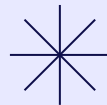


NAGai. Never Abandon Goals

: Final Presentation

Jiwoo Kim, Joohyoung Jun, Wooyoung Jung

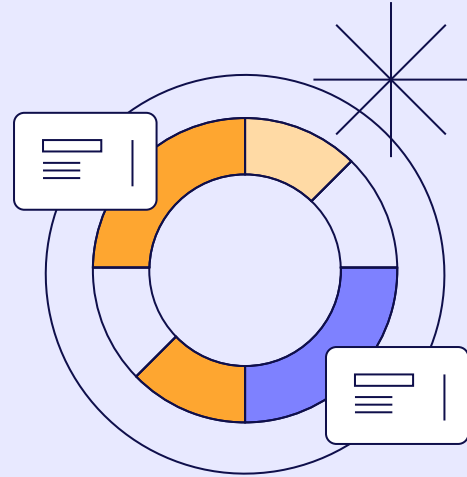


Problem Statement

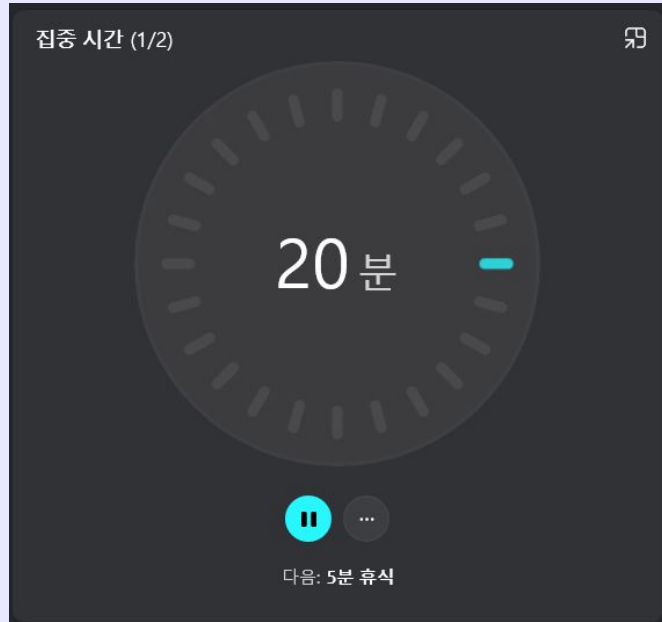
The Internet has revolutionized learning, but also made distractions more accessible.

With our phones at our fingertips, we often find it difficult to stay focused when we have to.

We present 'NAG,' short for 'Never Abandon Goals,' an AI-based application that watches the user through their webcam and warns them when they are distracted.



Study Timer + AI Focus Detection?



Pomodoro Timer

Helps you focus with set time intervals



[3]

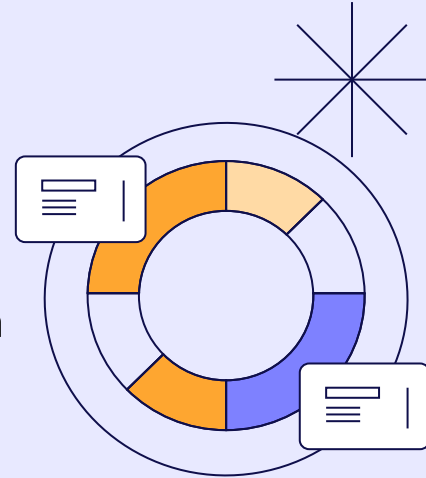
AI Focus Detection

Detects you & your surroundings to see if you are focused

Product Description

NAGai (Never Abandon Goals), an AI-powered focus tracking application to help users stay productive.

- **Google OAuth for seamless authentication, computer vision via open-source APIs.**
- **Detects distractions such as phone usage, gaze wandering, inactivity, and background disturbances.**
- **When distractions are detected, the system pauses the user's study timer and sends a non-intrusive notification to help them refocus.**
- **Simple UI, distraction logs, and an analytics dashboard.**
- **Aims to be an accountability tool for students who struggle with focus.**



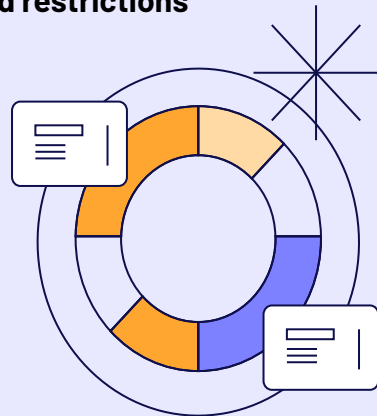
Scope

In Scope:

- ✓ **User Authentication**
 - Google OAuth login with automatic account creation
 - Secure session handling
- ✓ **Distraction Detection**
 - Phone detection via computer vision API
 - Gaze tracking for off-screen distractions
 - Inactivity detection (AFK > 5 min)
 - Background people detection
- ✓ **React frontend**
 - Study session tracking with real-time focus score
 - Distraction event log for user review
 - Visual notifications when distractions are detected
- ✓ **Minimal Backend**
 - Cloud database for user management & distraction logs

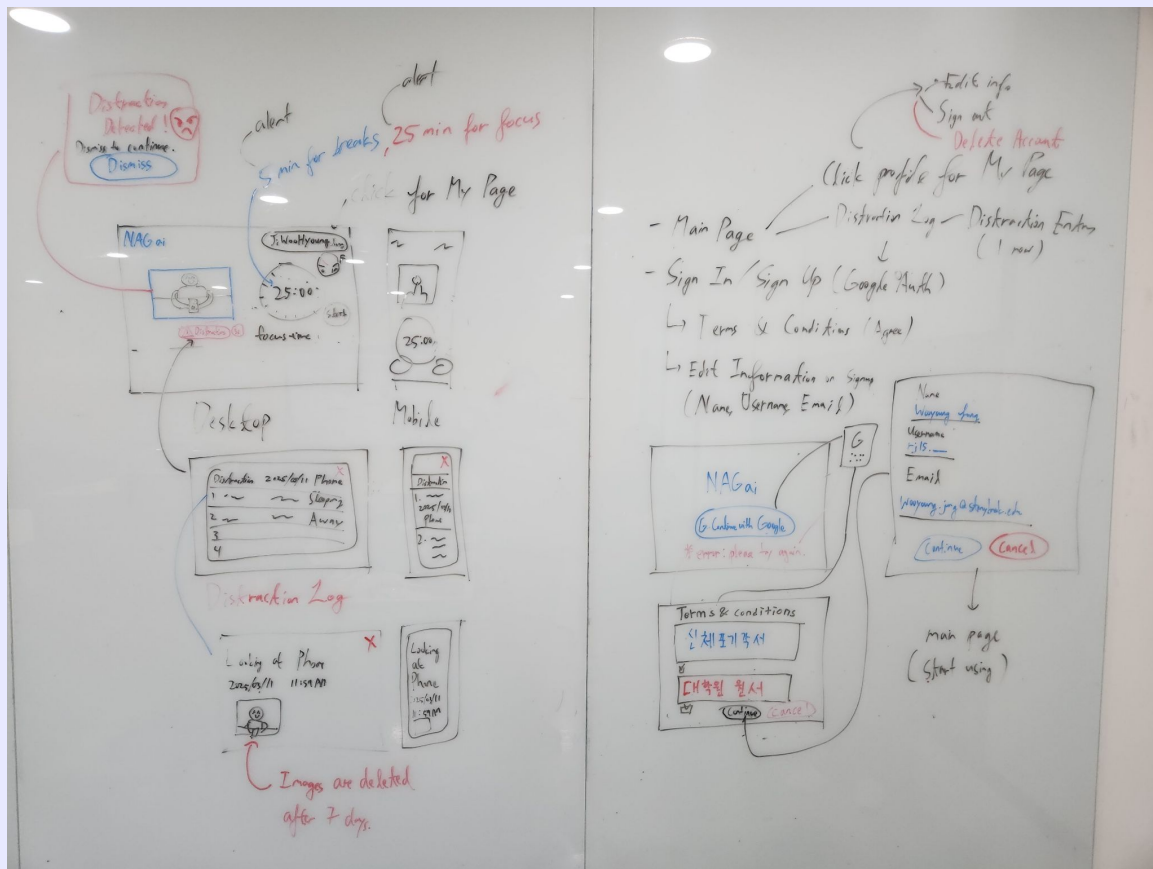
Out of Scope:

- ✗ **Full AI Model Training**
Using a pre-trained AI API instead
- ✗ **Multi-User Surveillance**
Focused on individual users
- ✗ **Automated Consequences**
The system only notifies, no forced restrictions



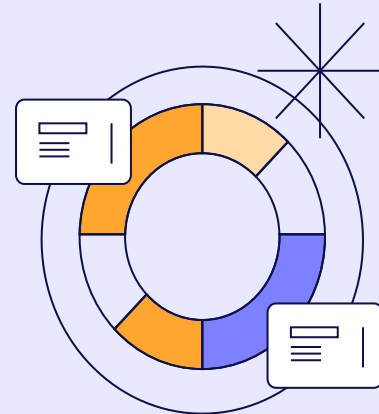
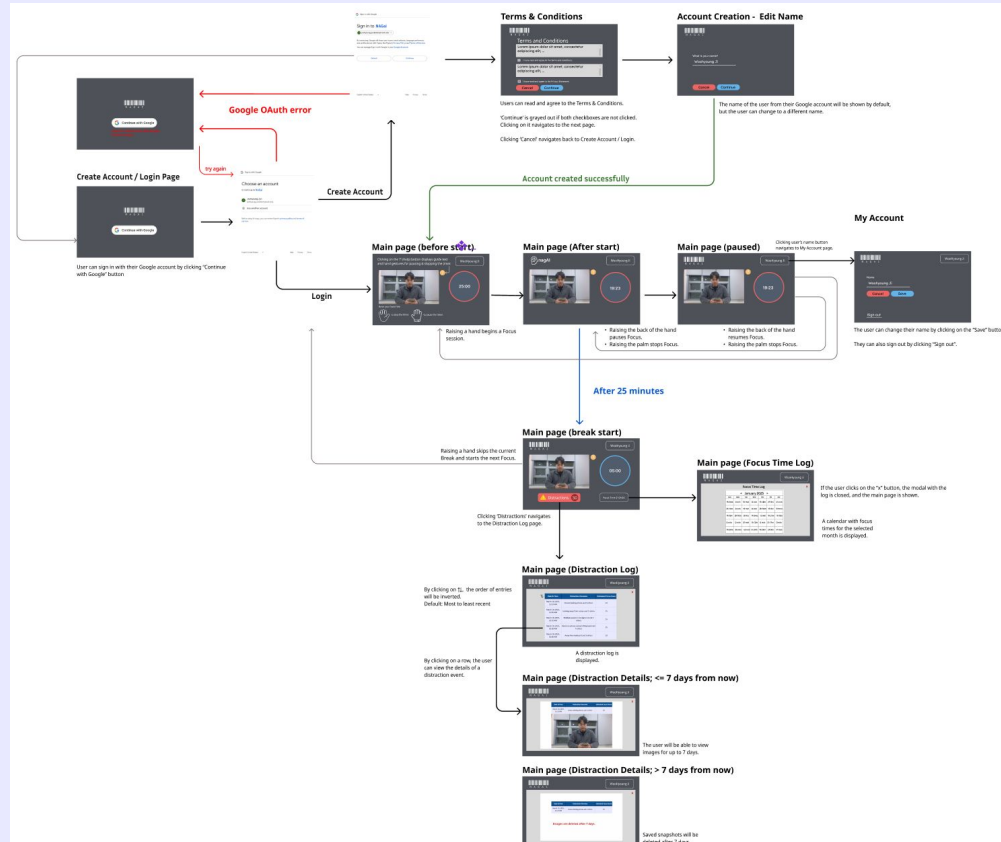
UI Design Mockup

Paper(board) prototype:



UI Design Mockup

Figma ([link](#)):



Functional Requirements ([link](#))

NAGai: Product Requirements

Jiwoo Kim, Joohyoung Jun, Wooyoung Jung
CSE 416, Spring 2025

Functional Requirements:

Detailed list of all functional requirements grouped by feature or page.

0. Navbar:

- 0.1: The navigation bar shall allow the user to move to the desired page when the name of the page is clicked.
- 0.2: The 'NAGai' logo on the top left shall navigate to the Main Page when clicked.
- 0.3: The button with the user's name, on the top right, shall navigate to the 'My Account' page when clicked.

1. Create Account / Log In Page

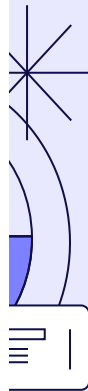
- 1.1 User Input & Buttons
 - 1.1.1: The page shall allow the user to enter their credentials (username and password).
 - 1.1.2: The page shall have a "Continue with Google" button for account creation or login.
- 1.2 Handling Google OAuth Login
 - 1.2.1: When the "Continue with Google" button is clicked, a popup window shall appear.
 - 1.2.2: If the google_id returned by OAuth does not exist in our database:
 - 1.2.2.1: Create a new user account with:
 - google_id
 - full_name
 - created_at (current timestamp)
 - last_login (current timestamp)
 - 1.2.3: If the google_id already exists, log in the associated user and update last_login.

