

AI-Powered Email & Calendar Management

Intelligent Automation System for Professional Communication & Scheduling

Advanced Machine Learning Integration with Google Workspace

ABSTRACT

This project presents a comprehensive AI-powered Calendar and Email Management System that leverages Google Workspace APIs (Gmail and Calendar) integrated with Google's Gemini AI model to create an intelligent assistant for professional productivity. The system combines natural language processing, automated email analysis, and intelligent calendar management to streamline meeting scheduling and email workflow automation.

The application features a Flask-based web interface with dual interaction modes: a conversational AI chat assistant and interactive dashboards for email and calendar management. It employs advanced AI techniques for email categorization, meeting request extraction, and conflict detection while maintaining professional communication standards through enhanced email templates and automated notifications.

OBJECTIVE

Primary Goals:

- Automate Meeting Management: Schedule, update, and delete calendar events through natural language commands
- Intelligent Email Processing: Automatically categorize emails by urgency and type, detect meeting requests, and generate AI-powered summaries
- Conflict Detection: Identify scheduling conflicts and send appropriate notifications to participants
- Seamless Integration: Provide Google Meet links, send professional email invitations, and sync with Google Calendar in real-time

Key Features:

- Natural language processing for calendar operations
- AI-powered email analysis and categorization
- Automatic meeting request extraction and scheduling
- Professional email templates with HTML formatting
- Real-time calendar synchronization and conflict management
- Web dashboard for email and calendar visualization
- Enhanced session management and error handling

CLIENT LAYER

WEB DASHBOARD
HTML/CSS/JS
Bootstrap UI

AI CHAT INTERFACE
Real-time Chat
/Commands

EMAIL DASHBOARD
AI Categorization
Priority Filtering

CALENDAR VIEW
Meeting Schedule
Conflict Detection

MIDDLEWARE LAYER (Flask Application)

AI PROCESSING ENGINE
• Gemini 1.5 Flash
• Email Categorization
• Smart Scheduling

BUSINESS LOGIC
• Meeting Scheduling
• Conflict Detection
• Email Processing

SESSION MANAGEMENT
• User State
• Meeting Tracking

API Routes: /api/emails | /api/scheduled_meetings | /chat | /api/process_meeting_requests | /api/stats

EXTERNAL SERVICES LAYER

GMAIL API INTEGRATION
• Email Fetching & Processing
• Smart Email Sending

OAuth 2.0 Auth

Calendar API Integration
• Event Creation & Management
• Google Meet Links

AI Email & Calendar Assistant

Your intelligent assistant for email processing and calendar management.

Email Dashboard

AI-powered email processing with smart categorization, urgency detection, and automatic meeting request handling.

[Open Email Dashboard](#)

Calendar Management

Schedule, update, and manage calendar events with natural language processing and automated invitations.

[Open Calendar](#)

AI Assistant Chat

Hi! I'm your AI assistant. I can help you with:

- Processing and analyzing emails
- Scheduling calendar events
- Managing meetings automatically

Email Dashboard

— Back to Dashboard

High Priority | Medium Priority | Low Priority | Meeting Requests | Action Required

⟳ Refresh Emails | 📈 Status Meetings

⌚ Loading emails... Click "Refresh Emails" to load your latest emails.

Email Dashboard

[Back to Dashboard](#)

[Helped Emails](#)

[Priority Message](#)

22

Total Emails

3

High Priority

18

Action Required

17

Meeting

Showing: all

All

High Priority

Medium Priority

Low Priority

Meeting Requests

Action Required

Meeting Invitation: check

From: AI Calendar System <noreply@calendar.ai>
Invitation sent for check meeting

Category: meeting

Confidence: 100%

8/15/2025 03:31 AM

HIGH

Meeting

Action

Meeting Confirmed: check

From: AI Calendar System <noreply@calendar.ai>
Meeting check confirmed and scheduled successfully

