Making Autonomous System Project Report

MayDay,
Workplace Companion AI

Azarang Etemadi[1], Pavankumar Chandankar[1], and Gururaj Shetty[1]

[1]Human Computer Interaction, University of Siegen, Germany

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Abstract

MayDay is an AI-driven workplace companion designed to enhance productivity by effectively managing interruptions, reducing cognitive load, and promoting overall well-being in the workplace. This AI system prioritizes critical notifications, filters non-essential distractions, and facilitates smooth resumption of tasks after interruptions. Additionally, MayDay promotes physical and mental well-being by integrating stress-reduction techniques, personalized breaks, and social connection reminders. By automating routine tasks, encouraging self-care, and fostering enjoyment, MayDay aims to create a healthier, more focused work environment. This report explores the development process, design methodology, and user-centered research behind MayDay, which aims to transform how users approach work, reduce distractions, and maintain a balance between productivity and well-being.

Keywords: Autonomous system; AI; Prevent interruption; Manage interruption; Resumption

1 Introduction

In today's fast-paced work environment, constant interruptions, multitasking, and overwhelming task loads are increasingly common, leading to reduced productivity and high level of stress. With the rise of digital technologies and the pressure to remain connected, professionals find it challenging to maintain focus, manage interruptions, and resume work efficiently. To address these issues, we introduce MayDay, a workplace companion AI designed to help users manage interruptions, navigate complex workflows, reduce cognitive load, and promote a healthy balance between productivity and well-being.

MayDay is a workplace companion AI that offers solutions to common workplace challenges, including interruptions, information overload, and work-related stress. This AI-powered system specifically designed to optimize focus maintanace and boost productivity. With distractions at every corner, it's easy to lose valuable time and fall behind on crucial tasks. MayDay addresses these challenges by offering a personalized, interactive approach to managing focus and productivity. The system is built with a user-friendly interface, ensuring an engaging experience for users. Through its innovative features, the AI transforms what can often feel like a stressful and overwhelming work environment into a structured and manageable process. By offering tailored recommendations based on individual behavior patterns, MayDay helps users to minimize interruptions, reduce distractions, and ultimately enhance their focus span.

The goal of MayDay is to revolutionize how people approach work by providing a seamless tool that guides users towards achieving their maximum potential. Whether by suggesting breaks at key moments, blocking distractions, or encouraging the adoption of better work habits, MayDay acts as a digital companion that makes productivity both attainable and sustainable.

This report presents the conducted research, design development, and implementation of MayDay AI, focusing on how AI can assist and support users in workplace by by building sustainable healthy work habits.

1.1 Problem Statement

As mentioned above, maintaining focus and productivity at work has become increasingly challenging due to the pervasive presence of social media and digital distractions. These distractions disrupt workflow and prevent individuals from maintaining sustained attention on critical tasks. Despite the availability of various productivity tools, many users find it difficult to manage their attention effectively, leading to decreased efficiency and heightened stress. Traditional methods of time management and focus enhancement often fail to address the personalized needs of users, leaving a significant gap in the market for a more tailored and adaptive solution. This has created an urgent demand for a system that not only supports focus but also adapts to individual user behaviors, offering tailored recommendations that align with their specific work patterns.

MayDay aims to bridge this gap by providing a more intuitive and personalized solution, optimizing attention management and reducing distractions. By focusing on the individual, it creates an environment that enhances focus, reduces mental fatigue, and ultimately improves productivity, thus revolutionizing how users interact with their work environment.

1.2 Methodology of the Study

Creating a productive and supportive user experience requires thoughtful design that addresses both user needs and challenges. Our approach focuses on fostering a positive experience while enhancing performance through intuitive interaction and engagement. The design and development of this project followed a user-centered design approach, starting with initial user research to identify common personal struggle with maintaining focus at work and workplace challenges. Qualitative interviews were conducted with working with five professionals to understand their pain points and test the outlined scenarios. Moreover, competitive analysis, mood board, design guidelines, wireframe designs, and user testing shaped the development of the AI. The research was followed by iterations of scenarios and design as well as usability testing with prototypes. Finally, feedback from real-world scenarios was used to refine MayDay into a viable solution for managing interruptions and enhancing productivity.

The methodology of this study is also grounded in a comprehensive literature review focused on preventing and managing interruptions and resumption after interruption at workplaces. The review conducted to gain an understanding of existing research, find best methods, and identify any existing gaps.

To structure our design process for effective problem-solving, we utilized the Double Diamond design approach. This framework allowed us to thoroughly explore and understand user needs, ensuring that the solutions we developed were both relevant and effective. The Double Diamond consists of four key phases:

- Discover: In this phase, we conducted extensive user research through interviews and observations to uncover user pain points and expectations. This foundational understanding guided our design direction and illuminated the challenges users face in maintaining focus and productivity.

- Define: Based on the insights gathered during the discovery phase, we refined our understanding of the core problems. We established clear focus areas to address specific user needs, ensuring that the design solutions would directly respond to the identified challenges.

- Develop: This phase involved brainstorming and prototyping potential solutions. Collaborative workshops allowed us to generate innovative ideas, and we created initial prototypes to test different features. User feedback was integral in refining these prototypes, ensuring they aligned with user preferences and expectations.

- Deliver: In the final phase, we focused on implementing the refined solutions. This included user testing to validate the design's effectiveness in enhancing user experience and performance. Iterative feedback loops helped us make necessary adjustments before the final deployment of the solution.

By employing the Double Diamond approach, we ensured a structured and user-centered design process that aims to create an AI tool that not only enhances productivity but also fosters a positive and engaging user experience.

It is important to note that all the interviewees were students and work part time jobs which cannot reflect the real world challenges at work spaces.

In this study we aim to answer the following research questions:

1. How can AI assist in managing interruptions without overwhelming users with additional tasks?
2. What strategies can be implemented to help users resume work efficiently after interruptions?
3. How can AI systems improve focus span and promote well-being without adding to users' stress or workload?

1.3 Competitive Analysis

The competitive analysis of MayDay in evaluating of leading AI-driven productivity tools, including Google Gemini, Microsoft Copilot, Zoom AI Companion. These tools were selected based on their integration into existing ecosystems, functionality, and user experience. Each competitor was analyzed for its approach to focus management, distraction reduction, and overall productivity enhancement.

Microsoft Copilot is an AI-powered assistant integrated into Microsoft Office products. While it excels in automation and real-time collaboration, it lacks personalized well-being support and does not offer comprehensive resumption tools.

Zoom Companion AI is focused on optimizing virtual meetings, this AI provides features like scheduling and auto-summarization. However, it does not address the challenges of work resumption or managing physical interruptions outside meetings.

Google Gemini AI, is a versatile AI tool aimed at improving productivity across various domains. While strong in task automation and integration with Google Workspace, it is less focused on managing interruptions and promoting user well-being.

In overall, Google Gemini and Microsoft Copilot stand out for their deep integration into their respective ecosystems—Google's suite of tools and Microsoft 365—offering advanced content generation and productivity management features. However, they focus primarily on document creation and workflow automation rather than tailored, user-specific focus management.

This competitive analysis highlights a gap in the market for a more tailored and adaptive focus management solution, specifically one like MayDay, which provides personalized recommendations and real-time behavioral insights aimed at enhancing focus. While existing tools excel in task automation and productivity within specific environments, they do not comprehensively address the unique, user-centered approach to sustained focus and distraction reduction that MayDay offers. This review underscores the opportunities for MayDay to provide a differentiated, specialized solution for focus management, leveraging insights from its competitors while addressing the unmet needs in the productivity market.

