# Project Documentation: FRIDAY AI Assistant

## 1. Project Overview

This project implements FRIDAY, a voice-enabled AI personal assistant inspired by Iron Man’s AI. It leverages LiveKit Agents with Google’s Realtime LLM, integrates tools like weather checking, web search, and Gmail-based email sending, while maintaining a consistent persona through prompts.

## 2. Files and Their Purpose

`.env` (Environment Configuration)

Contains sensitive credentials such as:
- LIVEKIT_URL, API_KEY, API_SECRET → To connect to a LiveKit cloud instance.
- GOOGLE_API_KEY → For Google Realtime LLM APIs.
- GMAIL_USER, GMAIL_APP_PASSWORD → For Gmail SMTP authentication.

Why: Credentials are stored securely here (not hardcoded).

`agent.py` (Main Entry Point)

Defines the FRIDAY assistant and starts the LiveKit session.
- Loads `.env` credentials.
- Assistant class with Google Realtime Model, voice “Aoede”.
- Tools: get_weather, search_web, send_email.
- Session with video + noise cancellation.
- Generates initial reply per SESSION_INSTRUCTION.

Why: Central script that initializes the AI agent.

`prompts.py` (Personality & Instructions)

Defines persona and session instructions:
- AGENT_INSTRUCTION → Witty, futuristic FRIDAY persona.
- SESSION_INSTRUCTION → Defines introduction and session tone.

Why: Ensures FRIDAY stays in-character.

`requirements.txt` (Dependencies)

- livekit-agents, livekit-plugins-google → Core AI + LiveKit.
- duckduckgo-search, langchain_community → Web search.
- requests → Weather API requests.
- python-dotenv → Load environment variables.
- smtplib (via stdlib) → Email sending.

Why: Lists all external libraries needed.

`tools.py` (Custom Tools)

Defines tools accessible to FRIDAY:
- get_weather(city) → Fetch weather using wttr.in API.
- search_web(query) → Search internet via DuckDuckGo.
- send_email(to, subject, message) → Gmail SMTP email sending.

Why: Extends FRIDAY’s capabilities beyond chat.

## 3. Flow of Execution

1. `.env` loaded.
2. Assistant (FRIDAY) created with persona + tools.
3. Session starts on LiveKit (voice/video + noise cancellation).
4. FRIDAY introduces itself.
5. User asks → AI may invoke tools → Responds in-character.

## 4. Why Each Component is Used

- LiveKit Agents → Real-time AI sessions.
- Google Realtime Model → Voice + reasoning.
- Noise Cancellation → Clear communication.
- Prompts → Maintain persona.
- Tools → Weather, search, email.
- dotenv → Secure API key management.

## 5. Possible Improvements

- Add memory with mem0ai.
- Task scheduling/reminders.
- Multi-language support.
- GUI dashboard for logs/email history.