Category: meeting

Confidence: 100%

8/15/2025 03:31 AM

HIGH

Showing: High Priority Emails

All

High Priority

Medium Priority

Low Priority

Meeting Requests

Action Required

Meeting Invitation: check

From: AI Calendar System <noreply@calendar.ai>
Invitation sent for check meeting

Category: meeting

Confidence: 100%

8/15/2025 03:31 AM

HIGH

Meeting

Action

Meeting Confirmed: check

From: AI Calendar System <noreply@calendar.ai>
Meeting check confirmed and scheduled successfully

Category: meeting

Confidence: 100%

8/15/2025 03:31 AM

HIGH

No Subject

From: abisaran286@gmail.com

Email from abisaran286: No Subject. ✗ Meeting Cancelled We regret to inform you We regret to inform you that the following meeting has b...

Category: meeting

Confidence: 100%

8/17/2025 03:00 PM

HIGH

All High Priority Medium Priority Low Priority Meeting Requests Action Required

Meeting Invitation: check
From: AI Calendar System <no-reply@calendar.ai>
Invitation sent for check meeting
Category: meeting Confidence: 100% Date: 8/15/2025 09:31 AM

Web Developer Intern at Nexperia Technologies Pvt Ltd. and 12 more jobs in Bangalore Rural for you. Apply Now.
From: Glassdoor Jobs <no-reply@glassdoor.com>
Email from Glassdoor Jobs: Web Developer Intern at Nexperia Technologies Pvt Ltd. and 12 more jobs in Bangalore Rural for you. Apply Now. Ezmit Technologies is hiring
Category: information Confidence: 85% Date: 8/11/2025 03:59 PM

No Subject
From: abisaran286@gmail.com
Email from abisaran286: No Subject. The meeting #39;test1#39; has been cancelled.
Category: meeting Confidence: 70% Date: 8/11/2025 03:08 PM

No Subject
From: abisaran286@gmail.com
Email from abisaran286: No Subject. **Meeting Rescheduled test1** New Date: 2025-08-18 New Time: 4pm to 5pm You will receive an updated calendar invite via email.
Category: meeting Confidence: 70% Date: 8/11/2025 03:07 PM

Dashboard

127.0.0.1:5000 says
Processed 16 meeting requests!

OK

Refresh Email

22 Total Emails **3** High Priority **18** Action Required

Calendar Management

Back to Dashboard

Schedule Meeting: Create new calendar events with invitations. Update Event: Modify existing events. Delete Event: Delete calendar events. Email Integration: Process email requests.

