AI Receptionist Agent – Modular System Breakdown

The AI Receptionist Agent is built as a modular, fully automated assistant to handle all receptionist duties across multiple communication platforms. Each module is independently configured to prevent conflicts, allowing graceful degradation if one service fails.

# System Overview

Each feature of the AI Receptionist is broken into separate modules to ensure independence, stability, and scalability.

## Voice Call Handling Module

• Handles inbound and outbound calls using SIP, Twilio, or OpenPhone.

• Includes IVR, call logging, voicemail, STT, TTS.

• Independent listeners and controllers per phone service.

## Email Management Module

• Manages inbound/outbound email using SendGrid, Mailgun, or SMTP.

• Auto-categorization, custom auto-responses, CRM integration.

• Inbox listener, reply generator, and attachment handler.

## Live Chat / Messaging Module

• Handles web/app chat via widget.

• Includes session tracking, live transfer, chat memory.

• Microservices handle delays, threading, context.

## WhatsApp Business Module

• Automates replies via WhatsApp Business API.

• Supports multimedia, session-based conversations.

• Webhook listeners and classifiers for AI reply.

## Google Calendar & Scheduling Module

• Schedules, cancels, manages meetings via Google Calendar API.

• Slot analysis, invite handling, and reminders.

• Time-zone aware and conflict-free booking.

## Admin & Client Configuration Panels

• Admin manages clients, billing, industry templates.

• Client adjusts AI tone, uploads FAQs, views logs.

• Highly configurable with real-time monitoring.

## Product, Pricing & Inventory Module

• Supports pricing updates and stock checks.

• Integrates Shopify, WooCommerce, or manual uploads.

• AI answers pricing queries in calls, chat, emails.

## AI Core & Training Module

• Upload industry FAQs, chat history to train AI.

• Supports vocabulary customization and tone settings.

• Intent mapping and memory-based responses.

## Speech-to-Text & Text-to-Speech Engines

• Real-time STT using Whisper/Google API.

• TTS via ElevenLabs/Polly for voice output.

• Accent handling, emotion tagging, pacing.

## System Watchdog & Conflict Prevention Layer

• Each service uses isolated queues, circuit breakers.

• Crash reports and audit logs monitored.

• Prevents full app crashes by isolating failing modules.

# Security Highlights

• Role-based access control (RBAC)

• Configurable IP restrictions

• Audit logs for all user and AI actions

• OAuth 2.0 for third-party integrations

• Encrypted data storage for sensitive configs

# Suggested Database Tables

• users: Core user info

• sip\_phone\_settings: SIP service config

• twilio\_config: Twilio settings

• openphone\_config: OpenPhone settings

• smtp\_email\_config: SMTP email setup

• sendgrid\_config: SendGrid credentials

• mailgun\_config: Mailgun details

• chat\_logs: Live chat logs

• whatsapp\_logs: WhatsApp history

• meeting\_logs: Google Calendar meeting records

• calendar\_settings: Calendar API tokens

• product\_data: List of products

• inventory\_status: Stock information

• price\_list: Pricing configuration

• training\_data: AI training samples

• intent\_map: Intent recognition mapping

• response\_map: Generated response models

• voice\_transcripts: Speech transcription

• audio\_templates: TTS audio cache

• config\_audit\_trail: Configuration change logs

• admin\_logs: System actions by admin