App	UI Design	UX Design	Interactions
	The interface clearly indicates where and how the AI is assisting	The design encourages focus on the task at hand by minimizing unnecessary distractions Offers proactive suggestions, such as auto-completing tasks	Generate text, summarize emails, & create presentations
zoom	The UI is designed to be straightforward, with large, easy-to-click buttons and clear labels	Features like live transcription and automated meeting summaries enhance user focus by reducing manual note-taking tasks	Provide transcription, summarize meetings, & suggest actions like setting up follow-up meetings Supports interaction between participants: managing polls, gathering feedback, or highlighting key discussion points
	Ensuring a clean, modern, and consistent look across all interactions Ensuring a clean, modern, and consistent look Ensuring easy navigation	Centered on context-aware assistance, where the AI understands what the user is working on and provides relevant help	Offers predictive suggestions and actions: completing sentences, generating content based on keywords, or organizing emails

Figure 1: Competitive Analysis.

1.4 Our Solution

MayDay provides a tailored approach to improving focus and productivity by utilizing AI-powered features that offer both practical support and a personalized experience, all while addressing key concerns related to user privacy, autonomy, and bias.

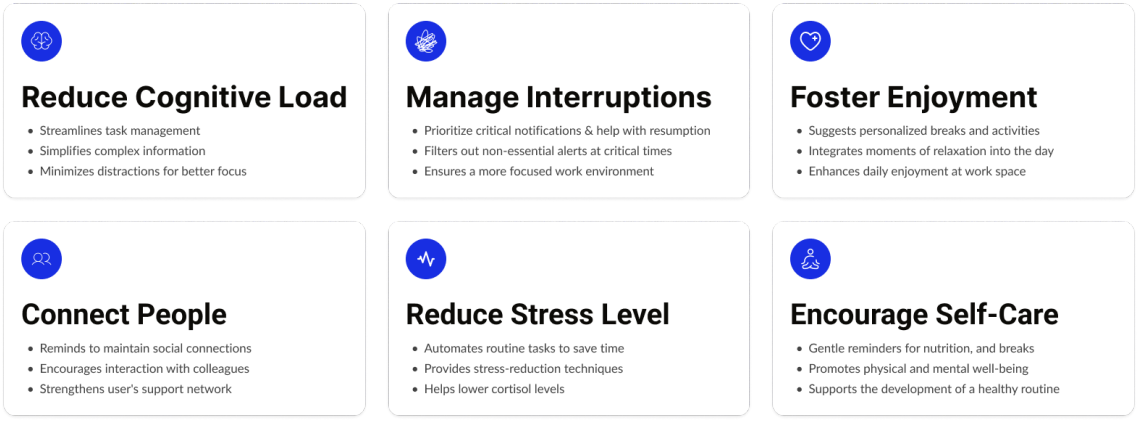

Figure 2: Our Solutions.

1. Task Management and Prioritization:

   When users feel overwhelmed, MayDay can assist by automatically generating a comprehensive list of tasks. The AI categorizes related tasks and helps users prioritize based on deadlines and importance, reducing the cognitive load on users and providing a structured approach to managing their workload.

2. A Real Assistant:

   MayDay goes beyond basic productivity tools by actively participating in meetings. It takes notes, categorizes tasks assigned during discussions, and organizes follow-up actions based on user needs. This not only ensures seamless task tracking but also enhances productivity without requiring users to manually document every detail. In response to user concerns about autonomy and privacy, MayDay only records meeting tasks and notes when explicitly activated by the user. This ensures user consent and maintains privacy during other times.

3. Deep Work Mode:

   To help users stay focused, MayDay enables Deep Work Mode, which blocks distractions and schedules specific times for checking emails or phones, ensuring minimal interruptions throughout the day. Users can limit this to two or three checks per day, allowing more control over how and when they engage with their tasks. Autonomy is prioritized here by allowing users to set the duration of Deep Work Mode, granting flexibility based on individual preferences. Additionally, users have the option to customize or disable this mode to maintain their personal work style.

4. Privacy-Preserving Notifications:

   To address privacy concerns, MayDay utilizes text alerts and a private chatbot for communication, ensuring user data remains confidential. The chatbot allows for discreet interactions, protecting sensitive user information and minimizing intrusive notifications. MayDay also provides users with full control over which data is collected, offering transparency and the ability to opt out of certain monitoring features.

5. Emotional Support and Well-being:

   Using facial tracking and heart rate monitoring, MayDay can detect signs of stress or frustration, offering support in real-time. If a change in behavior or heart rate is detected, MayDay checks in to ask whether the user needs a break or emotional support, creating a more empathetic working environment. Users can choose to enable or disable these health-tracking features, ensuring their privacy and autonomy are respected.

6. Motivation and Rewards:

MayDay incorporates a reward system that recognizes and celebrates user achievements, such as maintaining focus or completing tasks. Users earn points for meeting productivity milestones, fostering motivation and engagement. This system is designed to encourage progress without imposing unnecessary pressure, ensuring that users work at their own pace. The reward system can be tailored to each user, ensuring that the focus is on individual progress and personal productivity standards, rather than a one-size-fits-all approach.

2 Literature Review

Research on managing interruptions and improving work resumption has identified significant challenges that affect productivity, task completion, and cognitive load in modern work environments. These challenges are particularly relevant as workplace interruptions have become more frequent, resulting in increased stress and decreased task accuracy.

Mark *et al.*, (2008) in their paper "The Cost of Interrupted Work: More Speed and Stress" studied how frequent interruptions impact task performance, stress, and productivity. Findings emerged from their study displays that interruption at work resulted in faster task completion, but at the cost of increased stress and reduced accuracy and burnout. They also noted that multitasking and frequent interruptions disrupted focus and overall productivity. Although the study provides a crucial foundation for understanding the impact of interruptions, its findings are limited to specific work environments.

In contrast, Parnin and Rugaber (2011) focused on how programmers manage interruptions and work at workspace in their study "Resumption Strategies for Interrupted Programming Tasks." They highlighted that automated reminders and cues can significantly improve task resumption after interruptions. Their research showed that while developers often relied on self-made notes to manage task resumption, system-generated reminders proved to be more effective in reducing cognitive load and resumption time. However, the study's narrow focus on programming tasks limits its applicability to other cognitive work.

Iqbal and Bailey (2005) in their paper "Investigating the Effectiveness of Mental Workload as a Predictor of Opportune Moments for Interruption" examined how mental workload can serve as a predictor for determining the most suitable times to interrupt a person during a task. The study found that interruptions during low mental workload periods led to quicker task resumption and fewer errors compared to interruptions during high workload phases. However, as this study was conducted in a controlled laboratory setting, it may not fully reflect the complexity of real-world interruptions.

Czerwinski *et al.*, (2004) adopted a diary study approach in their work "A Diary Study of Task Switching and Interruptions," capturing real-world data on how employees handled interruptions and task switching. They found that interruptions were an unavoidable part of daily work, and most workers developed personal strategies, such as using to-do lists, to minimize their impact. However, task switching consistently increased cognitive load, leading to reduced efficiency and increased fatigue. Employees who logged their interruptions and reflected on them managed to improve their resumption skills over time. The diary study method, though valuable, relied heavily on participant memory, introducing potential inaccuracies in the data.

Mark *et al.*, (2017) in their paper "How Blocking Distractions Affects Workplace Focus and Productivity", investigated the impact of blocking distractions in the workplace to improve focus and productivity. The study specifically examines strategies like disabling non-work-related notifications and reducing external interruptions to enhance deep work and task efficiency. The results showed that blocking distractions significantly improved participants' focus and task completion speed. Participants in distraction-free settings reported better cognitive flow and higher productivity levels compared to those in the control group that was subjected to normal workplace distractions. The short duration of the experiments and controlled situation are the limitations that do not allow to fully capture the complexity of real-world workplaces where distractions vary in nature and frequency.