Calendar Assistant

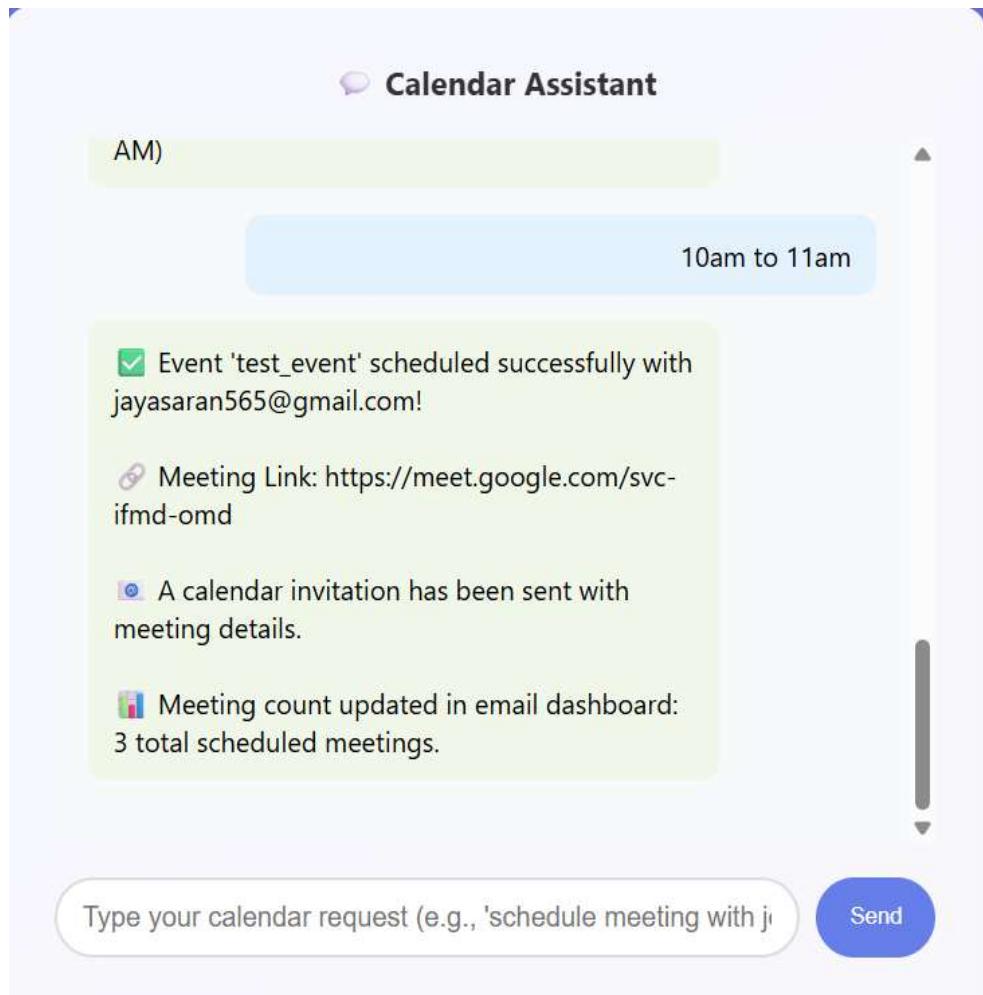
Welcome to Enhanced Calendar Management! I can help you with:

- Schedule meetings with automatic email invitations
- Send calendar invites to participants
- Check for scheduling conflicts
- Update existing calendar events
- Delete events with notifications
- Process meeting requests from emails
- View your upcoming schedule

Enhanced Example Commands

Scheduling with Email Invites

Schedule a meeting with alice@company.com tomorrow at 10am to 11am titled "Weekly Sync". Book a call with bob@startup.io on Friday 2pm titled "Project Review". Set up a team meeting next Monday 3pm to 4pm with team@company.com.



The screenshot shows a Gmail inbox. On the left, there's a sidebar with icons forCompose,Inbox (selected),Starred,Snippets,Sent,Drafts, and More. The main area shows an email from "Abinayashree K8" with the subject "Meeting scheduled through AI Calendar Assistant". The email body includes a message about the meeting being scheduled, a "Join the meeting using Google Meet" button, the date and time "Monday Aug 18, 2023 - 10am – 11am (India Standard Time - Kolkata)", a "Meeting Link" button, and a "View all guest info" link. At the bottom of the email, there's a "Reply" button and options for "Yes", "No", "Maybe", and "More options". A note at the bottom of the inbox says "Invitations from Sample Calendar" and "You are receiving this email because you are subscribed to calendar invitations. To stop receiving these emails, go to Calendar settings, select this calendar, and change 'Calendar notifications'".

💬 Calendar Assistant

tomorrow

Please specify: What is the new time? (e.g., 10:00 AM to 11:00 AM)

4pm to 5pm

✓ Event 'test_event' successfully rescheduled to 2025-08-18 at 4pm to 5pm!

🕒 Participant has been notified and will receive an updated calendar invitation.

📅 Updates reflected in your calendar.

Type your calendar request (e.g., 'schedule meeting with j...')

Send

The screenshot shows a Gmail inbox with one email listed. The subject of the email is "Abinayaeswari KS". The email body contains the following information:

This event has been updated
Changed: time, conferencing

Meeting scheduled through AI Calendar Assistant.
Join the meeting using Google Meet.