- 1.3 Handling New User Sign-Ups (Terms & Conditions)

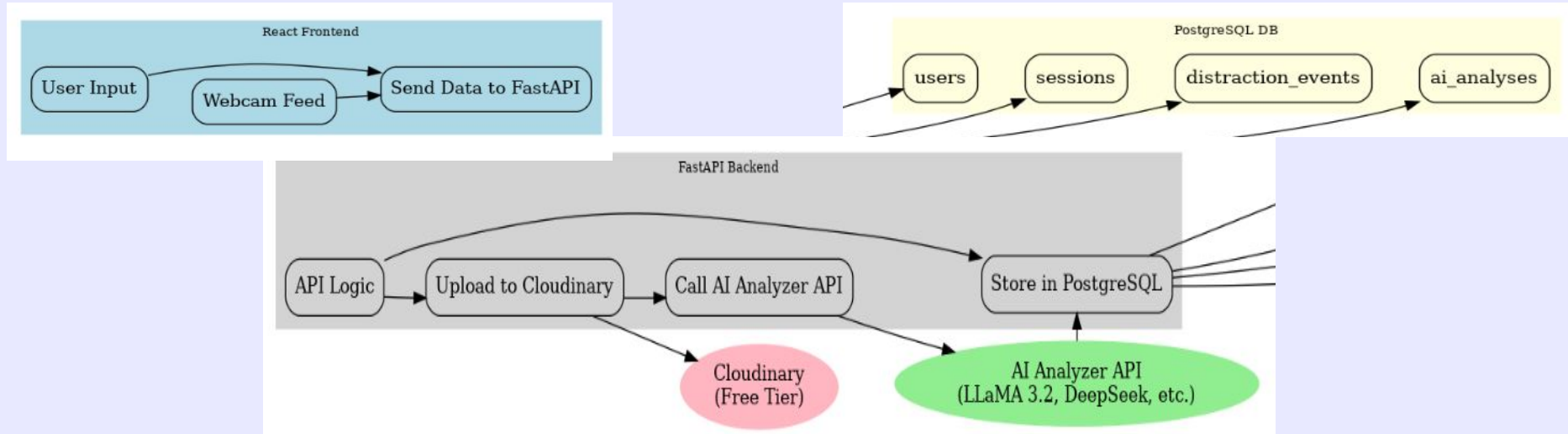
- 1.3.1: If the user is new, they must agree to:

- 1.3.1.1: Terms & Conditions
 - 1.3.1.2: Privacy Statement
 - 1.3.1.3: The "Continue" button shall be greyed out unless both checkboxes are checked.

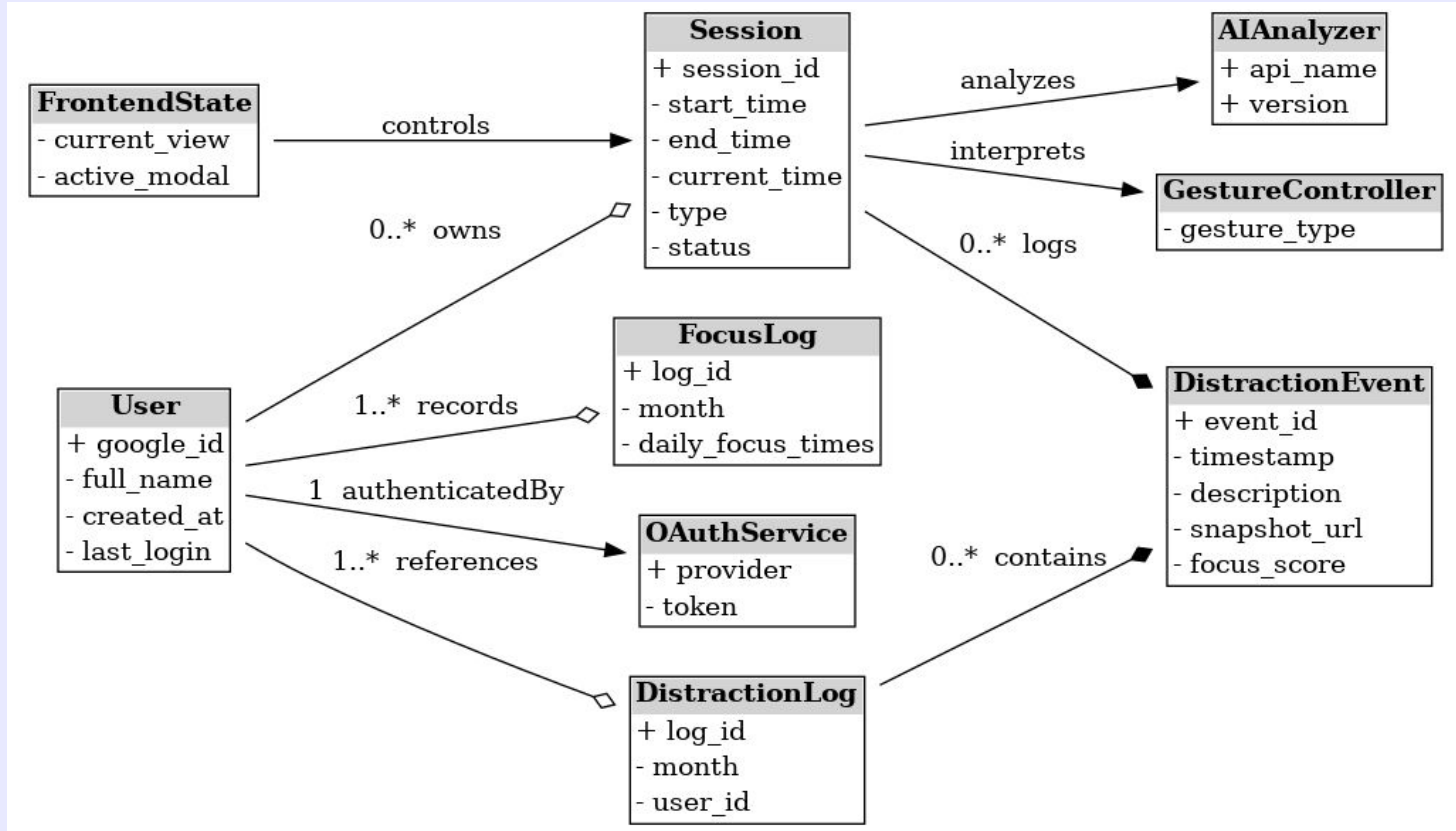
- 1.3.1.4: Clicking "Cancel" navigates the user back to the login page.
- 1.4 Post-Signup Name Editing
 - 1.4.1: After successful signup, show a confirmation page displaying the user's full_name from their Google account.
 - 1.4.2: The user can edit their name in a text field before continuing (30 characters max).
- 1.5 Error Handling
 - 1.5.1: If "Continue with Google" fails, display a red error message:
 - "Failed to authenticate with Google."
 - 1.5.2: Redirect the user back to the login page.
- 1.6: The page shall securely store new google_id-full name pairs in a database.
 - The google_id-full name pairs shall be stored in a 'user info' table within the MySQL database.



