Project Brief: AI Calendar & Scheduling System

Project Title: AI Calendar & Scheduling System

Project Overview:

The **AI Calendar & Scheduling System** is a productivity-enhancing application designed to support **secretaries, personal assistants (PAs), and executive support professionals** in managing complex calendars, coordinating meetings, and responding to scheduling needs with minimal friction. This AI-powered system connects seamlessly to **email platforms and external calendars**, using natural language understanding to parse incoming messages, suggest meeting times, handle scheduling conflicts, and generate summaries or adjustments as needed.

Whether it's responding to a calendar request, rearranging a day's appointments, or interpreting scheduling instructions buried in emails, the application aims to become a **proactive scheduling assistant**, capable of anticipating user intent and streamlining time management across multiple systems.

Objectives:

1. Create a centralised AI-powered dashboard for managing calendar events, scheduling requests, and meeting invitations.
2. Integrate with common email clients (e.g. Outlook, Gmail) to parse incoming scheduling messages and suggest intelligent responses.
3. Connect to external calendar platforms (e.g. Outlook Calendar, Google Calendar) and allow real-time syncing and updates.
4. Implement smart meeting planning, including conflict resolution, time slot suggestions, and location preferences.
5. Provide an AI assistant layer that can understand and execute scheduling instructions given via text or voice commands.
6. Support role-specific workflows for secretaries and PAs, including multi-user calendar views and permissions.
7. Offer summary and follow-up capabilities such as daily agenda emails, meeting notes, or reschedule recommendations.

Key Features:

1. **Email Integration:** Parses incoming messages for scheduling intent and surfaces relevant suggestions.
2. **Multi-Calendar Syncing:** Supports synchronization across multiple calendar services.
3. **Conflict Detection & Resolution:** Automatically identifies overlaps and proposes alternative time slots.
4. **Smart Suggestions:** Recommends optimal meeting times based on availability, context, and user preferences.

5. **Voice & Text Command Interface:** Allows users to create, move, or cancel events using natural language input.
6. **Multi-User Scheduling:** Enables assistants to manage calendars for multiple team members with appropriate access levels.
7. **Automated Daily Summaries:** Sends agenda briefs and meeting recaps via email or dashboard notifications.
8. **Custom Rule Engine:** Lets users define preferences for scheduling logic, such as buffer times, meeting durations, or preferred meeting hours.

Technical Specifications:

1. **Programming Language:** Python
2. **Frameworks and Libraries:**
    - Flask/Django: Web application framework.
    - Calendar APIs: Google Calendar API, Microsoft Graph API (Outlook) for syncing
    - Email Parsing: IMAP tools or Gmail API integration
    - NLP libraries (e.g., SpaCy or NLTK): for language understanding and intent recognition.
3. **Database:** SQLlite for storing user-defined configurations and logs.
4. **Deployment:** Docker containerization and cloud service deployment (e.g., AWS or Azure).
5. **Version Control:** Git for source code management.

Expected Outcomes:

1. A robust and intelligent **AI-powered calendar assistant** suitable for professional use in executive support roles.
2. Increased **efficiency and responsiveness** in scheduling workflows.
3. Seamless **integration with existing tools**, reducing cognitive load and manual time-management effort.
4. A scalable platform capable of expanding to support teams and organisational needs.

Risks and Mitigations:

1. **Data Privacy:** Implement strong encryption, access control, and audit logging to safeguard calendar and email data.
2. **Integration Challenges:** Perform thorough testing of email and calendar API connections across platforms.
3. **Language Ambiguity:** Use advanced NLP models and customizable parsing rules to handle vague or varied scheduling instructions.
4. **Performance & Sync Reliability:** Optimise calendar syncing and ensure real-time responsiveness with efficient background workers and retry logic