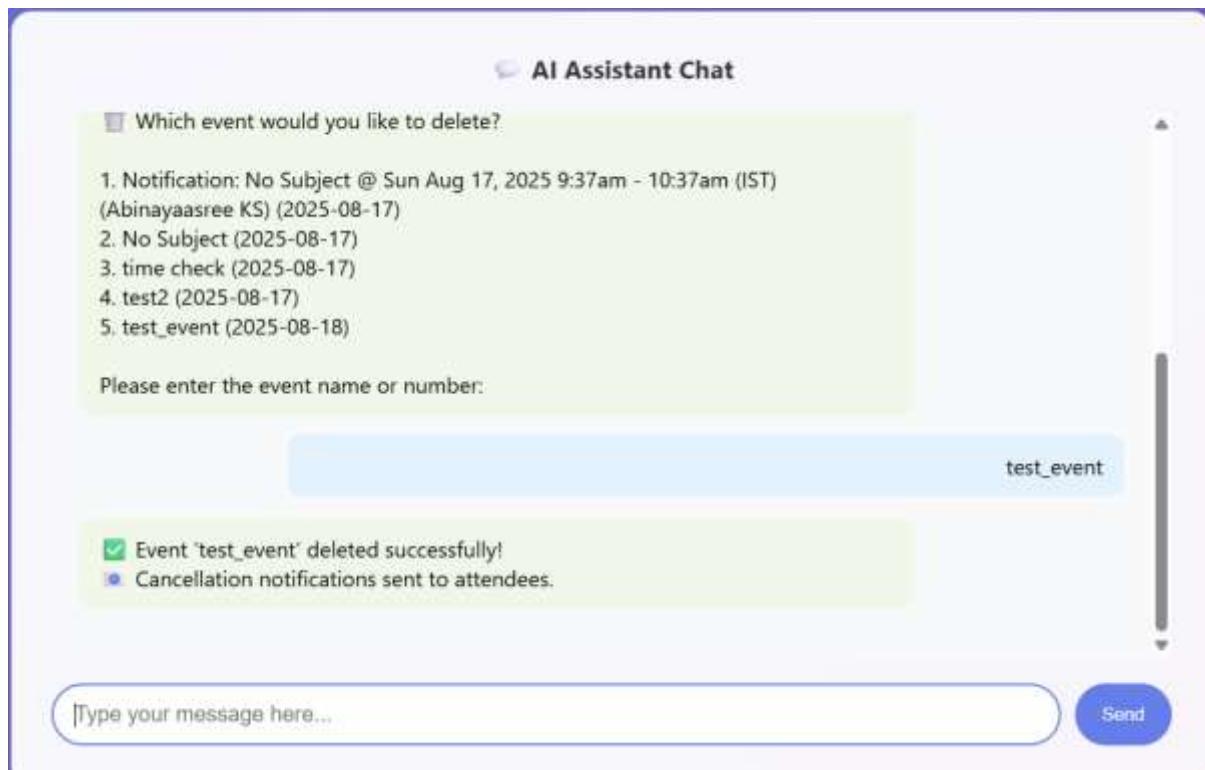
[Join with Google Meet](#)

When [\(UNSET\)](#)
Monday Aug 13, 2023 - 4pm (India Standard Time - Kolkata)
Monday Aug 13, 2023 - 10am - 11am (India Standard Time - Kolkata)

Guests
Abinayaeswari KS - organizer
jaysenm165@gmail.com
[View all guest info](#)

Reply for jaysenm165@gmail.com

700 710 720 730 740 750 760 770 780 790 800 810 820 830 840 850 860 870



Gmail Search mail

Inbox Abinayaasree KS to me 1 of 100

This event has been canceled and removed from your calendar.

Meeting scheduled through AI Calendar Assistant.

Join the meeting using Google Meet.

Join with Google Meet

When Monday Aug 18, 2025 - 4pm - 5pm (India Standard Time - Koltana)

Meeting link https://google.com/meet/u/0...