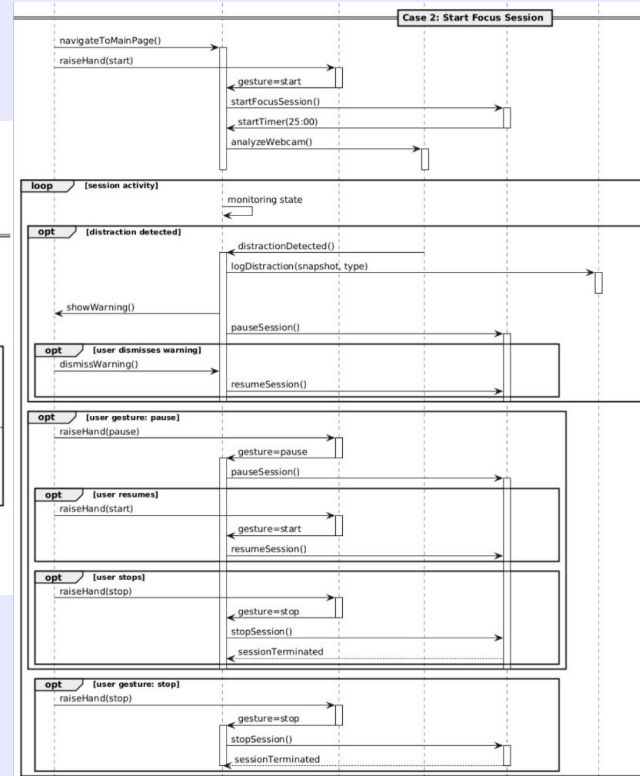
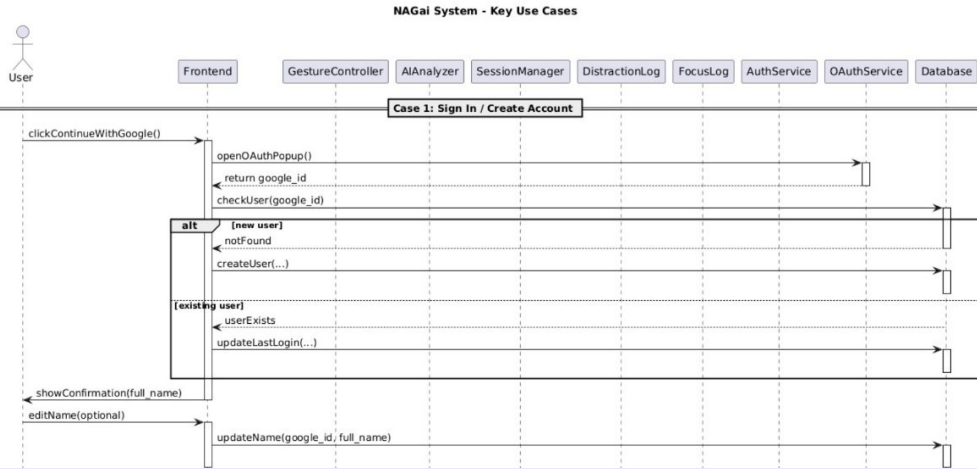
System Architecture Overview



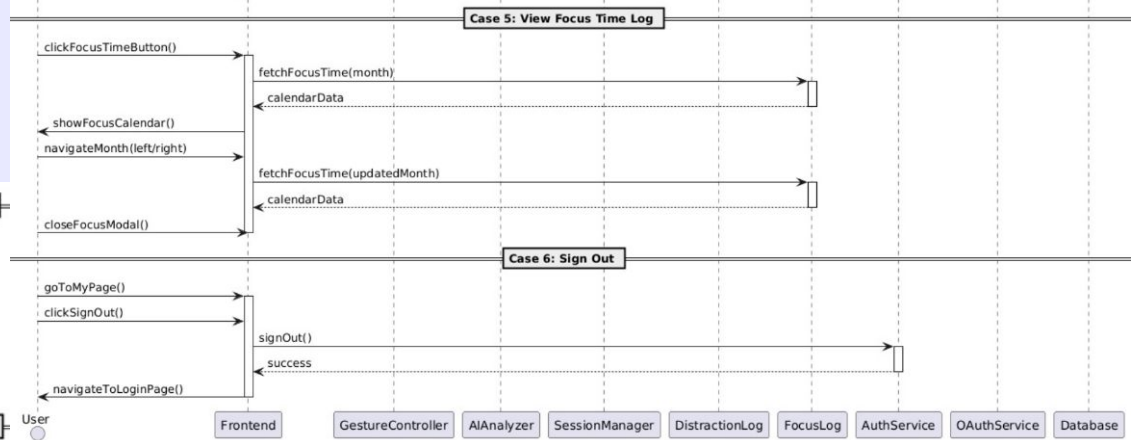
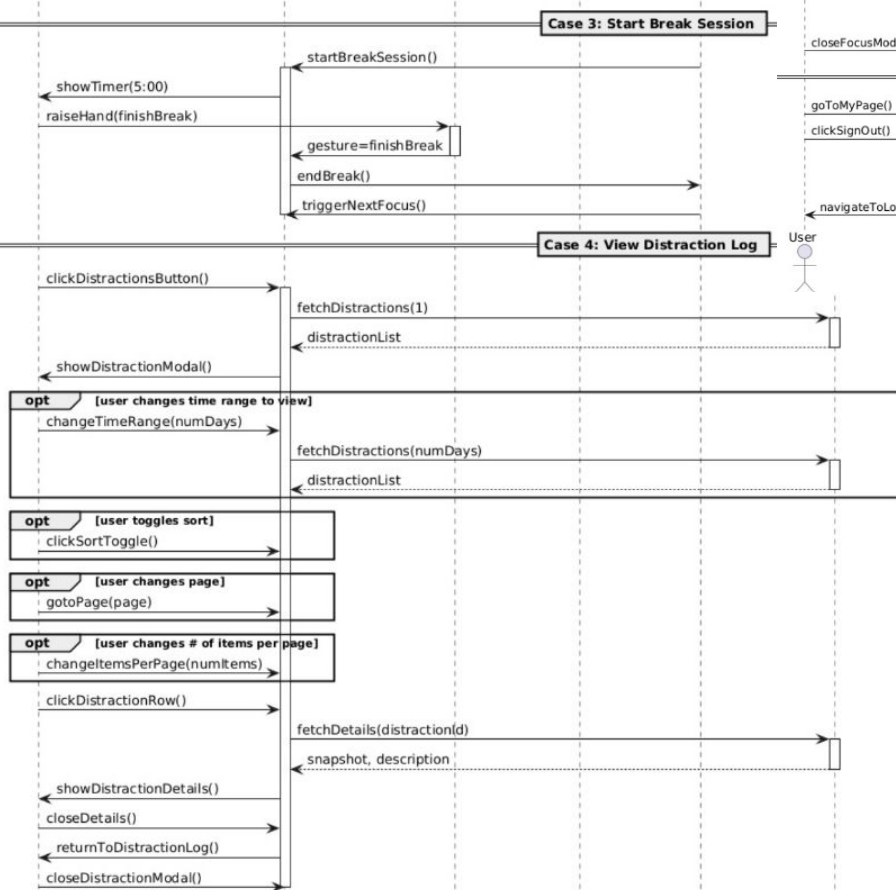
Class Diagram



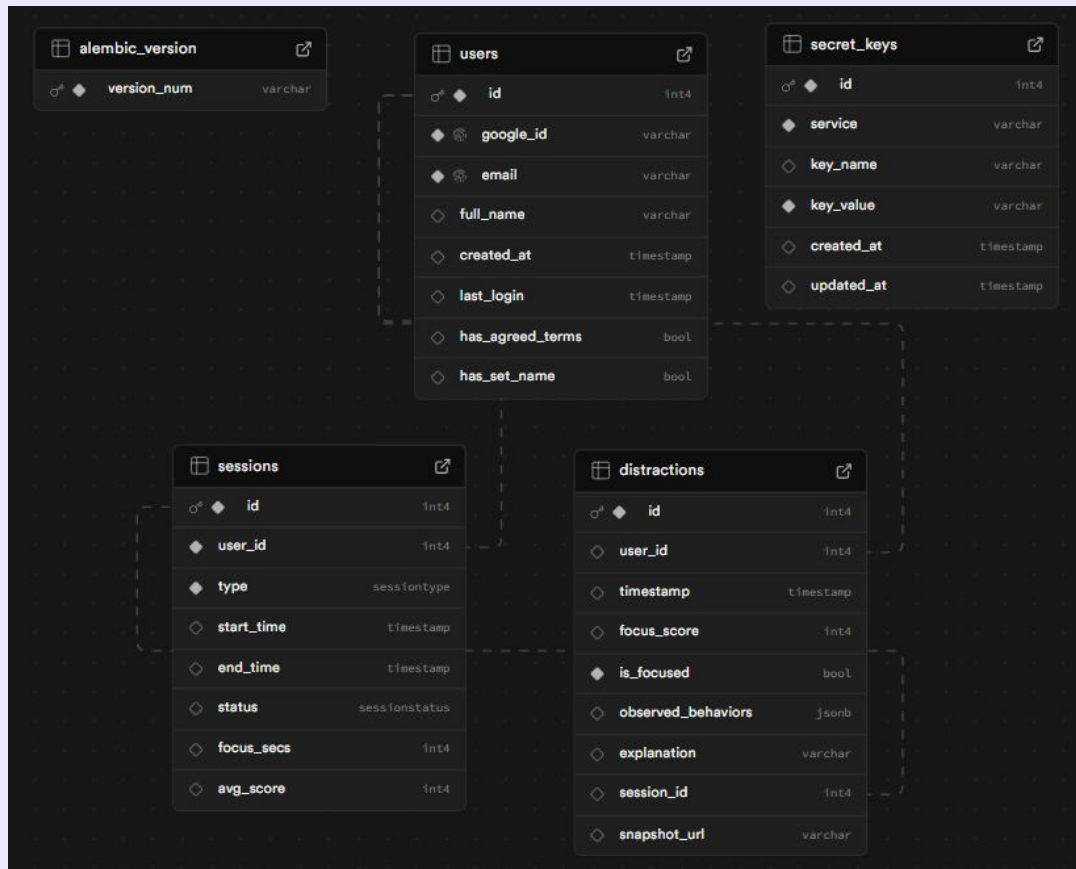
Sequence Diagram



Sequence Diagram



SQL Schema



Schedule ([link](#))

Mon	Tue	Wed	Thu	Fri
3	4	5 🔗 SCRUM Sprint 1 - Pre-Planning	6	7
10 🔗 SCRUM Sprint 1 - Pre-Planning 🔗 SCRUM Sprint 2	11	12	13	14
17 🔗 SCRUM Sprint 2	18	19	20	21
24	25	26	27	28

Mon	Tue	Wed	Thu	Fri
31	Apr 1	2	3	4
7	8	9 🔗 SCRUM Sprint 3	10	11
14 🔗 SCRUM Sprint 3	15	16	17	18
21	22	23	24	25

<input checked="" type="checkbox"/>	SCRUM-18	Software Design Document	IN PROGRESS ▾	-	
<input checked="" type="checkbox"/>	SCRUM-10	Frontend Refinement	IN PROGRESS ▾	-	WJ
<input checked="" type="checkbox"/>	SCRUM-12	Review UI scaling	IN PROGRESS ▾	-	WJ
<input checked="" type="checkbox"/>	SCRUM-15	Help message (image & text)	IN PROGRESS ▾	-	WJ
<input checked="" type="checkbox"/>	SCRUM-16	Scale mobile UI to fit all elements in viewport	IN PROGRESS ▾	-	WJ
<input checked="" type="checkbox"/>	SCRUM-30	Create main page	DONE ▾		WJ
<input checked="" type="checkbox"/>	SCRUM-22	Create Focus Time button	DONE ▾	-	JK
<input checked="" type="checkbox"/>	SCRUM-23	Create Distraction Button	DONE ▾	-	JK
<input checked="" type="checkbox"/>	SCRUM-19	Create Focus Log with actual calendar	DONE ▾	-	JK
<input checked="" type="checkbox"/>	SCRUM-20	Focus Log button activation & make it available ...	DONE ▾	-	JK
<input checked="" type="checkbox"/>	SCRUM-24	Focus Log: show the time and focus cycle in the ...	DONE ▾	-	JK
<input checked="" type="checkbox"/>	SCRUM-24	Create Distraction Log with table	DONE ▾	-	JK
<input checked="" type="checkbox"/>	SCRUM-25	Distraction Log: create pagination	DONE ▾	-	JK
<input checked="" type="checkbox"/>	SCRUM-14	Adjust element margins	DONE ▾	-	WJ
<input checked="" type="checkbox"/>	SCRUM-13	Add element animations	DONE ▾	-	JJ
<input type="checkbox"/>	<input checked="" type="checkbox"/>	SCRUM-29 Create Terms & Condition page	DONE ▾		JJ ...
<input checked="" type="checkbox"/>	SCRUM-14	Terms & Conditions: Agree All button & error text	DONE ▾	-	JJ
<input checked="" type="checkbox"/>	SCRUM-26	Enable webcam streaming	DONE ▾	-	JJ
<input checked="" type="checkbox"/>	SCRUM-17	Webcam div becomes tiny after pressing 'Save' i...	DONE ▾	-	WJ
<input checked="" type="checkbox"/>	SCRUM-27	Create my page with essential functions	DONE ▾	-	JK
<input checked="" type="checkbox"/>	SCRUM-28	motion animation when navigating to other pages	DONE ▾		JJ
<input checked="" type="checkbox"/>	SCRUM-32	press ESC to close Logs	DONE ▾		JK

API Docs ([link](#))

