

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

EMAIL 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](#)

[Delete Email](#)

[Process Meeting](#)

All

High Priority

Medium Priority

Low Priority

Meeting Requests

Action Required

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

Email Dashboard

Back to Dashboard

Refresh Email

Process Meeting

22
Total Emails

3
High Priority

18
Action Required

17
Meetings

Showing: all

AllHigh PriorityMedium PriorityLow PriorityMeeting RequestsAction Required

Meeting Invitation: check

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

Category: meeting

Confidence: 100%

8/15/2025 08:31 AM

HIGHMeetingAction

Meeting Confirmed: check

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

Category: meeting

Confidence: 100%

8/15/2025 08:31 AM

HIGH

Showing: High Priority Emails

AllHigh PriorityMedium PriorityLow PriorityMeeting RequestsAction Required

Meeting Invitation: check

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

Category: meeting

Confidence: 100%

8/15/2025 09:31 AM

HIGHMeetingAction

Meeting Confirmed: check

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

Category: meeting

Confidence: 100%

8/15/2025 08:31 AM

HIGH

No Subject

From: abisara286@gmail.com
Email from abisara286. No Subject. ❌ Meeting Cancelled We regret to inform you We regret to inform you that the following meeting has b...

Category: meeting

Confidence: 88%

8/17/2025 03:00 PM

HIGH

AllHigh PriorityMedium PriorityLow PriorityMeeting RequestsAction Required

Meeting Invitation: check

From: AI Calendar System <noreply@calendar.ai>

Invitation sent for check meeting

Category: meetingConfidence: 100%8/11/2025 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 <noreply@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.; Ezrid Technologies is hiring

Category: informationConfidence: 98%8/11/2025 09:59 PM

No Subject

From: abisaran286@gmail.com

Email from abisaran286: No Subject. The meeting 'test1' has been cancelled.

Category: meetingConfidence: 70%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 ca...

Category: meetingConfidence: 70%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

Done

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

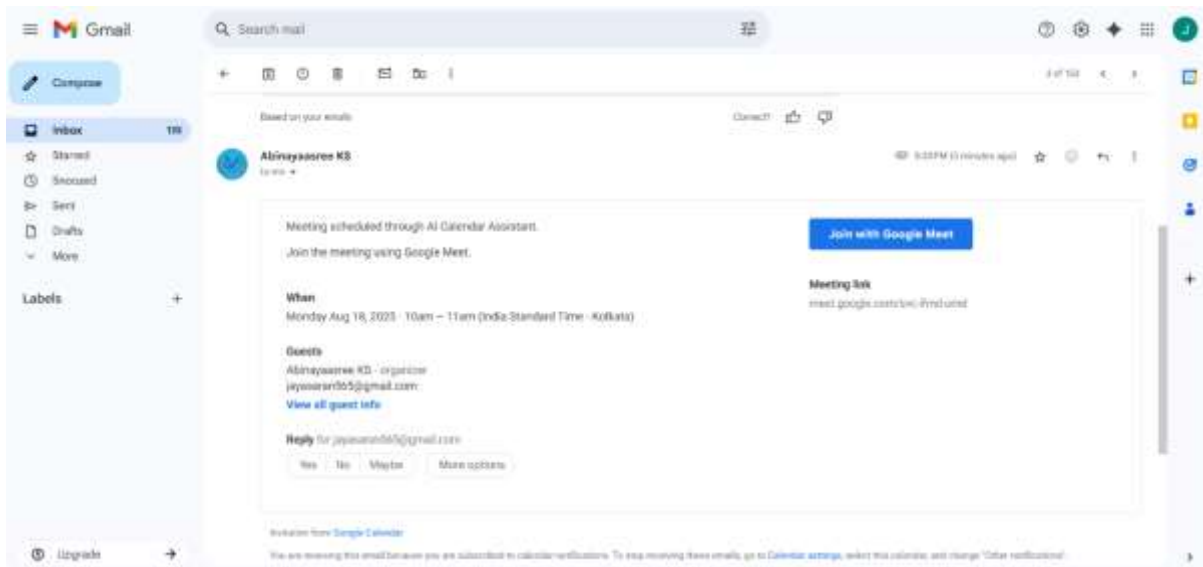
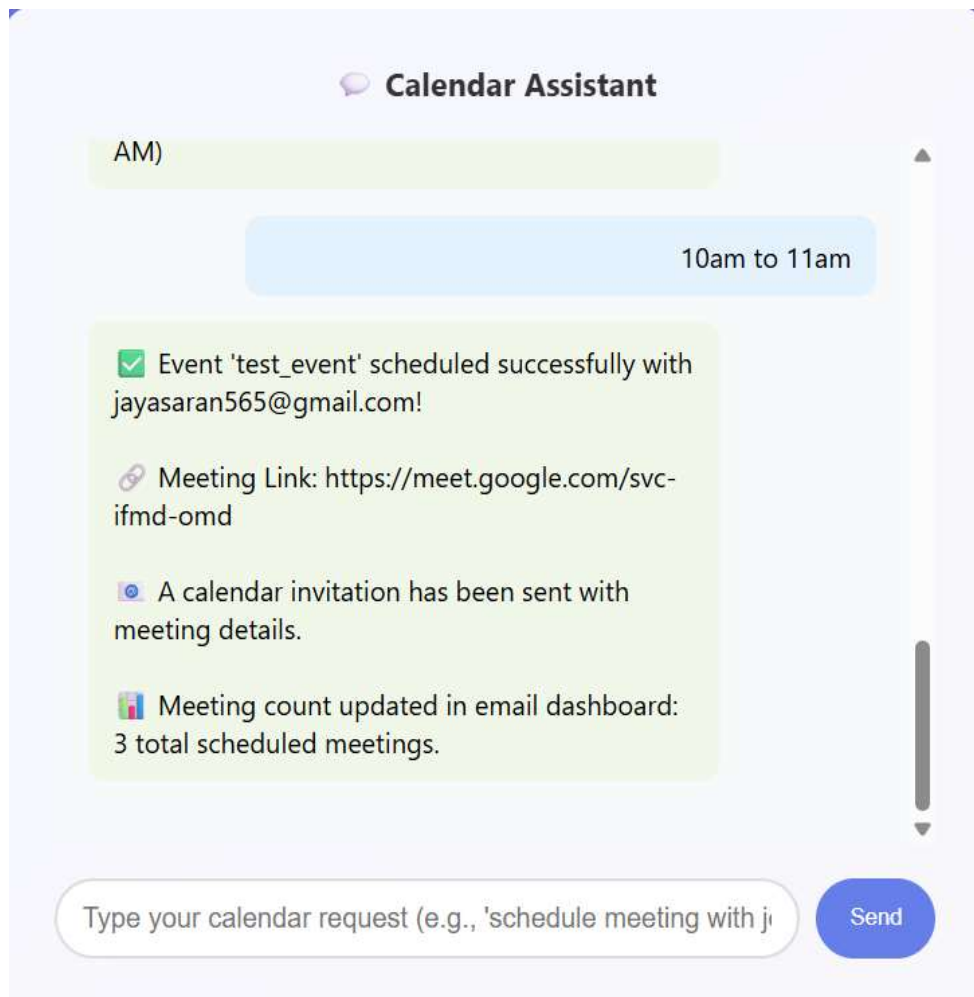
Enhanced Example Commands