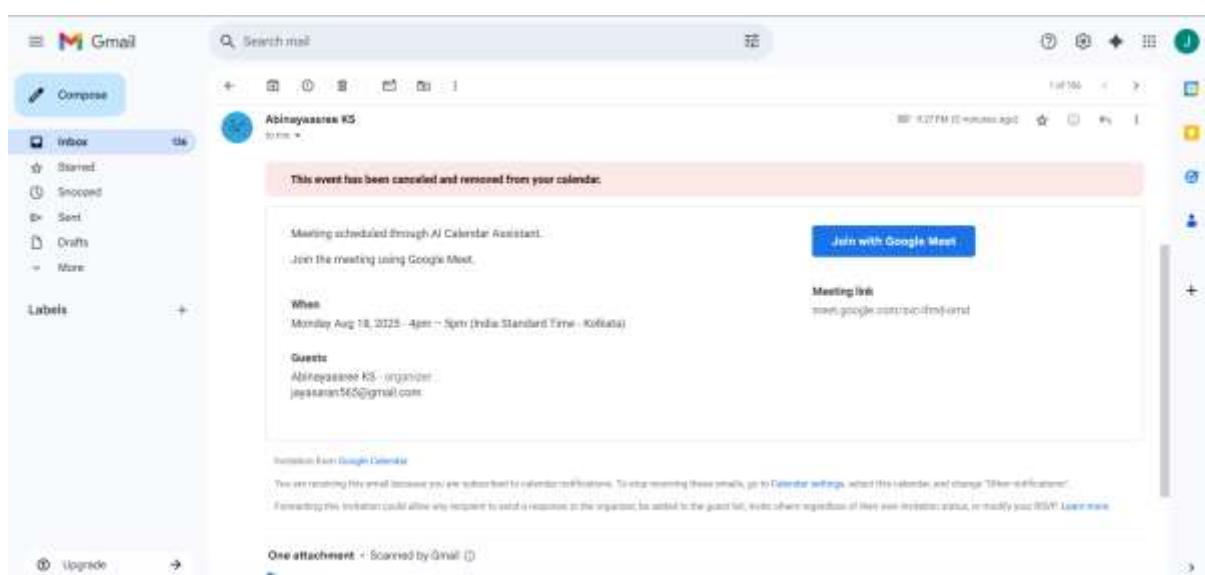
Guests Abinayaasree KS - organizer... jesusasante56@gmail.com

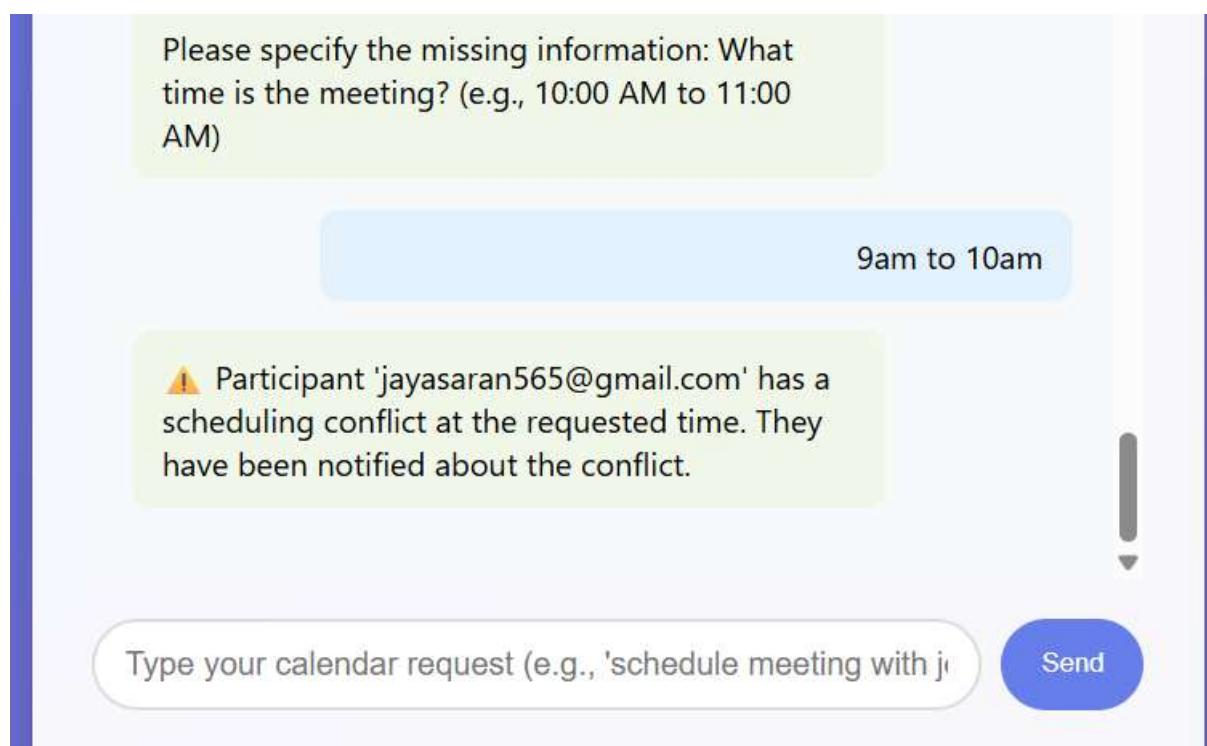
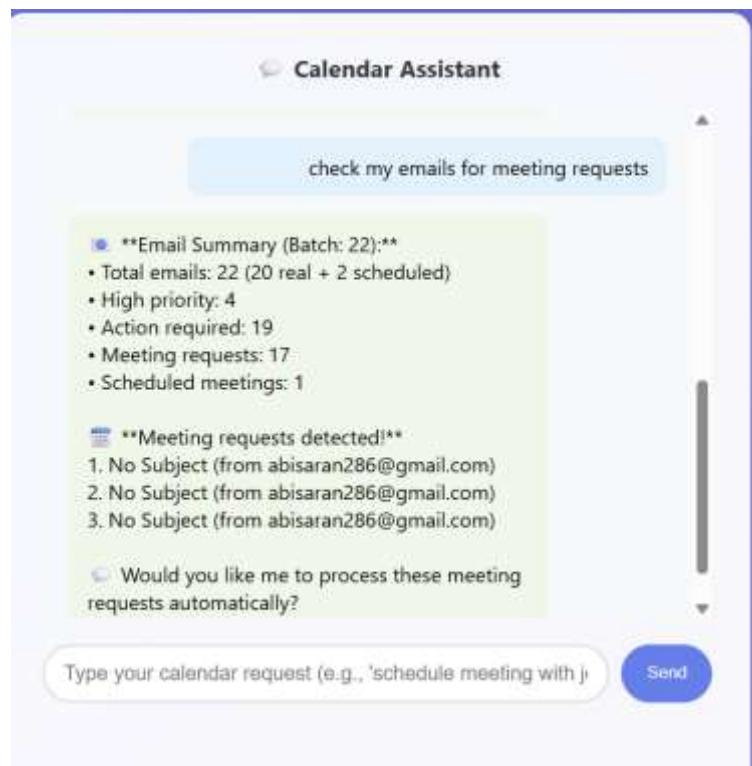
Invitation from Google Calendar

You are receiving this email because you are subscribed to calendar notifications. To stop receiving these emails, go to Calendar settings, select this calendar, and change "Other notifications".

If accepting this invitation could allow any recipient to send a response to the organizer, be added to the guest list, invite others regardless of their own invitation status, or modify your RSVP, Learn more

One attachment · Scanned by Gmail





≡ Calendar Today August 17, 2025

+ Create

SUN 17

August 2025

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Search for people

My calendars

- Abhisayadee KS
- Birthdays
- Tasks

Other calendars

- CIT
- DOT YOUR DESIGN FOSS...
- Holidays in India

10 AM No Subject 9:00 AM - 10:30 AM (IST) [Abhisayadee KS] 9:00 - 10:30 AM

No Subject 9:30 - 10:30 AM

12 PM

1 PM

2 PM

3 PM Total check 3 - 4PM

4 PM

5 PM

6 PM

7 PM

8 PM

9 PM

10 PM

11 PM

12 AM

Day