These studies highlight the negative impact of interruptions on workplace productivity, the cognitive load of task switching, and the importance of effective resumption strategies. However, several gaps remain in the literature. Most studies focus on specific job types, such as programming, or controlled lab environments. Expanding research to other industries and real-world settings could offer broader insights. And although automated reminders and notifications have proven effective, more innovative solutions—such as AI-driven systems that prioritize tasks and reduce context switching—could provide deeper insights into managing workplace interruptions and improving focus.

Addressing these gaps will require more extensive research, particularly in how AI can integrate into workplace tools to optimize both focus and productivity in the case of frequent interruptions.

3 Scenarios

In the early stages of user research, we created 3 different context scenarios, two are outlined in the following, to understand our users and how MayDay AI features can provide practical solutions for their issues. Each scenario display the perspective of one type of user and any existing issues or gaps they face at work environment, plus potential errors that might happen when using an intelligent system. Based on the gathered feedback from our supervisors, we have revised every scenario and defined one more to ensure they are aligned with our project goal and users' needs.

Based on the conducted literature review, the following 3 criteria are the primary focus of the AI to help users maintain focus and productivity, that are considered in drafting the scenarios:

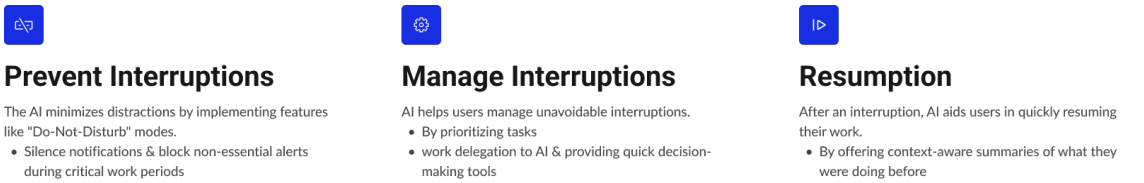

Figure 3: Main Focus of MayDay AI.

First Scenario: User with ADHD. Taylor feels overwhelmed by the upcoming presentation and numerous appointments. Due to high levels of anxiety, he keeps switching tasks and struggles to stay focus on his tasks.
Context: Taylor arrives at work and starts the system. He has an important presentation with the whole team but before starting to work on that, he takes a look at today's schedule. His presentation is at noon and there are several meetings in between, one is in 30 minutes.
User Reaction: The meeting is so close, I need to prepare a summary of my process with the project in hand for the meeting and my mind is with the presentation that I do not feel ready to present yet! (he keeps switching tasks and struggle to make progress)
AI Reaction: I noticed you switching tasks, should I set a timer for 25 minutes for deep work (with background 40 Hz wave music to relax the nervous system and enhance brain activity and focus with mute option) with a 5-minute break before your meeting? - there is a potential error that the system is wrong in its analysis.
AI Reaction: I suggest starting with meeting preparation in this phase.
Action: Taylor finds that helpful and press activate.
Action: Taylor notice that background music frequency is on mute by default! He tries unmute but at the moment he is too stressed to enjoy and relax with the music. He ends up muting it again.
Action: After 10 minutes into deep work, a colleague comes to his desk and interrupt his work. He stops and learns that he needs some important documents before the meeting, he feels frustration start running through his whole body. . . and after handing over the required file to his colleague, he changes his status on the system from 'Available' to 'Do not disturb'!
Response: Taylor managed to finish the report. It took him longer than 10 minutes because of the interruption plus his struggle to maintain focus but he made it in 25 minutes!
Response: He check-marked the report from his To do list.
Potential Errors: Timing and context sensitivity: The AI might not adequately consider the urgency of the upcoming meeting and Taylor's need to prepare quickly. The suggested 25-minute work session might consume too much of Taylor's limited time, leaving insufficient time for effective meeting preparation.
Solution: Timer should be manually editable by the user.
Action: Taylor finds that the focus time is too long and click on the timer icon to change it manually. Ineffective suggestion: The AI's suggestion of a 25-minute deep work session with background music might not align with Taylor's current mental state or needs.
Solution: "Set a Timer" suggestion should offer two key buttons, 'Activate' and 'Cancel'. Background music should be on mute by default to give full authority to the user to decide.
Action: Taylor finds the suggestion unhelpful or stressful, that increase his anxiety and reduce his productivity further. So he decides to press cancel. disable sharing screen with AI as well as disabling further notifications from AI.

User overload: Under current pressure Taylor feel overwhelmed by AI tracking his work and notifications which is adding to his stress level.
Solution: AI access and limitations can be decided on the Setting page.
Action: Taylor disable sharing screen from settings as well as disabling further notifications from the AI.
Result: This could lead to Taylor ignoring or completely disabling the AI, reducing its effectiveness in the long term. Feedback and adoptation: The AI might not provide meaningful feedback or adapt quickly enough to Taylor's real-time responses and changes in needs. For example: the AI is set to suggest the following
well-being methods: 1. Standing up every one hour, 2. Rest eyes after every 25 minutes to avoid eye strain, 3. Take a break in the coffee room with other available colleagues, 4. Take a walk for 5 minutes, 5. Start a mindful session to reduce cortisol (stress) level.
Action: Taylor is in critical situations, between meetings, presentation, and report writing. He is not in a good state to take care of his health and socialize with people at the moment! So he gets frustrated by AI suggestions and end up putting the AI itself on 'Do not disturb'!
Result: This could lead to Taylor ignoring or completely disabling the AI, reducing its effectiveness in the long term.
Revisions:
Deep Work: 'Do not disturb' should be implemented by default.
Time Suggestion in Hectic situations: The meeting is so close, there are lots of workload, the AI should suggest a shorter time period that fits the user's cognitive load based on the critical situation and time pressure. Example: Reduce Focus time from 25 to 10 or 15 minutes.
Background Music: Let the user decide if he wants the music or not in the first place. And if the user gets frustrated with background noise, the AI tracks his eye pupils and expressions to suggest turning it off. (Let the intelligent system track facial expression, eye tracking and automatically turn off or mute the music without distracting the user with notifications)
Deep work / Busy status: Let information come in, AI gives notification of the tasks that have higher priority but not the ones with lower priority.
Mindful practice: Keep this for other contexts that have less urgency.
Resumption: The most important thing is resumption, because when interruption happens people tend to forget what they were doing or where they were.

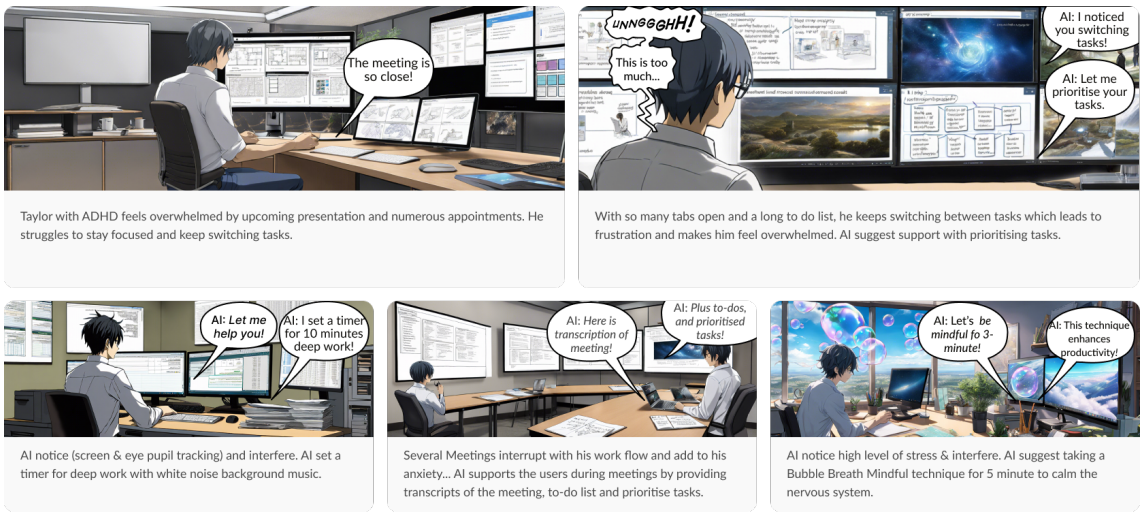

Figure 4: Story Board.

3.1 Iteration of Scenarios

Later on, in the phase of user research, we defined one more scenario in more detail, outlined in the following, to address three main focus of the project (preventing interruption, managing interruption, and resumption) more precisely.

When it comes to productivity enhancement tools, understanding user needs is essential for developing effective focus management solutions. Initial scenarios highlighted users' discomfort with unsolicited break reminders, which often led to increased anxiety. Iterations focused on

creating a more intelligent system that act to support based on context and personal needs of the user.

Additionally, scenarios addressing anxiety management before important presentations were refined to provide calming techniques, such as mindfulness exercises, instead of direct anxiety alerts, and it will be suggested to the user when there are no upcoming urgent deadline. Finally, for users facing challenges with ADHD or ADD, the focus was on creating personalized focus modes that filter distractions, allowing users to tailor their working environment for optimal productivity. These iterations ensure that the tool adapts to individual preferences and enhances user satisfaction.

Fourth Scenario: User with PCOS. Sarah is a 30-year-old woman working as a financial analyst. She has Polycystic Ovary Syndrome (PCOS), which causes hormonal imbalances, difficulties staying focused, and high levels of cortisol (stress hormone). She is suffering from lack of focus, brain fog, high level of stress, addiction to social media, and fearing that her productivity issues might lead to job loss. Additionally, she was diagnosed with autoimmunity two years before, having digestive system issues that caused vitamin deficiency and fatigue. All these physical conditions affected her mental health too and led to a minor depression.

Context: Sarah has an important deadline by tomorrow, but she has been procrastinating the whole week and made little progress with the project in hand. She feels very frustrated by this work, feeling over guilty for making little progress, wasting time, and struggling with the urge of checking her social media. She has been neglecting her health, doing no exercise, not socializing, avoiding all messages from friends and family, and just sitting for over 10 hours daily for the past week to finish this work but she is still far from getting half way through... She keeps blaming herself for being lazy and not being able to work. She finds the task complex, it needs her full concentration which is extremely challenging for her at the moment... She set 20 minutes timer in the morning but she is unable to remain focus and makes no progress. Every time the alarm goes off she sets another one and continues checking her Instagram... The more she gets closer to the deadline the more she feels anxious... Now a headache is added to the foggy brain and every 10 to 20 minutes she automatically reaches out to her phone to check Instagram and spends hours on that every time... It seems very difficult for her to resist this strong urge...

User Reaction: I should read these two lengthy reports (40 pages each full of statics), take key points, summarize them, and use them to write the final report (Keep switching between tabs)! We also started using a new approach for managing our finances that I am not familiar with! I need to read some articles to be able to use the method in our next year's suggestion plan, this is loads of work... Without thinking, reach out to grab her phone, automatically opens Instagram, and starts scrolling on her news feed.

AI Reaction: Hey Sarah, you have been scrolling for over 30 minutes now! How about taking a short break to stand up and get some fresh air?

AI Reaction: I suggest standing up for one minute and maybe taking a walk for 10 minutes to freshen up your mind.

User Reaction: Thanks for reminding me of that! Although it is a good suggestion, I have to finish my to-do list for today, and cannot afford wasting time... So I prefer to get back to work!

AI Reaction: I understand that you prefer to work continuously, but based on your screen time, and your physical expressions today, it appears to me that you are under pressure! This can cause lack of focus and high levels of anxiety which can decrease productivity...

User Reaction: I AM under pressure, I have lack of focus and I feel I am too lazy towards my responsibilities, and my job...

AI Reaction: It is natural to feel that way... But know that you are not alone... There are a variety of factors that can affect your brain function like chronic diseases, life conditions, workload, stress level, lack of activity, depression, and your diet... Even only one of these factors is enough to cause severe fatigue, and less concentration.

User Reaction: Actually, I was diagnosed with autoimmunity and PCOS syndrome... And I am very stressed right now...

AI Reaction: That explains a lot! I am here to help you create a support system to manage the workload, prioritize, make a routine and above all take care of your health! My first suggestion is to reduce your sugar intake which can affect your brain function and reduce concentration.

AI Reaction: Based on research findings, any activities that raise heartbeat is good for people with PCOS syndrome. This will regulate your mood and increase concentration. Exercise releases endorphin hormone, "feel good" chemical, that releases positive emotions and reduces cortisol "stress" / "anxiety" hormone levels.

AI Reaction: I suggest taking a short break, for example going up the stairs for two to three story levels or walking up for only 5 minutes, preferably at a fast pace.

AI Reaction: Meanwhile I divide the workload, make small tasks for when you are back. Here is the first task: Start reading the first 5 pages of the first report.
AI Reaction: I will assist you with summarizing and taking key points of the text.
User Reaction: OK! I am convinced! Let me try that! I will climb the stairs.
AI Reaction: I set the exercise for climbing the stairs! Press end once you are finished.
Action: Sarah checks her smartwatch and sees the 3-second countdown screen before the stopwatch begins. She stands up and walks up to the staircase.
Context: After 5 minutes Sarah is back at her desk, she feels a positive change in her mood. Now that screen is active, she gets notification from AI where she left.
AI Reaction: Well done, you did a 5 minute exercise! Keep doing 4 more times of a 5 minute exercise to reach your exercise goal for today!
AI Reaction: Here is the first task to begin with, start reading the first 5 pages of the first report. I set the timer for 10 minutes.
Action: Sarah begins with reading. She forgot to end the exercise. After a few minutes her watch vibrates with a notification including three action buttons:
AI Reaction: End workout / Pause / Continue?
Action: Sarah first checks all the info, feels happy about the results and then presses End workout.
AI Reaction: A new screen pops up displaying three main factors, Move, Exercise, Stand. Screen also displays the duration of the exercise, heart rate, blood oxygen, blood pressure, stress level, total calorie, active calorie.
Action: Sarah checks her all the information, feeling positive to see the records, close the screen and continue with her work.
AI Reaction: Hey Sarah, you are reading lengthy reports. Do you want me to open Immersive Reader to help you with that?
User Reaction: How can that help me?
AI Reaction: Immersive Reader is a tool to assist you with reading and comprehension. This method helps you improve your focus on the text by changing font size and style, text and line spacing and background color. Immersive Reader also reads text aloud to you so that you can follow the audio along with the visual display. These can all help you remain focused, make documents easier to read, and save more time.
AI Reaction: New pop up displays Immersive Reader — Activate / Cancel?
Action: Sarah presses activate. She also needs a summary of the report with all key points so she press the "summary" button as well as the "key points" button.
Response: Sarah finds the tool very useful and finally manages to remain focused for a longer span of time and finish the first report in an unexpectedly shorter time! She double checked the summary provided by AI, revised a few parts and added some notes. She looks at it, although it is a small progress but she is feeling satisfied, and a bit motivated to continue. She takes the same steps with the other report and finishes that one too.
User Reaction: After working two hours straight, Sarah feels tired and likes to check her Instagram as a break. She picks up the phone and starts scrolling.
AI Reaction: You have been working for two hours non stop! It's time to stand up to release the pressure on your spine, take a 5 minute break, and take a few steps.
User Reaction: Sarah ignores AI and continues scrolling... AI Reaction: Hey Sarah, I understand that scrolling on Instagram is fun and does not add to your cognitive load but it is negatively affecting your body posture and increasing eye strain... I suggest taking a 1 minute or just 20 seconds break from your screen and have your gaze outside a window up to 20 meters away to rest your eyes.
User Reaction: This time Sarah is concerned about her health, feels pain and dryness on her eyes so she puts aside her phone and walks a few steps, opens the window and takes a deep breath. She comes back and starts working again but this is tiring and frustrating for her so after 10 minutes again she picks up the phone...
AI Reaction: Hey Sarah, you have been using Instagram on your phone for 15 minutes. And today you picked up your phone 12 times in the past 4 hours. This habit will disturb your concentration and workflow. I can help you create a mindful behavior towards using your phone and most used apps. Do you want me to set a 1 hour limit on Instagram to manage your usage per day?
User Reaction: Sounds good, let's do that!
AI Reaction: 1 hour limit is set for Instagram app! You can reduce or increase the time from setting "screen time" anytime you like.
AI Reaction: Would you like to separate your 1 hour time limit into 3 multiple times of 20 minutes, one in morning, one in the afternoon and one at night?

