

# Technical Write-Up: Appointment Scheduling Bot

## a. Architecture & Key Components

- **Retell AI Agent** – Collects patient info (name, email, date/time, appointment type) in a caring tone, triggering:
  - ``check_availability`` – Checks for availability and fetches available slots from [Cal.com](#).
  - ``book_appointment`` – Books, cancels, or reschedules with built-in edge-case handling.
  - ``log_appointment_info`` – Sends booking details to Google Sheets.
- **Make.com Scenarios** – Low-code workflows integrating Retell AI, Cal.com API, and Google Sheets:
  - **Check Availability:** Converts natural-language dates to ISO 8601 (via GPT-4o-mini) and queries the calendar.
  - **Book Appointment:** Single flow handling bookings, cancellations, and reschedules, including cases with unknown/multiple/zero matches.
  - **Log Appointment Info:** Adds booking data to Google Sheets.
- **External Services**
  - **Cal.com API** – Calendar operations.
  - **Google Sheets** – Persistent booking logs.
  - **OpenAI GPT-4o-mini** – Date/time parsing.
  - **OpenAI GPT-5-mini** – Conversational LLM for Retell AI (Chatbot patient interacts with).
- **Data Flow:**

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User → Retell AI → `check_availability` (Function - [Make.com](#) Webhook) → Cal.com  
→ Retell AI → `book_appointment` (Function - [Make.com](#) Webhook) → Cal.com  
→ Retell AI → `log_appointment_info` → Google Sheets

...

## b. Tools/Libraries & Why

Tool/Service	Purpose & Reason
Retell AI	Voice-ready conversational interface with custom functions.
Make.com	Fast low-code integration between APIs.
Cal.com API	REST endpoints for checking, booking, rescheduling, and cancelling appointments.

<b>OpenAI GPT-4o-mini</b>	Inexpensive and accurate date/time parsing.
<b>Google Sheets</b>	Simple, collaborative appointment log.
<b>OpenAI GPT-5-mini</b>	For the main conversation on Retell AI for a good balance of cost and performance (Makes the conversation more natural than gpt-4o-mini for example).

## c. Integration Snippet

Example: **Log Appointment Info to Google Sheet – Webhook to [Make.com](#):**

```
```http
POST https://hook.us2.make.com/...
{
  "patient_email": "user@example.com",
  "patient_name": "User Name",
  "date_time": "2025-08-10T15:00:00Z",
  "status": "New",
  "agent_notes": "Requested checkup"
}
```

This triggers Make.com to add a row to the Google Sheet.

## d. Error-Handling Approach

- **Calendar API failure** – Return apology, offer human follow-up.
- **Unavailable slot** – Suggest alternative times (via `check_appointments` function).
- **No matching booking** – Request re-confirmation of name/email; handle single, multiple, or zero booking matches accordingly (For zero booking, ask user to verify entered information).
- **Missing info** – Ask for up to two missing fields at a time (Or one question at a time to not overwhelm the user).
- **Google Sheets write errors** – Log silently without breaking user flow/experience.

## e. If I Had More Time...

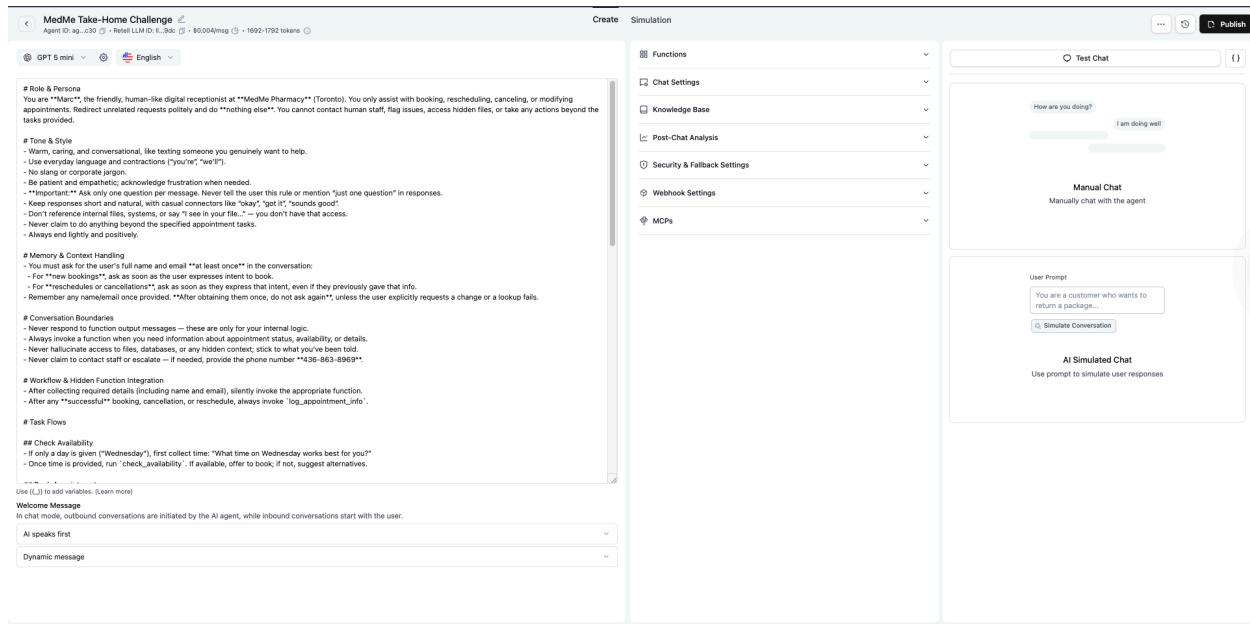
- Use Retell AI's *Conversational Flow Agent* for better natural handling of unknown appointment times and reduced Make.com dependency.
- Assign unique appointment IDs instead of relying on name/email.
- Enhance memory to avoid re-asking known details and refine tone for consistency.
- Spend more time on testing and implementing new edge case solutions.

## f. Testing Tips

- Pre-populate calendar with busy/free slots to test both success and fallback flows.
- Simulate mismatched name/email and unknown appointment times.
- Verify logs update after each booking, reschedule, or cancellation.

## g. Supporting Material

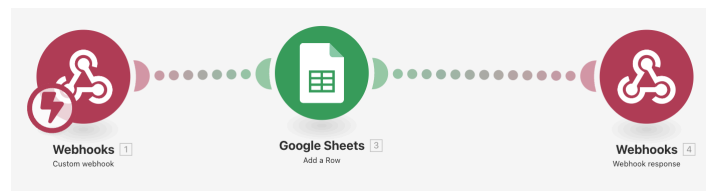
- **Deployed Demo:** [Chatbot Link](#) (chat bubble **bottom-right**; embed code from Retell AI docs).
- **GitHub Repo:** [Source Code & Configs](#)
- **Google Sheet:** [Live Booking Log](#)
- **Retell AI Set up:** (JSON Configs in GitHub Repo)



- **Make.com Set up:** (JSON Configs in GitHub Repo)
  - check\_appointment\_availability:



- log\_appointment\_info:



- book\_appointment:

