

Adaptive Task Manager for ADHD Users

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ABSTRACT

The goal of the Adaptive Task Manager project is to offer a customized task management solution tailored for people with ADHD. ADHD individuals frequently encounter difficulties with focus, task organization, and time management as a result of frequent distractions and cognitive overload. Existing task management tools do not have the flexibility and adaptability needed to accommodate the changing focus patterns of ADHD users, resulting in frustration and reduced productivity. This project presents a system that divides tasks into smaller steps and adapts reminders and task difficulty according to user behavior. Important aspects consist of breaking down tasks, a focus mode that adjusts to the user, and a dashboard for tracking progress visually. The system is created to adjust to user abilities and minimize interruptions, offering a smooth process for users with ADHD to efficiently accomplish tasks. The solution is influenced by adaptive learning platforms and includes design features that minimize cognitive load, providing a customized experience in task management.

Keywords: ADHD; task management; adaptive interface; personalized task breakdown; dynamic reminders; focus mode; cognitive assistance; productivity; user behavior tracking; visual dashboard.

1. INTRODUCTION

The Adaptive Task Manager project is created to address the specific difficulties faced by ADHD users in managing tasks. The users who have ADHD frequently struggle with maintaining focus, arranging tasks, and effectively managing their time due to distractions. The users of this project are working professionals, students and people managing daily routines. It's for all who have trouble with productivity and organization. The software's main goal is to complete tasks by breaking them down into smaller and easier steps and getting reminders to stay on track.

The task management tools that are used today are often too complex and don't adjust to the different focus levels of ADHD users. This can cause frustration, distraction and inefficiency. Our application is designed to adapt the needs of ADHD users by providing personalized task breakdowns and reminders based on their focus patterns. By doing this, the tool will help users achieve their goals more efficiently and with less mental strain.

2. DISCUSSION OF ISSUES

Cognitive Issues:

- **Distractions and Loss of Focus:** ADHD users are subject to frequently losing focus. They struggle with retaining attention over a period of time, experiencing mental fatigue when they are performing tasks. Staying focused is an issue they deal with that can result in incomplete tasks. This reduces motivation and productivity more.
- **Overloading of Tasks:** Handling a large task list without clear prioritization is overwhelming for ADHD users. When too many tasks are presented at once, they may get indecisive and skip the required steps.
- **Memory Retention:** Forgetting to complete their tasks and missing deadlines is one of the cognitive issues that ADHD users face. They may be forgetful about switching between tasks and might not be able to maintain awareness of their current task priorities.

Technical Issues:

- **Task Adaptation:** Creating a system that adjusts task difficulty and reminders based on real-time user behavior can be technically complex. It requires accurate focus tracking, timely adaptive reminders, and robust algorithms to handle these features.
- **Cognitive Load Minimization Through Interface Design:** Designing an interface that reduces cognitive load without sacrificing functionality is a major challenge. Balancing simplicity and usability while incorporating features such as task breakdowns, focus mode, and a visual dashboard requires careful application of user-centered design principles and thorough testing.

Social Issues:

- **Collaboration and Accountability:** ADHD users might struggle to keep up with deadlines and might fail to contribute properly in a team setting. This can lead to frustration for themselves and largely their team members. Tracking team tasks and prioritization of work can be a big issue for them.
- **Communication Gaps:** ADHD users may struggle with understanding or remembering issues provided verbally or in written format. Additionally, they may be overwhelmed by the sheer amount of information leading to difficulty filtering through what is essential, and what isn't.

Other Issues:

- **Task Flexibility:** ADHD users may find it difficult to adapt to rigid task structures. If a task management tool lacks flexibility, it may not be able to accommodate

their need to switch between tasks when focus drifts. This can lead to increased frustration and disengagement towards a task.

- **Tool Limitations:** Many task management tools may not be tailored towards ADHD users, who benefit from visual aids, reminders, and custom task lists. Without these capabilities, traditional tools may feel restrictive and unhelpful.
- **Managing Multiple Task Sequences:** ADHD users may struggle with managing multiple tasks or handling multiple projects. Switching between tasks, remembering details, and maintaining task order can lead to poorly executed work for them, especially with the lack of guidance or task breakdowns.

3. APPROACH

Our project focuses on creating an Adaptive Task Manager for ADHD users. By employing various processing techniques, we break down complex tasks, personalize reminders, cater to unique user needs, and continuously track their progress.