User Reaction: Yes, do that!
AI Reaction: Your 1 hour Instagram app usage is now divided into 3 times per day. You can customize your plan later.
Response: This time when Sarah picked up her phone and immediately opened Instagram she got a message that she has 5 minutes left and screen will be down. She decides to close the app before the 5 minute is over. She gets back to work and continues without picking up her phone for the next 1 hour which is a great progress in her case.
Response: This time based on the user's physical and mental health situation plus the urgency of the task, AI only notified the user to stand and rest her eyes after every one hour. User ignored a few notifications but took a 5 minute break with the rest of the notifications. Walking for at least 30 minutes or more is suggested to people with chronic diseases and PCOS but this type of long breaks might trigger the user so it was avoided.
Response: With the help of AI in summarizing, taking key points, immersive reading, and writing a draft of a new report based on collected information, Sarah managed to finish the task two hours after the end of working hours.
Potential Errors:
Timing and context sensitivity: The AI might suggest breaks or exercises at times when Sarah feels too pressured to take them, leading to frustration and potentially worsening her stress.
Solution: The AI should be more context-aware, prioritizing critical deadlines over health reminders during high-pressure moments. It should offer customizable options for timing breaks and exercises, allowing Sarah to adjust according to her workload.
Ineffective suggestion: The AI might suggest breaks or exercises at times when Sarah feels too pressured to take them, leading to frustration and potentially worsening her stress. Solution: The AI should be more context-aware, prioritizing critical deadlines over health reminders during high-pressure moments. It should offer customizable options for timing breaks and exercises, allowing Sarah to adjust according to her workload.
User overload: The AI provides too many suggestions at once (e.g., exercises, reading tools, screen time management), which could overwhelm Sarah, especially when she's already stressed.
Solution: The AI should prioritize one suggestion at a time based on the most immediate need, reducing cognitive load. It could also ask Sarah if she would like more than one suggestion or just focus on one task.
Insufficient Personalization: The AI might not fully account for Sarah's unique health conditions (PCOS, autoimmune issues) when suggesting physical activities or work routines, potentially leading to suggestions that are too generic or not suited to her specific needs.
Solution: The AI should integrate detailed health data to provide personalized suggestions, such as low-impact exercises for when Sarah is fatigued or dietary tips that consider her vitamin deficiencies and hormonal imbalance.
Ineffective Distraction Management: The AI's approach to managing Sarah's social media addiction might be too rigid, causing Sarah to feel restricted or even rebellious, leading to a breakdown in cooperation.
Solution: The AI should offer more flexible and motivational strategies, like positive reinforcement (e.g., rewarding Sarah for sticking to her limits) and gradually reducing screen time instead of imposing strict limits abruptly.
Unaddressed Mental Health Concerns: The AI focuses on productivity and physical health but might overlook the underlying mental health issues, such as Sarah's minor depression, leading to a lack of holistic support.
Solution: The AI should integrate mental health support, such as offering mood-tracking, mindfulness exercises specifically designed to combat depression, or gentle encouragement to seek professional help if needed.
Potential Misalignment with Urgent Tasks: The AI might misinterpret Sarah's procrastination as laziness rather than recognizing it as a symptom of her anxiety and hormonal imbalance, leading to ineffective or frustrating interventions.
Solution: The AI should be programmed to recognize signs of anxiety-driven procrastination and offer supportive interventions, such as breaking down tasks into even smaller steps or providing calming techniques before focusing on work.
Limited Adaptation to User Feedback: If Sarah ignores or cancels multiple AI suggestions, the AI might not adapt quickly enough, continuing to offer the same type of suggestions without adjusting its approach based on her responses.
Solution: The AI should have adaptive learning algorithms that adjust its strategies in real-time based on Sarah's feedback, gradually refining its approach to better suit her needs and preferences.

Potential to Increase Anxiety: Constant notifications and reminders from the AI could inadvertently increase Sarah's anxiety, especially if she feels she's not meeting expectations.
Solution: The AI should monitor the user's stress levels and adjust the frequency of notifications accordingly, offering more supportive and less frequent prompts when high stress is detected.
Incomplete Follow-Up on Task Progress: The AI might not follow up effectively on tasks that Sarah starts but does not complete, leading to unfinished work or lack of closure.
Solution: The AI should track incomplete tasks and gently remind Sarah to revisit them at appropriate times, offering help to break down or simplify tasks further if needed.

It is important to note, all four scenarios have been used and tested with our target group, in user study phase, in order to understand our users and to gain practical insights about their pain points and concerns.

4 User Research

As mentioned above, to develop a deep understanding of user needs and challenges, we conducted user research focusing on users' needs and pain points. This research involved gathering qualitative and quantitative methodologies, enabling us to design a more effective AI solution to support people at work place for maintaining focus and productivity enhancement.

To identify users' expectations and pain points, we conducted five semi-structured interviews with our target group, testing three different scenarios. This approach allowed us to explore users' experiences in detail, uncovering specific needs related to focus management and productivity.

In the evaluation phase, for analyzing the gathered insights, we employed affinity mapping to synthesize key points into distinct categories such as pain points, goals, and expectations. The research utilized both qualitative and quantitative user research methods, specifically:

- **Semi-Structured Interviews:** Combining structured and open-ended questions enabled us to gather rich, nuanced data while allowing flexibility in the conversation to explore deeper insights.
- **Affinity Mapping:** This method facilitated the organization of data, allowing us to visualize relationships among user feedback and categorize findings effectively.

The following important findings informed the creation of user personas and user journey, which represent the key traits and behaviors of our target users. This essential information guided us in generating potential solution ideas that align closely with user needs.

4.1 Findings

The following key user insights emerged from the semi-structured interviews, significantly shaping our understanding of user journeys and informing the development of user personas. These insights highlight the needs, preferences, and challenges faced by users in managing focus and productivity:

- **Self-Regulated Breaks:**

  Users prefer to control their break times, indicating that taking breaks should be a personal choice based on self-control and task priorities. The option to turn off reminders for breaks is essential, as users find unsolicited notifications intrusive.

- **Mental Health and Anxiety:**

  Users expressed discomfort when the system indicates anxiety, particularly before high-stakes presentations. This feedback highlights the need for sensitivity in how AI interacts with users' emotional states.

