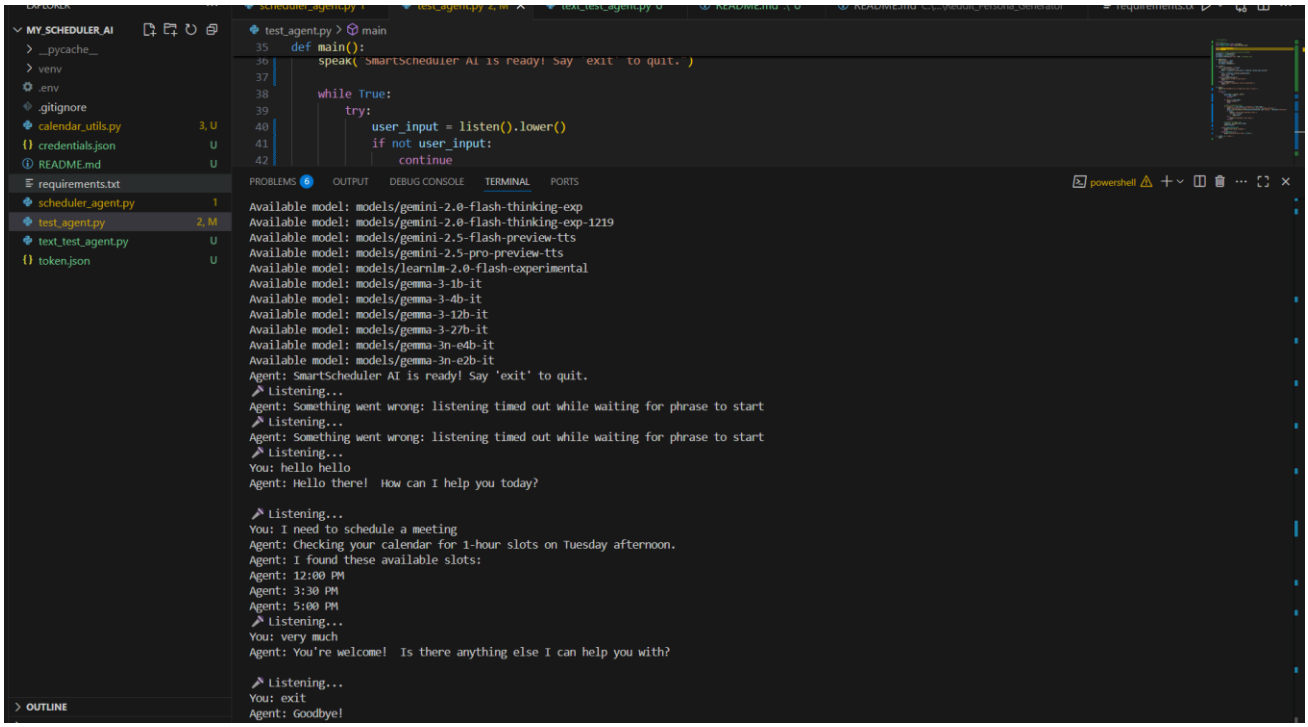
Voice Output (TTS)

Screenshots

Text based AI Scheduler agent



Voice-based AI Scheduler agent



Challenges Faced & Solved

- Gemini API versioning & model listing (404 fixed using correct model name)
- Calendar API authentication with token.json flow
- Speech-to-text accuracy tuning using thresholds
- Context management between LLM input and user preferences

Repository & Access

Click here to access GitHub repository.

Alternate link:- https://github.com/Samartha21BRS1698/Smart-Scheduler-AI

Project Status

- Fully working CLI prototype
- Voice input/output integrated
- Real Google Calendar slots
- Bonus features like advanced time parsing and UI can be implemented.

Conclusion

This project demonstrates how LLMs can be combined with real-world tools like calendars, speech, and authentication to build intelligent AI agents. The Smart Scheduler AI agent is a practical assistant and a proof-of-concept for enterprise AI integration.

Project Experience

The Smart Scheduler AI Agent project was a hands-on exploration of building an intelligent, voice-based assistant capable of scheduling meetings through natural multi-turn conversation. Powered by Google's Gemini 1.5 Flash model, the agent integrated with the Google Calendar API to retrieve real-time availability and handled contextual queries such as preferred day, time, and duration. The development process deepened my understanding of prompt engineering, conversational memory, OAuth2 authentication, and real-world tool orchestration. Overcoming challenges like model version errors and calendar token handling added valuable experience in debugging API-driven workflows. Overall, this task sharpened my skills in building practical AI agents that bridge language models with external systems—skills that are increasingly critical in real-world AI applications.

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