users

POST /users/ Create

POST /users/agree-terms Agree Terms

POST /users/set-name Set Name

sessions

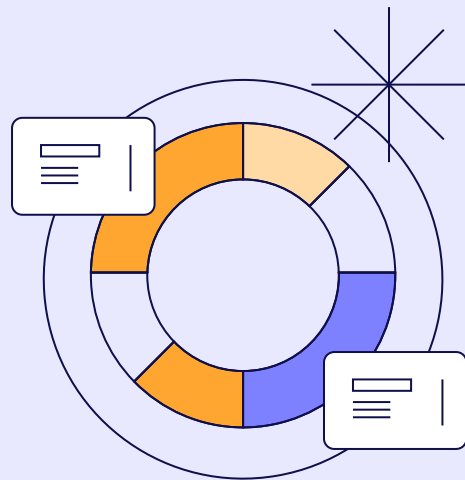
POST /sessions/ Start Session

PATCH /sessions/{sid}/update Update Session Status

POST /sessions/monthly-focus-summary Sessions Monthly Focus Summary

POST /sessions/by-day Sessions By Day

POST /sessions/today-total Total Focus Secs Today



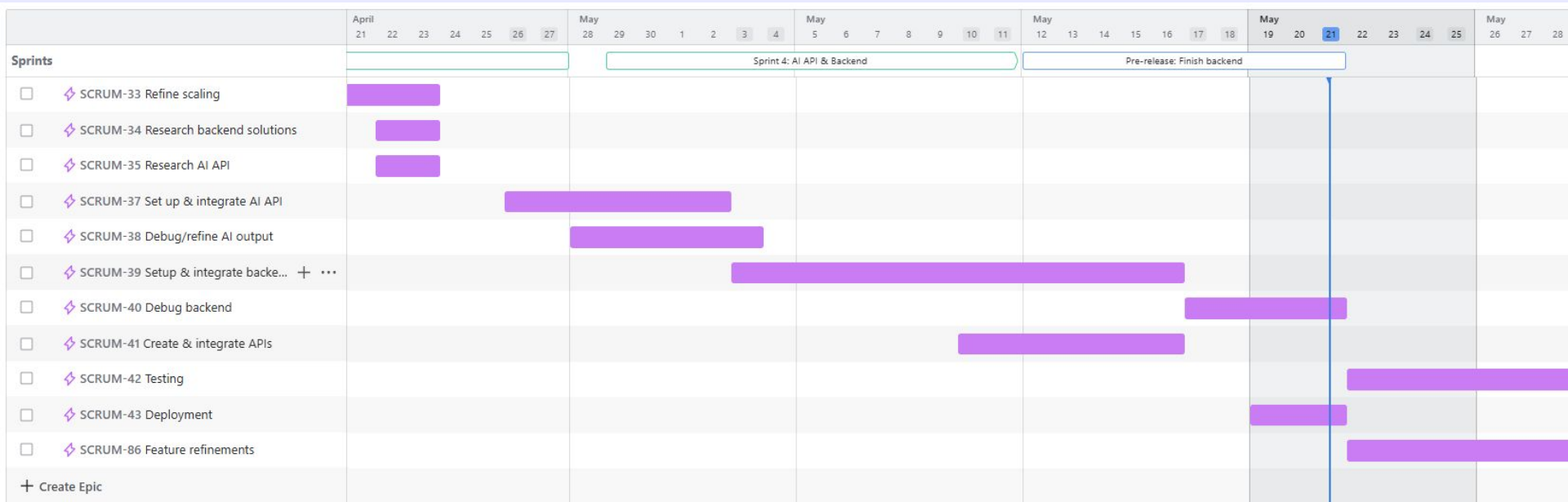
created by Swagger UI on FastAPI

Deployment

1. Frontend: Vercel
2. API Server: Render
3. Database: Supabase
4. Storage: Supabase
5. OAuth provider: Google (via Supabase)



Jira Timeline ([link](#))



Jira Backlog ([link](#))

Projects

NAG-AI ...

Summary Timeline **Backlog** Board Calendar List Forms Goals AI

Search backlog WJ +3 Epic ▾

<input checked="" type="checkbox"/>	SCRUM-68	Integrate and test Secrets table & routes	DONE ▾	-	WJ	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	SCRUM-69 <u>Create APIs to route Gemini outputs to...</u>	+ Epic	DONE ▾	-	JK ...
<input checked="" type="checkbox"/>	SCRUM-70	Create APIs to CRUD session data & display ...	DONE ▾	-	WJ	
<input checked="" type="checkbox"/>	SCRUM-71	Milestone #4 Group Report	IN PROGRESS ▾	-		
<input checked="" type="checkbox"/>	SCRUM-72	Unit & E2E Test Plan	TO DO ▾	-		
<input checked="" type="checkbox"/>	SCRUM-73	Deploy frontend on Vercel	DONE ▾	-	JK	
<input checked="" type="checkbox"/>	SCRUM-74	Implement logic to cycle between multiple ...	DONE ▾	-	WJ	
<input checked="" type="checkbox"/>	SCRUM-75	URL error in frontend: append "https://" to a...	DONE ▾	-	WJ	
<input checked="" type="checkbox"/>	SCRUM-76	bug: when the camera is off, the modal to te...	DONE ▾	-	WJ	
<input checked="" type="checkbox"/>	SCRUM-77	WebcamFeed videoRef returns null -> webc...	DONE ▾	-	WJ	
<input checked="" type="checkbox"/>	SCRUM-78	Gemini API key loading from backend is asy...	DONE ▾	-	WJ	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	SCRUM-79 <u>Compute average focus_score during a...</u>	+ Epic	DONE ▾	-	WJ ...

Testin

g

Bug

Individual Achievements

Report

Bug

Wooyoung

- Timezone bug in Frontend

```
const newLogs: LogEntry[] = Array.from(distractionMap.values()).map((distraction, index) => ({
  id: (index + 1),
  timestamp: (() => {
    let ts = distraction.timestamp as unknown as string; // Type assertion, safe for JSON API

    if (!ts.endsWith('Z')) ts += 'Z'; // Ensure UTC interpretation
    let dateObj = new Date(ts);

    // Format as local time (which will now be "manual KST")
    return dateObj.toLocaleString('en-US', {
      year: 'numeric',
      month: 'long',
      day: 'numeric',
      weekday: 'short',
      hour: '2-digit',
      minute: '2-digit',
      second: '2-digit',
      hour12: false,
    }) + ' GMT+9';
  })(),
  // Don't specify timeZone, because we've already shifted it!
});
```

Distraction Log

#	Date & Time
1	Tue, May 27, 2025 at 17:27:32 GMT+9
2	Tue, May 27, 2025 at 17:25:07 GMT+9

```
"session_id": 407,
"timestamp": "2025-05-28T09:28:15.577383",
```

Bug

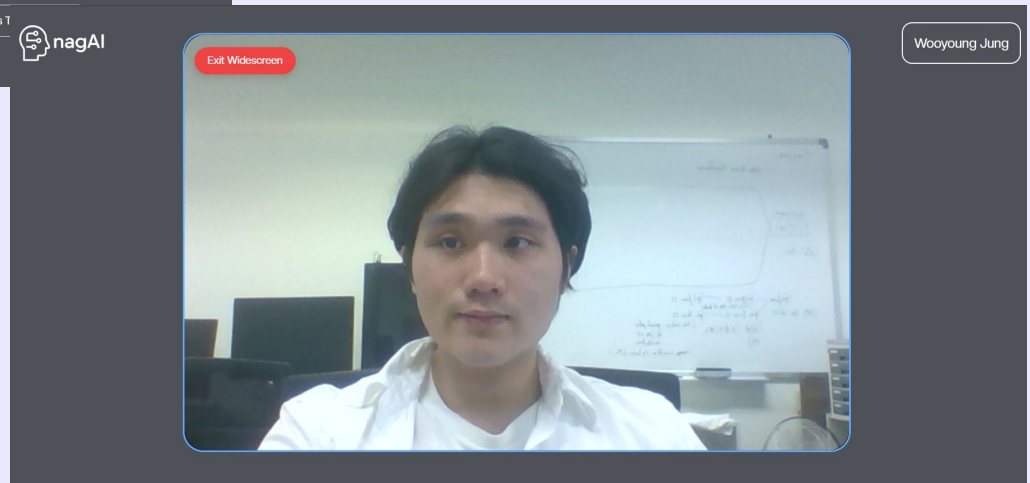
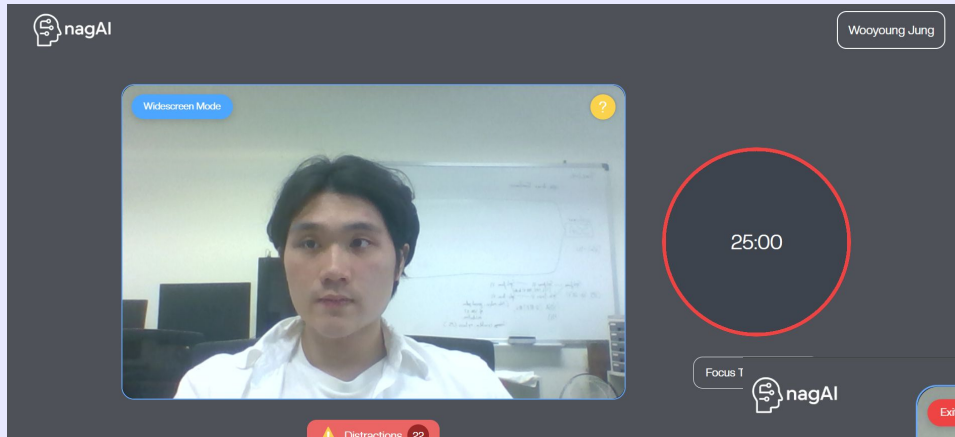
Wooyoung