- **Data Privacy Concerns:**

  Users are open to tracking their progress and facial expressions if their data remains anonymous. This indicates a willingness to share information under specific privacy conditions. Users feel more comfortable with features like snoozing notifications or reminders if they can control them.

- **Focus Challenges:**

  Users with ADHD report significant difficulties in maintaining focus, leading to frustration. Frequent interruptions from meetings exacerbate these challenges, highlighting the need for strategies that accommodate their work style. Users also expressed a desire for features that provide meditation sessions to improve focus.

Figure 5: User Interview Findings.

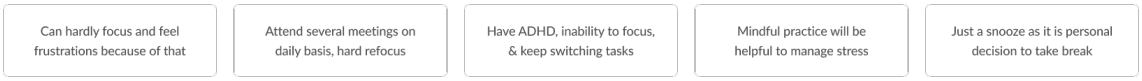

Figure 6: Key Findings.

- **Email Management:**

  Setting specific times for checking emails is viewed unfavorably, as some users prefer the flexibility to prioritize urgent communications without being restricted by preset schedules.

- **Motivational Features:**

  Users indicated that a rewards system could be a motivating factor in maintaining productivity, suggesting that gamification may enhance engagement. A simple reminder or snooze option for break notifications aligns with the user's preference for personal choice.

- **Boredom and Focus Loss:**

  Users reported feelings of boredom at work, contributing to a loss of focus. This underlines the need for engaging content and activities to sustain attention. There is a demand for features that allow for the translation of meeting transcripts into local languages, enhancing accessibility and understanding.

4.2 User Persona

When it comes to enhancing productivity, understanding user personas is crucial for developing tailored solutions. Three different user persona emerged from conducted user study. The final user persona is a 30-year-old financial analyst diagnosed with Attention Deficit Disorder (ADD) and Polycystic Ovary Syndrome (PCOS), seeking to improve focus and manage stress effectively. This user has experience in the financial industry but struggles with maintaining concentration, particularly during high-pressure tasks and multiple deadlines. She is suffering from fatigue, brain fog, and anxiety which led to procrastination and lack of focus.

Key characteristics of this user include a strong preference for autonomy over notifications and reminders, a need for tools that manage time and prioritize tasks, and a desire for recognition of achievements to boost motivation. The user is open to utilizing technology but requires an

interface that adapts to personal working styles. Understanding this persona is vital for creating a supportive AI solution that facilitates a productive work environment.

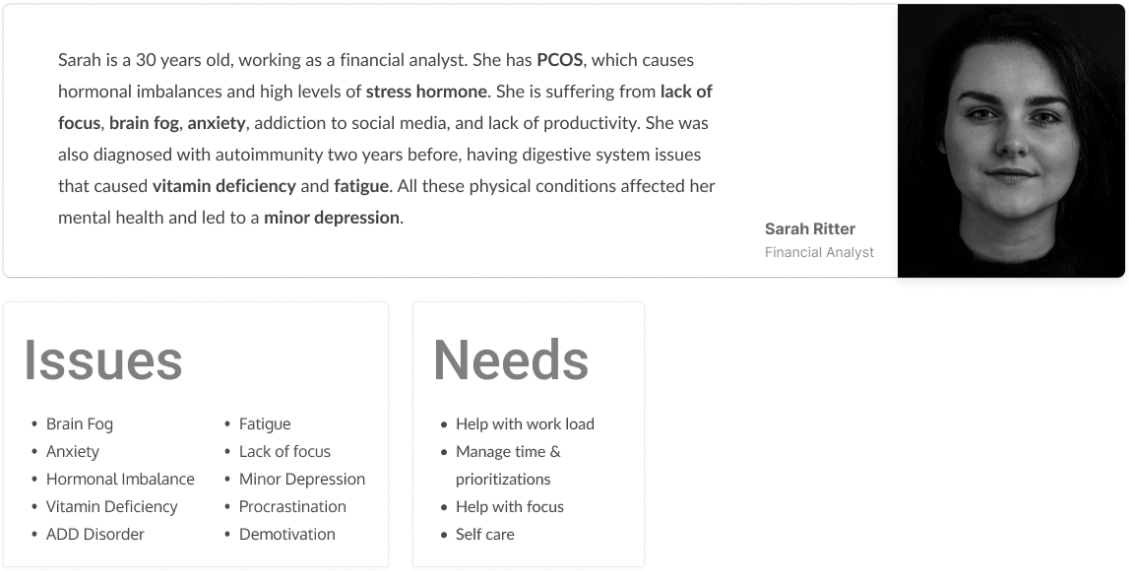

Figure 7: Final User Persona.

5 Development of Design

The design process for MayDay was iterative, starting with wireframes based on the defined scenarios, user research findings and competitive analysis. Prior to start designing the low- wireframes, it was important to define design style guide including color, typography, icons, and interactive components based on the crafted Mood Board. As we created the wireframes, we conducted usability testing to ensure that the interaction design was intuitive, and that the features provided genuine value to users. Feedback from these tests informed revisions, allowing us to refine the interface for better clarity and accessibility, while ensuring that user needs were consistently prioritized throughout.

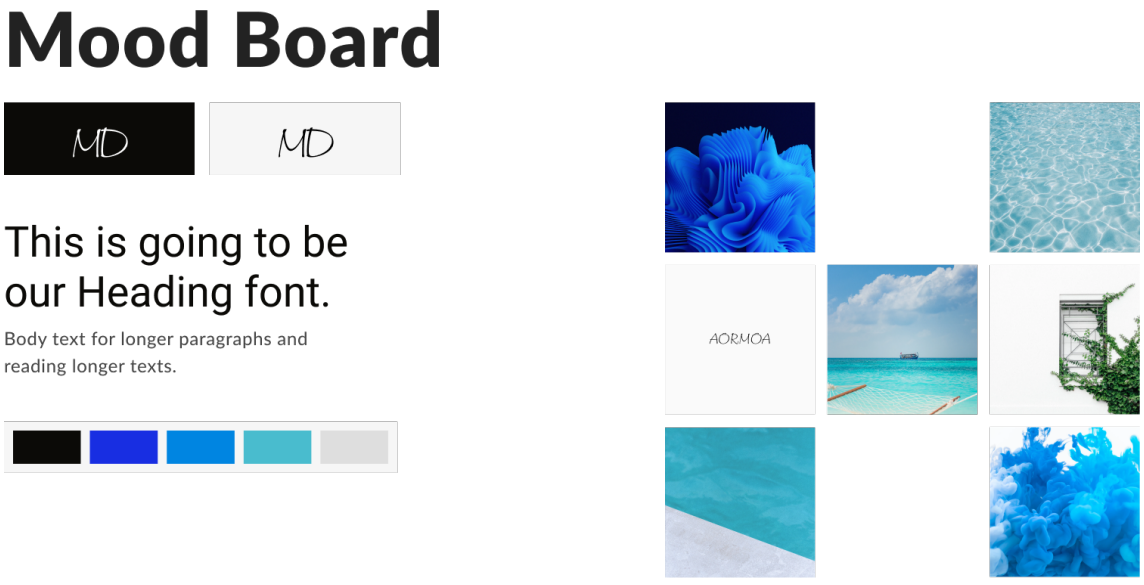

Figure 8: Mood Board.