Key Techniques include:

- **Task Breakdown and Adaptive Task Adjustment**

The system divides tasks into smaller subtasks, manageable within short time frames, reducing cognitive load for ADHD users. It also adapts subtasks based on user performance, maintaining productivity by modifying task complexity.

- **Focus Mode**

The system offers a focus mode that reduces distractions based on user behavior patterns. It prioritizes tasks and minimizes task overcrowding to help users stay focused.

- **Visual Dashboard**

A visual dashboard tracks task progress using an intuitive interface designed for organizing tasks effectively.

- **Reminders and push notifications**

The system provides timely push notifications that lets the user stay on track with the task at hand without distractions.

4. PRIOR AND RELATED WORK

Many different tools and research studies are helping us create the Adaptive Task Manager for users with ADHD. There are many task management solutions available like Todoist, but they usually only offer basic task tracking and reminder systems. These tools don't really work well for people with ADHD as they require flexible and adaptive tools. Most of the task management apps use a one-size-fits-all approach. They give users static task lists that don't consider changes in focus levels or the need to break down tasks in a personalized way.

Research into adaptive learning platforms like Duolingo, shows that changing the content and interactions based on a user's performance is very helpful. Duolingo adjusts the way tasks or learning materials are presented based on the user's current skill

level or focus. This makes the learning experience more effective and engaging. We plan to use this idea in our Adaptive Task Manager. We will make dynamic task adjustments where the difficulty of tasks is increased or decreased based on how well the user's focus mode. This will be modified based on the specific cognitive needs of users with ADHD.

Many existing tools, like Habitica, leverage gamification to engage users through reward systems. For ADHD users, who often struggle with sustaining motivation, these gamified elements provide immediate feedback and positive reinforcement, helping them stay focused. Similarly, tools like Forest and methods like the Pomodoro Technique emphasize structured time management, where short bursts of focused activity are followed by rest periods. These systems have proven effective in promoting productivity by encouraging focus during limited time intervals. However, while these tools provide valuable insights into time management and focus, they do not fully address the unique challenges faced by ADHD users, who require adaptive interfaces that can adjust dynamically based on their behavior and needs.

Our platform aims to bridge this gap by offering a focus mode that customizes task breakdowns, reminder intervals, and focus sessions in real time, creating a personalized experience for each user. The system can adjust focus modes and break intervals to optimize the user's productivity. Our platform will feature a dynamic task breakdown system specifically designed to alleviate the overwhelm often experienced by ADHD users when faced with large tasks. Through breaking down tasks into smaller, more manageable steps, the platform will help users maintain focus and avoid slackness. For ADHD users, large tasks can feel daunting, often resulting in avoidance or decreased productivity. By adapting task breakdowns to the user's current focus and motivation levels, the system makes each task feel more approachable and achievable.

Moreover, we have implemented reminders with predefined time intervals, ensuring users stay on track with their tasks. Once a time interval is set, the system frequently sends a beep sound and push notification, prompting users to complete their tasks. These reminders are consistent and designed to keep users engaged and focused throughout their day, while also offering flexibility to adjust intervals based on user preferences.

In summary, our platform builds on the principles structured time management, but goes a step further by providing a fully adaptive experience tailored to ADHD users. Through continuous learning and real-time adjustments, the platform will empower users to stay engaged, maintain focus, and ultimately improve productivity, creating a supportive environment that evolves as their behavior and needs change.

5. DESIGN

The Adaptive Task Manager is designed catering the unique needs of ADHD users. Its conceptual design focuses on simplifying interactions for the users and thus reducing cognitive load by dynamically adjusting the tasks and reminders based on user behavior. Our primary goal is to help users complete tasks by breaking them into manageable subtasks and tailoring the system

to their success and focus patterns. The users should be constantly engaged with the system so they can track their progress and complete their tasks.

Key Design Features:

- **Task Breakdown and Adaptive Task Adjustment:**

Users will enter their task description and details into a language input which will then be used by the system to break it down to smaller tasks. This breakdown process is subject to user performance and adaptivity to given tasks which is dependent on the focus mode of the user taken as an input. For example, if a user is comfortable with small task segments, all his larger tasks will be divided into smaller subtasks for better efficiency.

The adaptive element of the task manager is designing the amount of steps required to perform any task. The system will consider the user metrics and increase or decrease the number of steps required to reach the end result for any sub tasks. For example, if a user struggles with steps having more than a couple instructions, the user should change the focus mode of the logged in user. The system will then break these instructions into individual steps ensuring granularity and fault identification.