- Gestures are recognized multiple times

The screenshot displays the nagAI application interface. In the top left corner, there is a logo consisting of a head icon with a brain and the text "nagAI". In the top right corner, the name "Wooyoung Jung" is displayed in a rounded rectangle. The central part of the interface features a video feed of a man with dark hair, wearing a plaid jacket, waving his right hand. A small yellow circle with a question mark is in the top right corner of the video feed. To the right of the video feed is a large red circle containing the text "25:00". Below this circle is a rounded rectangle displaying "Focus Time: 00:23:08". At the bottom of the interface, there is a red bar with a flame icon and the text "Distractions 14".

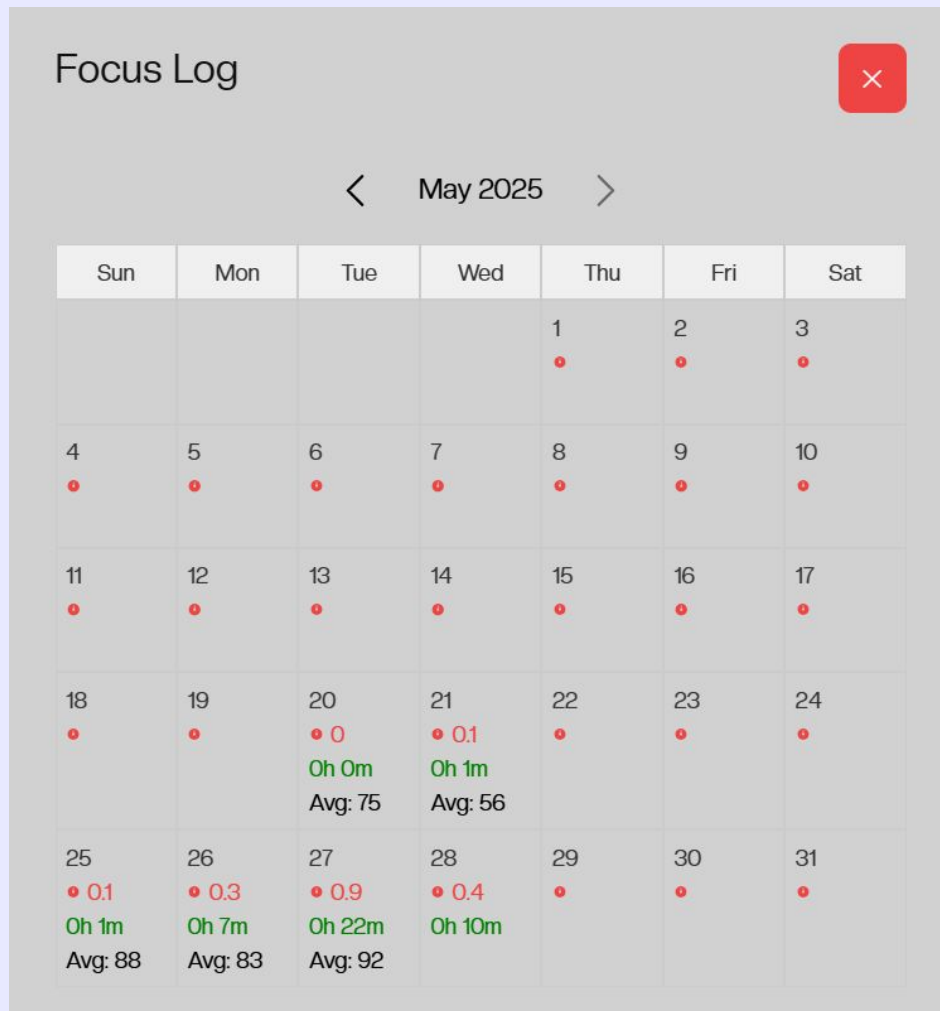
New Features

Widescreen Mode



New Features

Average Scores in Focus Log



Contributions

Individual Achievements

Milestone 1

Wooyoung

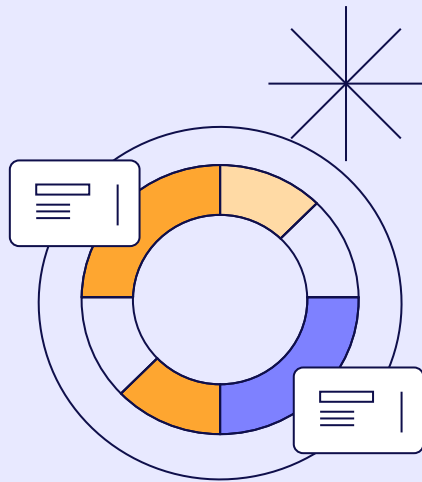
- Scaled mobile UI to fit all elements in viewport.
- Created main page and adjusted element margins.
- Fixed webcam div becoming tiny after pressing 'Save' in MyPage.
- HelpMessage (image & text).

Jiwoo

- Created Focus Time & Distraction buttons
- Created Focus Log with calendar view
- Created Distraction Log with table
- Created MyPage with essential functions

Joohyoung

- Created Terms & Condition page and added element animation
- Implemented element animation with motion.div
- Implemented 'Agree All' button in Terms & Condition page
- Enabled webcam streaming feature in MainPage.



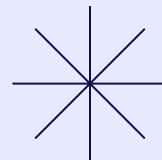
Milestone 2

Wooyoung

- Researched and Discussed AI API & backend solutions
- Refined frontend scaling
- Debugged Terms & Conditions page, and CreateAccountpage: animation and scaling
- Fixed webcam feed size in Mainpage.