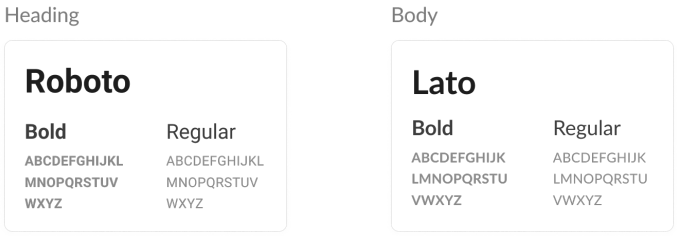

Figure 9: Typography.

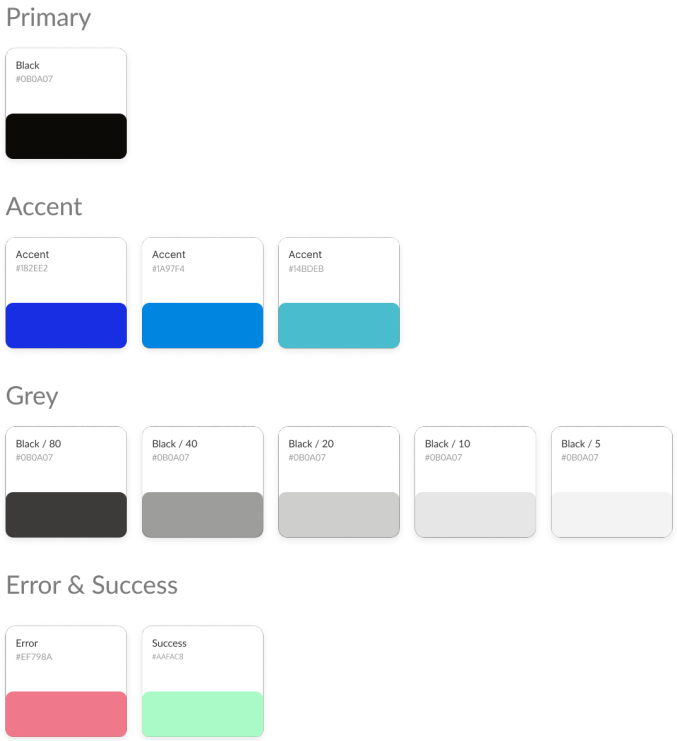

Figure 10: Colors.

5.1 Interactive Wireframes

The design of MayDay is complemented by interactive wireframes that serve as a visual blueprint for the user interface (UI) and user experience (UX). These wireframes illustrate the layout, functionality, and interaction flow of the application, ensuring that the design meets user needs effectively.

Objectives of Wireframes:

- User-Centered Design: The wireframes are created based on user insights gathered during the research phase, allowing for a design that addresses specific pain points and preferences.
- Clarity and Structure: Each wireframe provides a clear visual representation of how users will navigate through the application, outlining key features and interactions.
- Feedback Loop: The interactive nature of the wireframes allows for user testing and feedback, enabling iterative improvements before final implementation.

Key Features:

1. Home Screen:
   - Provides a dashboard overview of tasks, focus status, and upcoming reminders.
   - Includes quick access buttons for starting a deep work session and checking notifications.
   - Provides flexibility with scheduling daily/weekly focus plan, setting quite time by blocking notifications that have less importance and.

- Displays current emotional and mental state by tracking facial expressions, eye pupils, heart rate, and blood pressure.

2. Email Prompts:
   - AI scan and simplifies complex information like work related emails.
   - Reduction of cognitive load by delegating work to the AI like scheduling a follow up meeting or auto replying emails.

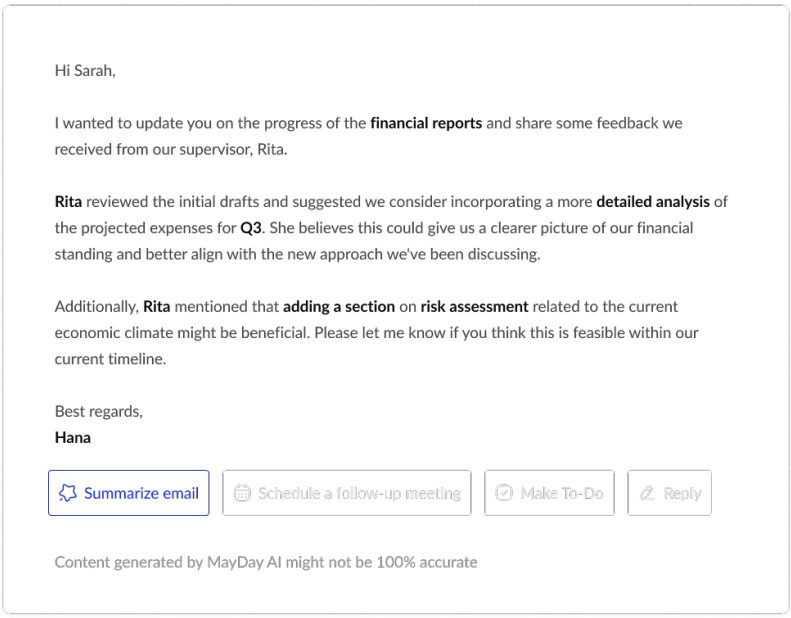

Figure 11: AI Email Prompts.

3. Task Management:
   - Displays a list of tasks based on their priority with options to prioritize, snooze, or mark as complete.
   - Allows users to categorize tasks based on urgency or type.
   - Suggests a good starting point into tasks with dividing each of them into small steps.

4. Focus Mode Activation:
   - Offers users the option to activate deep work mode, with settings to customize the duration and background music preferences. The AI automatically reduce or increase the span of the focus time and mute or unmute the background music by tracing user condition based on real time data processing.
   - Includes a visual timer that shows the remaining focus session time.
   - Displays the overall focus time and reward user with points. The collected points will be used to plant a real tree in the forest once it reached a certain point.

5. Progress Tracking:
   - Visualizes user achievements and progress through graphs and reward notifications.
   - Encourages users to maintain focus by showcasing their productivity milestones.
   - Every personal habit, mindful sessions, self-care activities and social activities will add to the collected points. Collected points will be used to plant a real tree in the forest once it reached a certain point to encourage user repeat them and make a healthy sustainable routine.

6. Settings Menu:
   - Provides options for customizing notifications, managing privacy settings, and adjusting personal preferences.