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



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 interface with a sidebar on the left containing 'Compose', 'Inbox' (134), 'Starred', 'Snoozed', 'Sent', 'Drafts', 'More', and 'Labels'. The main content area displays an email from 'Abinayassree KS' with the subject 'test_event'. The email body contains a green notification bar stating 'This event has been updated' and 'Changed: time, conferencing'. Below this, it says 'Meeting scheduled through AI Calendar Assistant. Join the meeting using Google Meet.' and provides a 'Join with Google Meet' button. The 'When' section shows the event is 'CHANGED' and lists two dates: 'Monday Aug 18, 2025 - 4pm - 5pm (India Standard Time - Kolkata)' and 'Monday Aug 18, 2025 - 10am - 11am (India Standard Time - Kolkata)'. The 'Guests' section lists 'Abinayassree KS - organizer' and 'jayasree565@gmail.com' with a 'View all guest info' link. At the bottom, there is a 'Reply for jayasree565@gmail.com' section with buttons for 'Yes', 'No', 'Maybe', and 'More options'.

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

Gmail

Search mail

Abinayassree KS

test_event

9:30 PM (1 minute ago)

This event has been updated
Changed: time, conferencing

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

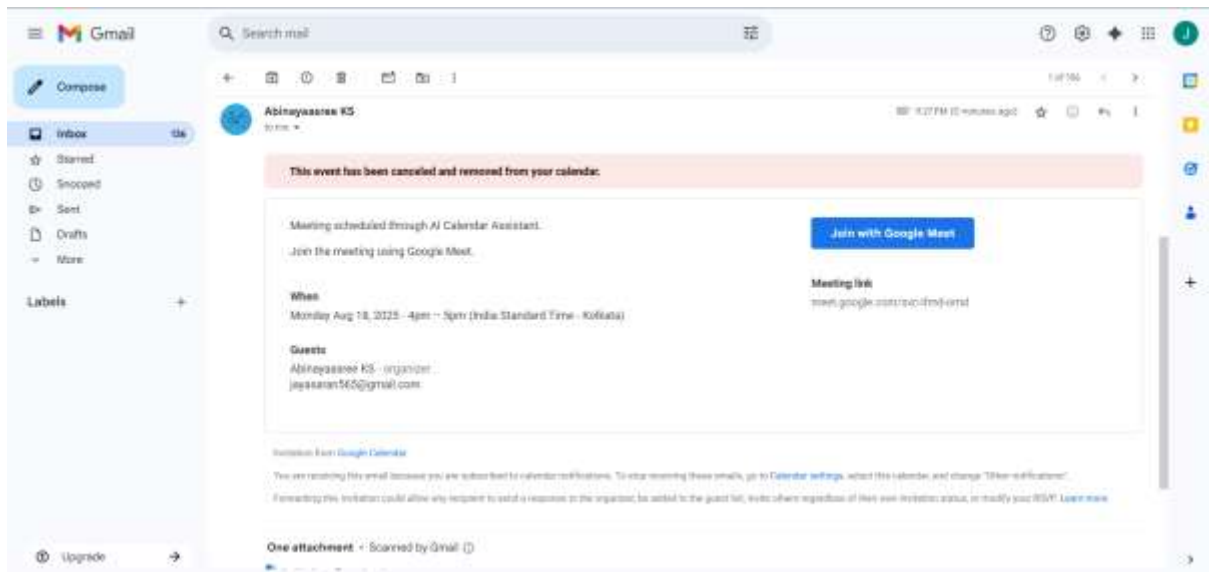
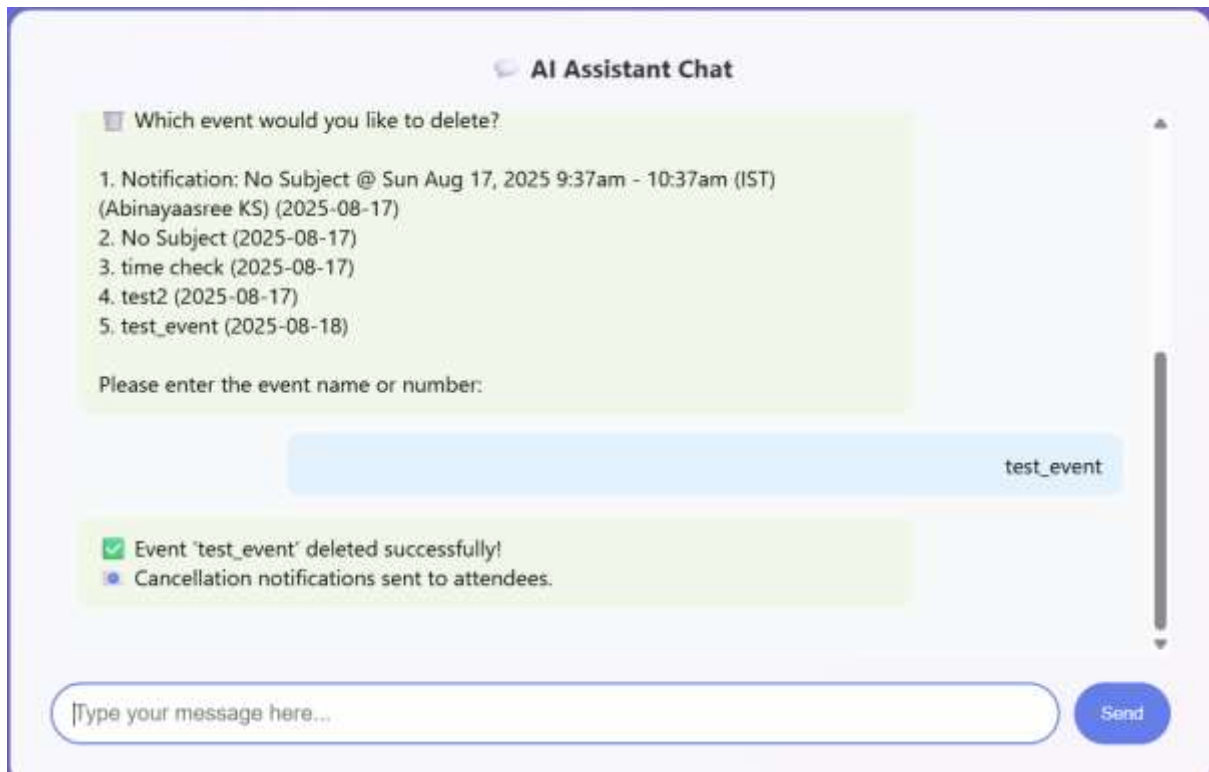
Join with Google Meet

When **CHANGED**
Monday Aug 18, 2025 - 4pm - 5pm (India Standard Time - Kolkata)
Monday Aug 18, 2025 - 10am - 11am (India Standard Time - Kolkata)

Guests
Abinayassree KS - organizer
jayasree565@gmail.com
[View all guest info](#)

Reply for jayasree565@gmail.com
[Yes](#) [No](#) [Maybe](#) [More options](#)

Meeting link
meet.google.com/vvc-vrml-omd



Calendar Assistant

check my emails for meeting requests

Email Summary (Batch: 22):

• Total emails: 22 (20 real + 2 scheduled)

• High priority: 4

• Action required: 19

• Meeting requests: 17

• Scheduled meetings: 1

Meeting requests detected!

1. No Subject (from abisaran286@gmail.com)

2. No Subject (from abisaran286@gmail.com)

3. No Subject (from abisaran286@gmail.com)

Would you like me to process these meeting requests automatically?

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

Send

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

9am to 10am

⚠ Participant 'jayasaran565@gmail.com' has a scheduling conflict at the requested time. They have been notified about the conflict.

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

Send