Jiwoo

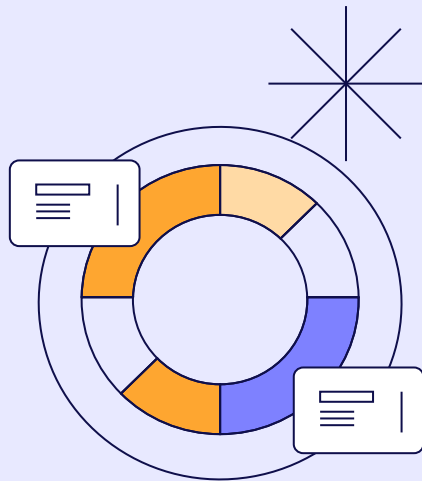
- Researched and Discussed AI API & backend solutions
- Refined frontend scaling
- Focus Log: enable users to move to different months by clicking left and right key
- Enable the users to update the user name in the top-right button when saving the name without reloading the page.



Milestone 2 (continued)

Joohyoung

- Researched and Discussed AI API & backend solutions.
- Refined frontend scaling
- Debugged Terms & Conditions page, and CreateAccountPage: animation and scaling
- Fixed webcam feed size in Mainpage.



Milestone 3

Wooyoung

- Debug motion detection for triggering Gemini API calls (resolved inaccurate hand gesture recognition)
- Adjusted motion detection thresholds & snapshot capture intervals
- Timer activation with Gemini responses
- Prompt engineering with ChatGPT.

Jiwoo

- Setup Google OAuth 2.0 API
- Generated API Key
- Created supabaseClient in backend.

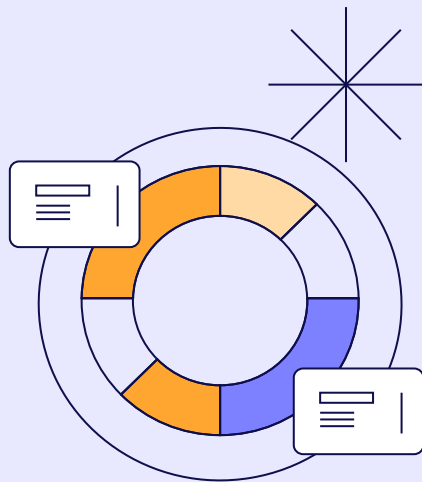
Joohyoung

- Set up FastAPI-Uvicorn and PostgreSQL DB
- Debug timer circle not resetting when stopped with hand gesture
- Connected to Supabase server in an IPv6 environment using transaction pooler URL.

Milestone 4

Wooyoung

- Integrated Alembic for DB table migration.
- Debugged module errors during DB setup.
- Created & tested schemas and routes for each table.
- Debugged redirection logic after signing in with Google.
- Created APIs to CRUD session & distractions data and display on frontend.



Milestone 4 (continued)

Wooyoung: Bug Fixes

- Debug URL error in frontend: append "https://" to await fetch(<URL>).
- Incorrect schemas -> backend validation error -> HTTP 500 & CORS error
- Debug WebcamFeed videoRef returns null -> webcam feed not showing -> solved by waiting for videoRef.current.onLoadedMetadata().
- API auth pattern mismatch: Bearer ... in request header vs. access_token in request body

... among many others (I went home at 1am this week).

Challenges:

- Subtle syntax differences led to deployment & server errors with vague error messages

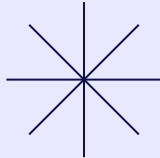
TODOs:

- Gemini API: often recognizes hand gestures incorrectly

Milestone 4 (continued)

Jiwoo

- Setup Google OAuth provider on Supabase
- Integrated and tested Secrets table & routes
- Created APIs to route Gemini outputs to Distractions table and display data in DistractionLog
- Changed Distractions table
- Received the Distraction data from the backend and display it in Distraction Log.
- Created Distraction Detailed Log
- Enabled User to see their distraction information from the distraction log
- Updated the count of distractions in the distraction button from the main page
- Enable pagination in Distraction Log
- Enabled notifications
- Enabled system chime when distraction is triggered



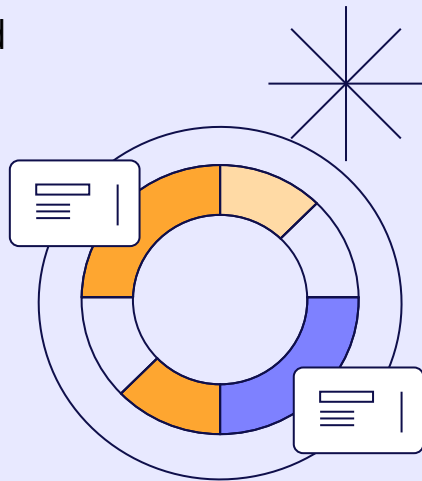
Milestone 4 (continued)

Joohyoung

- **Security: Implemented Secrets tables & routes for keys**
- **Implemented logic to cycle between multiple Gemini API keys to overcome daily request limits.**
- Implemented Sign-out logic.
- Fixed username being reset to "Guest" in Navbar.
- Connected API and FocusLog to get total focus time of the day and display it in FocusLog calendar view.

Tasks in Progress:

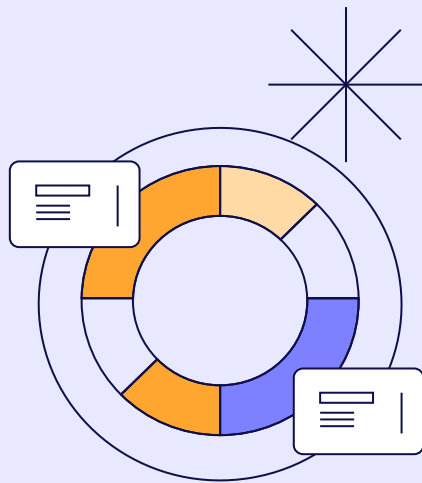
- Webcam full-screen mode and hide timer(low priority).
- Potential improvement: automatic/manual camera adjustment (exposure, highlights, brightness, contrast, etc) to filter bright lighting
- Blink GestureHelpButton if user inactivity ≥ 15 seconds.



Group Progress Update

Overall Status:

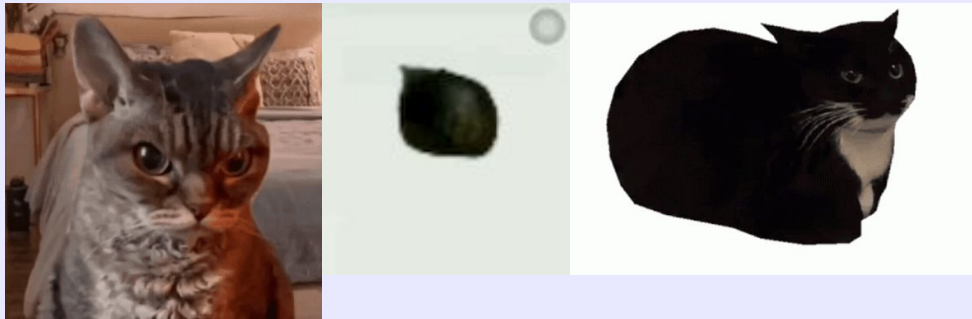
- We believe our progress is on track.
- Most of the planned features, including AI-triggered distraction logging, focus tracking, Supabase integration, and OAuth login, are implemented and working across both backend and frontend.





Link:

<https://nagai-pi.vercel.app/>



Thank you!