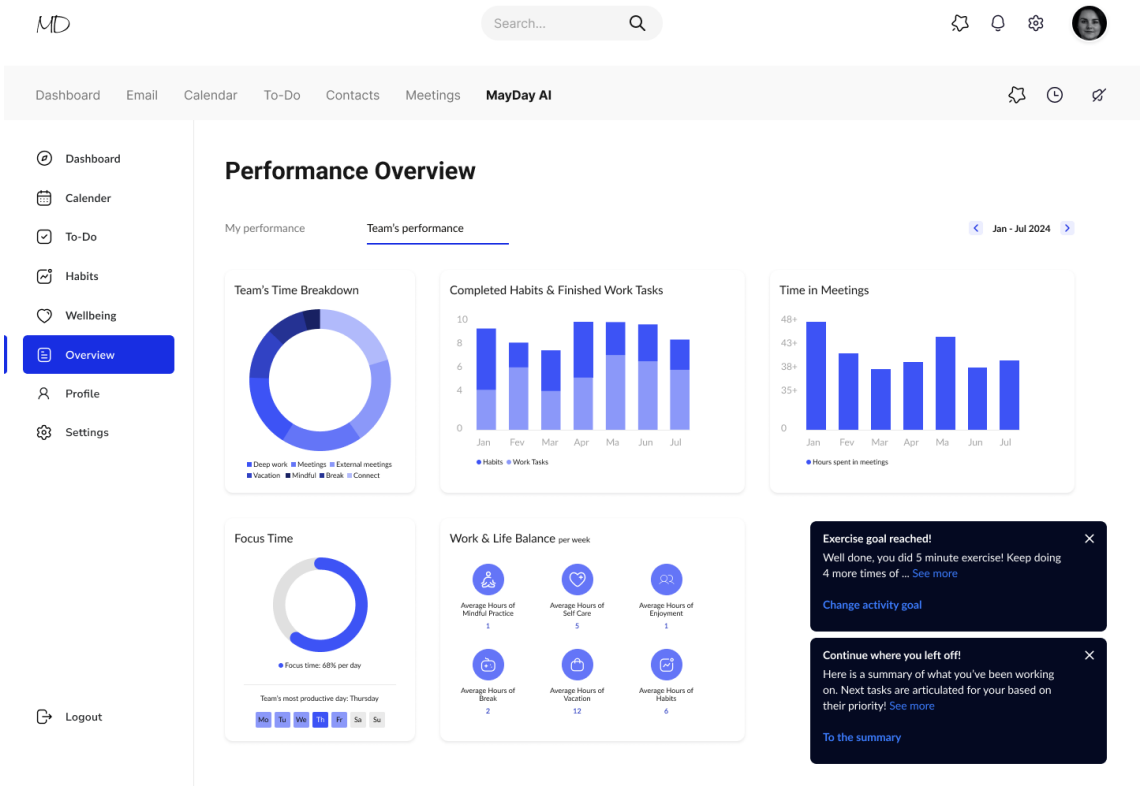

Figure 12: Performance Overview.

- Allows users to opt in or out of tracking features and manage data sharing preferences.

These wireframes play a crucial role in the development process, ensuring that the final product aligns with user expectations while providing an intuitive and engaging interface. Through continuous testing and iteration, these wireframes will evolve into a fully functional application that meets the needs of its users effectively.

6 Enactment

To obtain actionable feedback from our users and ensure that our design solutions were aligned with their expectations, we opted for enactment testing rather than a traditional usability test. This decision was influenced by the fact that an insufficient number of interactive wireframes had been developed, requiring further iteration—something we were constrained from doing given the limited time available. As a result of these time constraints, we were only able to conduct one enactment session, which we acknowledge as a significant limitation in our findings.

Enactment method allowed user to perform simulated tasks and engage with the system in scenarios that mimic their actual work environment, which enabled us to gather qualitative data on user behavior, emotional responses, and how he engage with interruptions. This approach helped us explore the MayDay system's potential.

We set up a single enactment session, due to time limitations, that placed the participant in a workplace scenario where interruptions were simulated using predefined scripts. The participant was asked to resume tasks after interruptions, use the AI's features for managing breaks, notifications, and task resumption, and provide verbal feedback throughout the session. We observed the participant's actions, noting their ease of use, decision-making process, and emotional responses to interruptions and AI interventions.

During the enactment test, participant responded positively to MayDay's interruption management features. He found the performance overview, task summaries and personalized well-being suggestions particularly useful but expressed a desire for more control over when the AI provided these recommendations. Based on this feedback, we will adjust the timing and frequency of notifications to give users more autonomy over their workflow.

Furthermore, participant appreciated the ease of resuming work after interruptions, facilitated by automated task summaries that allowed him to quickly pick up where he left off. Lastly, the

participant found the personalized break reminders, self-care suggestions, and prompts to connect with colleagues particularly helpful in maintaining a balanced work-life routine throughout the day.

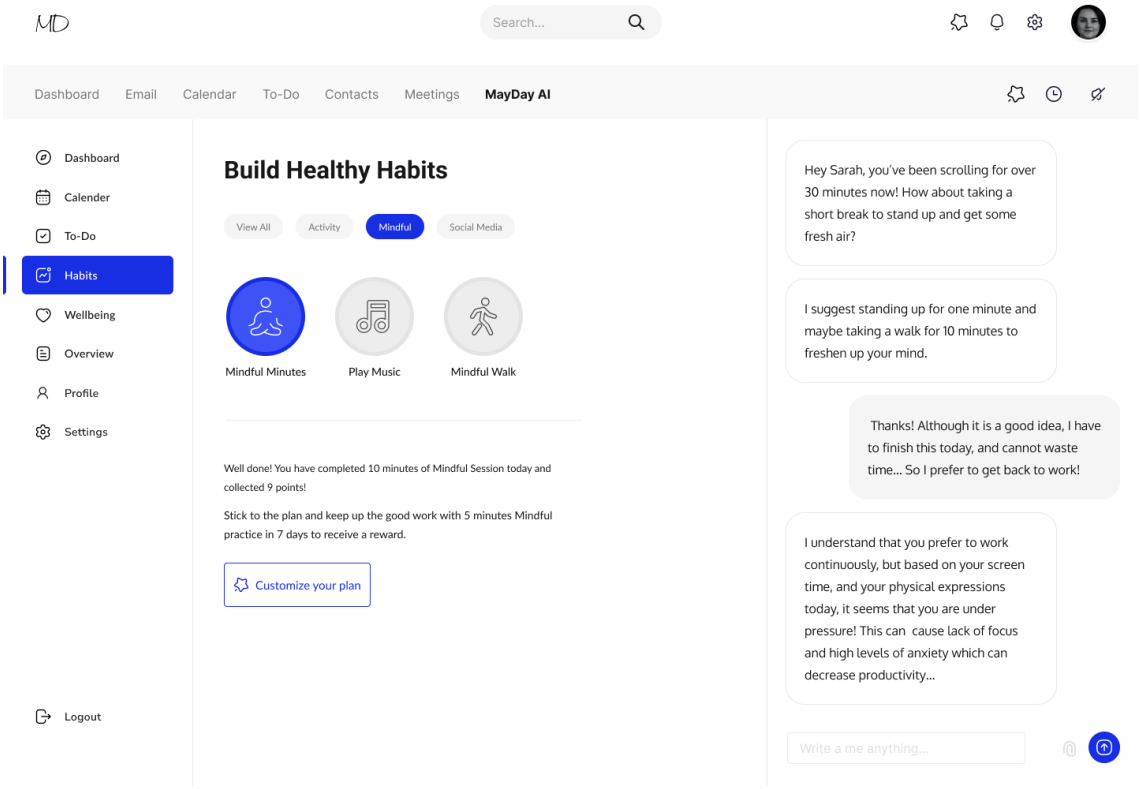

Figure 13: Build Healthy Habits.

7 Conclusion

In conclusion, MayDay represents a well-rounded, innovative approach to addressing the challenges of modern work environments, combining personalized productivity features with wellness and social support tools. Through its unique focus on managing interruptions, reducing cognitive load, and fostering enjoyment, MayDay creates a workspace that prioritizes both efficiency and mental well-being. Its integrated features, such as prioritizing critical tasks, automating routine work, and encouraging self-care to improve user focus, reduce stress, and enhance overall health.

Additionally, by incorporating social connection reminders and personalized break suggestions, MayDay recognizes the importance of human interaction and self-care in maintaining long-term productivity. This multi-dimensional support system helps workers not only meet their professional goals but also take care of their mental and physical health, thereby promoting a more balanced, sustainable work environment. Ultimately, MayDay's approach transforms the conventional productivity tools by addressing the deeper, often overlooked needs of today's workforce, ensuring a healthier, more supportive, and focused workday.

Moving forward, the next step of this project will be to develop more responsive components, interactive wireframes to conduct usability testing with a diverse group of users and refine the design based on the feedback from these testing sessions. By increasing the fidelity of our prototypes, we can conduct more detailed and comprehensive usability tests, allowing for more robust findings. Furthermore, expanding the sample size and diversity of participants in future sessions will help ensure that the AI system meets the needs of a wider range of users and work environments.

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