- **Focus Mode:**

A distraction free “Focus Mode” can be used to hide non-essential tasks and notifications, which allows users to concentrate on one task at a time. This mode will also limit interruptions by reducing notifications and focusing on task completion within a specified time frame. Users will be able to set custom focus intervals, and taking this as an input the system will suggest adjustments based on performance.

- **Visual Dashboard:**

The Visual Dashboard will offer real-time feedback on task progress through a color-coded interface. Checklist indicators will give users a visual representation of their completed, pending, and overdue tasks. This design ensures that ADHD users can stay motivated by easily tracking their accomplishments. The dashboard will also allow users to view their current tasks in simplified forms, reducing visual clutter.

- **Time-to-time Reminders:**

Our system will include a time to time reminder feature that allows users to get reminded of the task they are doing and how much time has passed since they are doing the task at hand. This section will focus on displaying the time spent and grabbing the attention of the user back to the task at hand by providing timely reminders only of the user’s task to avoid attention deviation. A beep or an alert sound will also be given out by the system as an alert. To stop the reminders the users can stop or pause the task that they are doing, reducing attention deviation strain.

Rationale for Design Choices:

The design mainly takes into consideration the specific cognitive and behavioral challenges that are regularly faced by ADHD

users. A traditional to-do list often overloads users with information and also fails to adapt to their changing focus and attention patterns. By having a system that integrates dynamic task breakdowns and adaptive focus modes, the system aims to help users maintain productivity without becoming overwhelmed.

Advantages:

- The dynamic task adjustment provides personalized assistance. This ensures that users receive task breakdowns that depend directly on their focus and modes.
- Focus Mode aims to minimize distractions and help users who frequently switch tasks or lose focus regain their productivity.
- The visual dashboard will enhance task tracking and provide instant feedback and motivation through visual progress indicators available on the dashboard by tracking the time that is spent for a particular task.

Disadvantages:

- A little too much adaptation can also sometimes confuse users who prefer consistent task structures. To tackle this problem, we will provide manual override options that allow users to ignore the dynamic task adaptation. This allows users to customize their task display if the adaptive UI system makes unexpected changes. Thus the system will offer customization options that can filter out irrelevant team data.

UI Mockup:

- **Dashboard View:**

The dashboard provides a clean, minimal interface which is designed to reduce cognitive overload for ADHD users. It describes all the todo tasks that are available for a user along with the time they have spent on it. The layout is fairly very simple and not cluttered in nature. This ensures that users can quickly find information they need without becoming overwhelmed. Users can also have an option where they toggle between different views, like switching to and from Focus Mode for a distraction free environment.

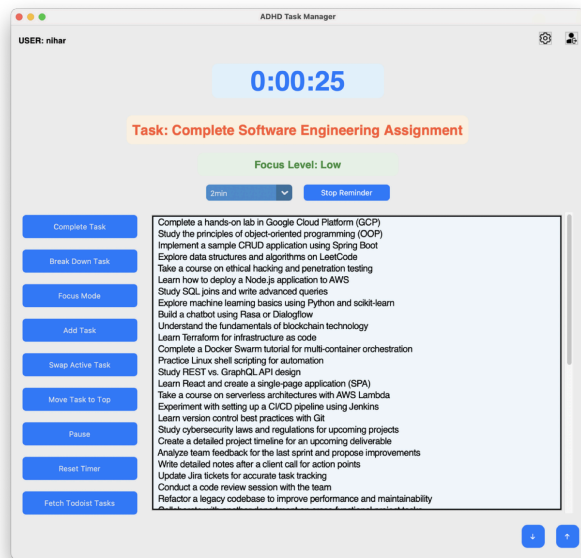


Fig 5.1 - Dashboard View

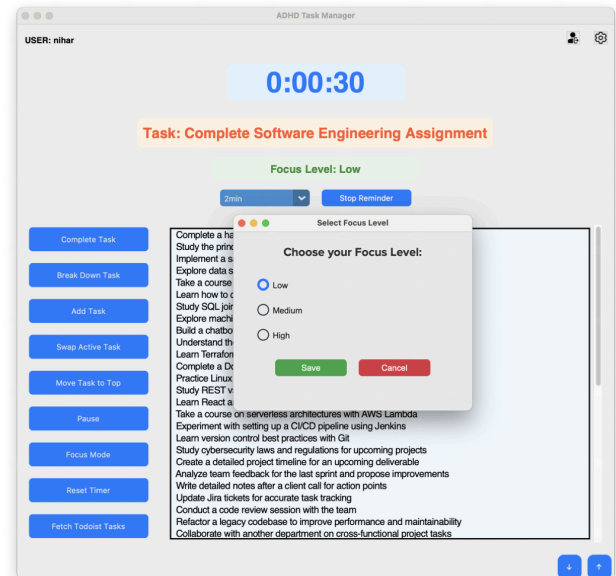


Fig 5.3 - Choose Focus View

- **Focus Mode:**

This interface shifts the user's attention to one task at a time, hiding all other tasks and notifications to create a distraction free workspace. The Focus Mode is designed to help ADHD users maintain concentration by limiting external distractions and focusing their energy on a single task.

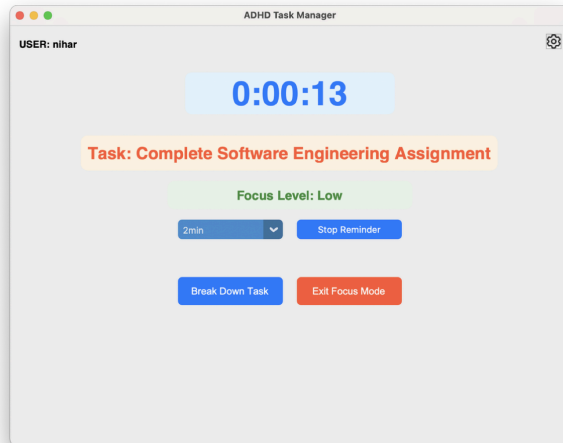


Fig 5.2 - Focus View

6. IMPLEMENTATION

6.1 Architecture/Data Flow

The purpose of the Adaptive Task Manager for ADHD Users is to assist users in efficiently handling their tasks by linking with Todoist and offering a simple interface. The program is developed using Python and the Tkinter library for the GUI. The setup consists of multiple essential elements that collaborate to offer a smooth task coordination encounter.

User Authentication: The process starts with a login page where users input their sign-in information. The LoginPage component validates the credentials by comparing them to a predetermined user dictionary. After logging in successfully, the callback function on_login_success will load the main window thus moving the user to the main application.

Main Application: The central component of the app is the ProductivityTimerApp, which serves as the primary tool for managing tasks, including creating, monitoring, and finishing them. This part consists of different widgets like buttons for adding, removing, and relocating tasks, a listbox for showing tasks, and a timer for monitoring task length. The primary application communicates with other parts to synchronize tasks with Todoist, save tasks on the device, and handle user inputs.

Todoist Integration: To ensure tasks are efficiently managed, the app fetches tasks from a local JSON file specific to each user. The task-fetching function reads and refreshes the task list from this file, ensuring synchronization with the user's local data. Additionally, the functions create_task and complete_task enable the app to add new tasks and mark existing ones as completed, updating the local JSON file to maintain an accurate task roster.

Local Task Storage: The application makes use of JSON in order to store tasks locally. This ensures that the offline access and backup is proper. The `load_json_file` and `save_json_to_file` functions are written to handle loading and saving tasks to JSON files. These functions are meant to interact with the main application to load, save, update tasks.

Task Management Widgets: The application has widgets for task management. ADHD users add tasks using the `add_task` functionality, delete tasks using the `delete_current_task` functionality, and move tasks up or down using the `move_task_up` and `move_task_down` functions. These talk to the main application to update the task list and timer display.

Timer Control: The application has a timer which tracks the time spent on each task. The timer calculates each and every second. It can also be paused, resumed, or reset. The `update_timer_display` function handles updating the timer display. The `toggle_pause` and `reset_current_task_timer` functions are controllers of the timer's state. These functions communicate with the main application in order to update the timer display and log task completion times.

Sound-Based Focus Reminders: To help ADHD users stay focused, the application plays a beep sound at regular intervals. This feature is designed to provide consistent auditory reminders, ensuring users remain attentive to their tasks. The sound is controlled directly by the main application and cannot be muted or adjusted by the user.

Focus Mode: The application includes a focus mode that provides a minimal UI to help users focus on the current task. ADHD users can toggle this mode using the `toggle_focus_mode` function. This function communicates with the main application to switch between the main UI and a minimal UI.

Task Completion Logging: When a task is completed, the application logs the task details, which includes the username, task name, start time, and end time. The `log_task` function handles logging task details, while the `complete_local_task` and `complete_task` functions manage task completion. These functions communicate with the main application to log task completion and update the task list.

State Management: The application saves the current state (task name, start time, total seconds) to a JSON file when closed and loads the state when reopened. The `load_state` function handles loading the state, while the `on_closing` function handles saving the state. These functions communicate with the main application to manage its state.

6.2 Interface

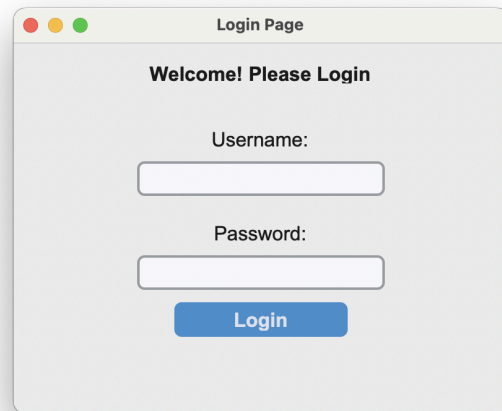


Fig 6.1 : Login Page

This is where users log into their account to access their tasks.

UI Elements:

Username Field: A text box where users enter their username.

Password Field: A text box where users enter their password.

Login Button: A blue button that logs them into their account.

User Actions:

The user enters their credentials and clicks on the blue "Login" button. If successful, they are taken to Fig 6.2's main dashboard.

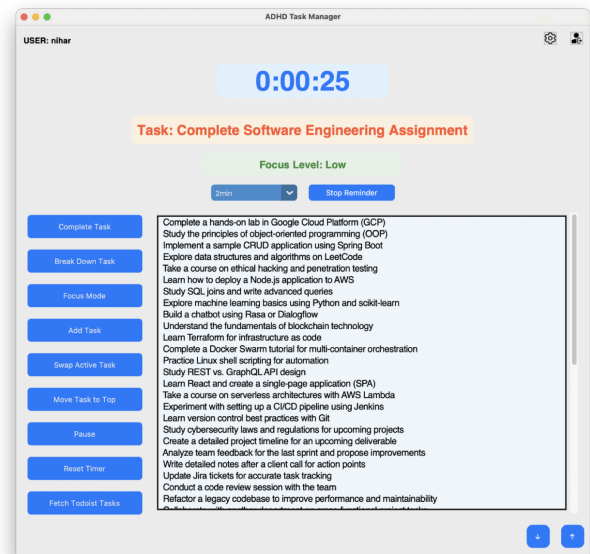


Fig 6.2 : Main Task Management Screen (ADHD Task Manager)

This is the main dashboard where users can view, manage, and track their tasks.

UI Elements:

Timer Display: Shows how much time has been spent on the current task.

Task Display: Shows the currently active task.

Task List: Displays all tasks in a scrollable list.

Logged-in Status: Displays who is logged in.

Action Buttons:

Focus Mode: Starts a focused work session on a selected task.

Complete Task: Marks a selected task as complete.

Add Task: Opens the task input interface (as seen in Fig 6.3).

Swap Active Task: Changes which task is currently active.

Move Task to Top: Prioritizes a selected task by moving it to the top of the list, which will be the next to be done.

Pause: Pauses the timer for the current task.

Reset Timer: Resets the timer for tracking time spent on tasks.

Fetch Todoist Tasks: Syncs tasks from Todoist, an external task management tool.

User Actions:

The user can review their existing tasks in the list. For example, they may see tasks like "Complete a hands-on lab in Google Cloud Platform (GCP)"

To start working on a specific task, they can click on it and then press "Focus Mode", which will take them into a distraction-free timer mode (as shown in Fig 6.4).

Once they finish a task, they can select it from the list and click "Complete Task", removing it from their active list.

If they want to add more tasks, they can click on "Add Task", which will open up a new window for inputting new tasks (as shown in Fig 6.3).

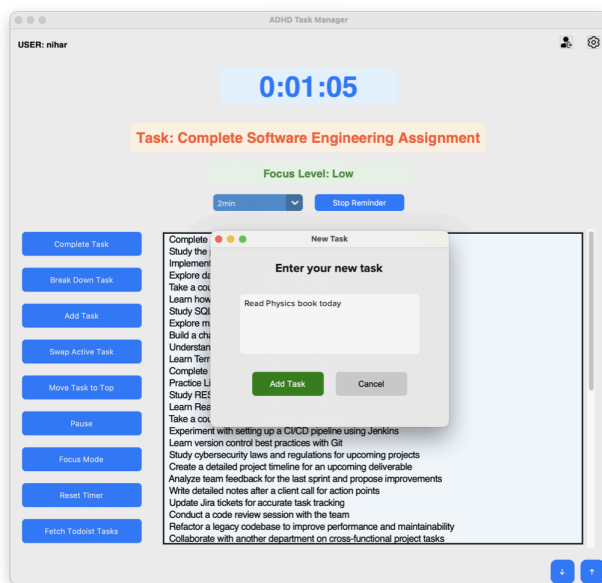


Fig 6.3 : Task Input Interface (Add Task)

This screen allows the user to input a new task into the system.

UI Elements:

Text Field: A blank text box where the user can type in a task.

Add Task Button: A green button that confirms and adds the task to the task list.

Cancel Button: A gray button that cancels the action and returns the user to the previous screen.

User Actions:

The user types a new task into the text field, such as "Finish project report."

After entering the task, they click "Add Task" to save it to their list.

If they change their mind, they can click "Cancel", which will discard the input and return them to the main screen without saving.

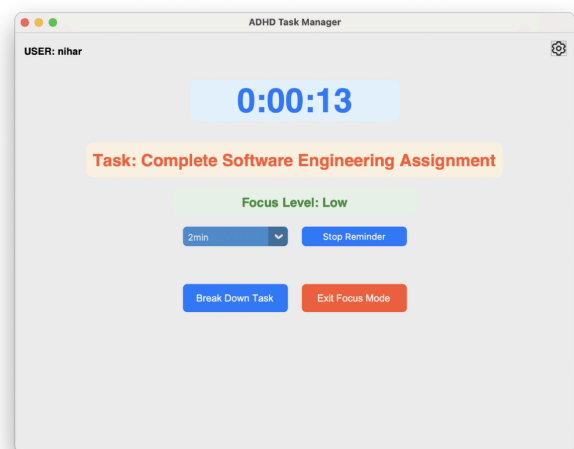


Fig 6.4 : Focus Mode Interface (Productivity Timer)

This screen represents a focused work session where users concentrate on one specific task without distractions.

UI Elements:

Timer Display: Shows how much time has passed since starting focus mode. In figure it's 13 seconds.

Task Display: Shows which task is being worked on. In figure it's "Complete Software Engineering Assignment."

Exit Focus Mode Button: Allows users to exit focus mode and return to the main dashboard.

User Actions:

The user enters focus mode by selecting a task from Fig 6.2's dashboard and clicks on the "Focus Mode" button.

While they are in focus mode, they work on one specific task without distractions. The timer tracks how long they have been working.

Once the task is finished or the user needs a break, they click the "Exit Focus Mode" button which returns them to Fig 6.2's main dashboard.

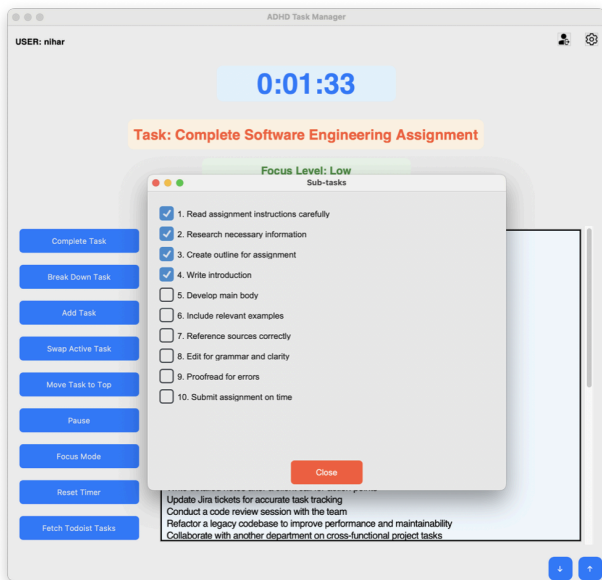


Fig 6.5 : Task Breakdown Interface

This screen allows the user to break task using AI

UI Elements:

Sub-tasks list: Display the sub-tasks provided by gpt api.

Checkbox before sub-task: Let the user select the breakdown tasks to add into the task list.

Close Button: After choosing the subtasks, use this button to close the window and add the tasks into the list.

User Actions:

The user clicks the break down task button.

The application will use the current focus level to determine the number of subtasks.

Then the gpt4 api will be used to generate subtasks and the user can select the subtasks to add into the task list.

Once the close button is clicked, the tasks are pushed into the list and the user returns to the main interface.

Let's take an example scenario below:

- Imagine XYZ user wants to complete his daily tasks using this system:
- First, the user logs into his account using his credentials on the login page (Fig 6.1).
- After logging in, he sees his list of tasks on the main dashboard (Fig 6.2). He notices that he still needs to complete "Complete Software Engineering Assignment"
- He clicks on this task and then presses "Focus Mode." This takes him into Fig 6.4's interface where he works uninterrupted while tracking his progress with a timer.
- After working for some time, he finishes the task. He clicks the "Exit Focus Mode" button, returning him to Fig 6.2's dashboard.
- To mark this task as complete, he selects it from his list and clicks "Complete Task" button removing it from his active tasks.

- Finally, the user decides to add another new task for the next day by clicking the "Add Task" button which opens up Fig 6.3's input interface. He types some todo tasks and clicks "Add Task."
- Besides, if the user wants to break the task into multiple smaller ones. He can click the breakdown button. A new window will show up and display the subtasks returned by the gpt4. He can then choose the tasks he needs. Those tasks will be added into the main list.

By following these steps, the user efficiently manages his tasks using various features of this productivity tool.

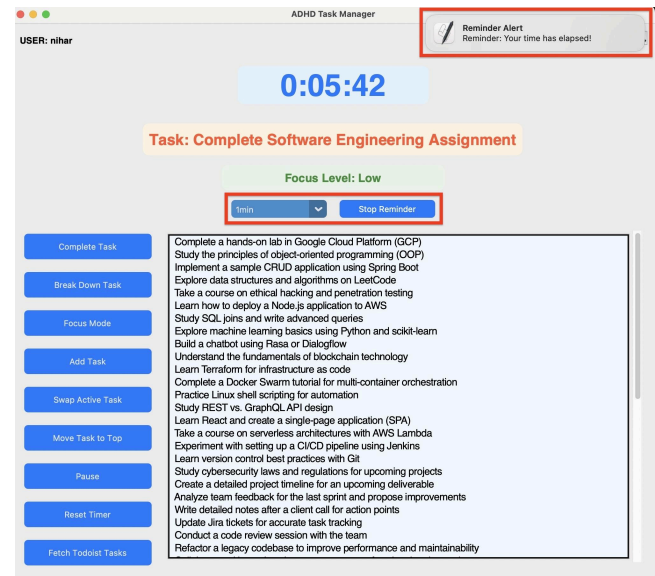


Fig 6.6 : Reminder Alert Notification

This functionality give alerts for elapsed time

UI Elements:

Reminder timer list: Display the timer options to set reminders..

Stop Reminder Button: The button is switched from Start Reminder button as soon as the user selects a time interval and sets the reminder. This button stops the reminder alerts.

User Actions:

The user selects the time interval to receive reminders for his active task. The interval ranges from 1 minute to several hours.

After pressing on the Start Reminder button, the timer begins and after successful passage of the time interval, a beep sound along with a push notification from the user machine is triggered which alerts the user of the deadline.

The timer repeats for the set interval until the user clicks the Stop Reminder button and ends the alerts.

Let's take an example scenario below:

- Imagine XYZ user wants to set reminders for one of his active tasks using this system:
- First, the user logs into his account using his credentials on the login page (Fig 6.1).

- After logging in, he sees his list of tasks on the main dashboard (Fig 6.2). He selects the task and notices the “Start Reminder” button next to the task. He selects the time interval from dropdown and clicks on the “Start Reminder” button.
- After 1 minute, the system triggers a beep sound and a push notification on his device, reminding him of the task. These alerts continue every 1 minute until he stops the reminder. This is shown in Fig 6.6.
- When the user no longer needs the alerts, he clicks the “Stop Reminder” button, stopping the notifications.

By following these steps, the user effectively uses the reminder feature to stay focused and meet his deadlines.

7. EVALUATION

Participants

The evaluation will involve three groups of 5 to 10 participants each over the period of 1-2 weeks. Firstly we start with the primary target users which will consist of individuals who are diagnosed with ADHD. These users will be the intended audience for our developed application. The feedback given by the users and performance will help determine how effectively the Adaptive Task Manager addresses challenges that we are trying to address. These challenges can include maintaining focus, managing time, and reducing cognitive load. Recruitment for this group involves online communities, students that face difficulty in focusing to finish university workload and volunteers.

Secondly, general users without ADHD will also participate in order to test the application and its overall usability and appeal. This will ensure us that the tool is not only functional for the ADHD population but also useful for broader audiences who may benefit from adaptive task management and breakdown solutions.

Finally, stakeholders like ADHD specialists, doctors, educators, and professionals who are certified to diagnose ADHD and caregivers will be included to provide expert perspectives in the future. These professionals can evaluate whether the system aligns with therapeutic and educational goals for ADHD users thereby helping us provide valuable insights for refinement.

Tasks for Participants

Participants will perform multiple tasks which are designed to test different aspects of the Adaptive Task Manager. Initially, they will set up the system by entering tasks manually to get it processed by automated task breakdown. They will then engage with Focus Mode to work on tasks in a distraction free environment and can also observe how adaptive intervals function.

Participants will be able to use the Visual Dashboard to monitor task progress by making use of the timer and reminder features on the main dashboard UI. These tasks aim to measure both individual task performance and productivity and offer a comprehensive view of the tools and its functionality.

Data Collection

Data will be collected through a combination of quantitative and qualitative methods. Quantitative metrics will include task completion rates, time spent on tasks, and patterns of focus and break intervals. These metrics will help assess the tool’s impact on productivity and efficiency.

Qualitative feedback will be gathered through surveys and interviews to capture opinions on system usability, adaptability, and functionality. Additionally, observational data will provide insights into any challenges participants face while interacting with the tool. Comparison metrics will be collected by having participants interact with a traditional task management tool, such as Todoist, to establish a baseline for evaluation.

Analysis

Quantitative data will be examined to compare task completion rates and time efficiency between ADHD and non-ADHD participants. In addition, focus and break patterns will be correlated with productivity outcomes to determine the effectiveness of adaptive intervals.

Qualitative feedback will be analyzed to uncover recurring usability issues or feature requests. Suggestions for improvement will be prioritized for future iterations of the tool. The overall assessment will determine whether the tool successfully enhances productivity for ADHD users, as well as its usability for general audiences.

8. CONCLUSIONS AND FUTURE WORK

Accomplishments

The Adaptive Task Manager project has made meaningful strides in addressing the everyday challenges faced by individuals with ADHD. One of its standout achievements is the introduction of task breakdowns, which transform daunting, large-scale projects into smaller, approachable steps. This approach helps users build confidence and maintain focus, which are often hurdles for those with ADHD. Complementing this is the distraction-free Focus Mode, a feature that creates a calm, interruption-free environment, enabling users to direct their energy to one task at a time.

On the technical side, the integration with Todo lists ensures that users can access and manage their tasks seamlessly across devices. Even in offline scenarios, the inclusion of local storage ensures that progress is never lost, a small but significant reassurance for busy users. The thoughtfully designed visual dashboard stands out as a practical yet motivating tool, allowing users to track their progress in a way that is clear and visually rewarding. Every design decision, from the adaptive reminders to the simple color-coded layout, reflects a deep understanding of the needs of ADHD users.

However most importantly, the project showcases the value of listening to users. By incorporating feedback throughout the development process, the team was able to create a tool that not only functions effectively but also feels intuitive and supportive.

This collaborative approach helped shape a solution that truly resonates with its intended audience, bridging the gap between technology and the human experience.

Lessons Learned

As the team worked on the Adaptive Task Manager, we encountered moments that reshaped our approach to designing for ADHD users. One major realization was the delicate balance between automation and user control. While features like adaptive task adjustments are designed to be helpful, they can sometimes feel disorienting to users who prefer stability. This taught the team that personalization must include the ability for users to override or adjust settings, ensuring the tool works for them, not against them.

Another key takeaway was the importance of user feedback, not just as a one-time check-in but as a continuous conversation. Early feedback revealed that some features, like reminders, needed fine-tuning to avoid being intrusive. This iterative process allowed the tool to evolve organically, addressing real needs rather than assumptions. Simplicity also emerged as a guiding principle; while ambitious ideas for collaboration features were exciting, they risked overwhelming the very users the tool was designed to support. The team learned that focusing on a few core functionalities often leads to better outcomes than trying to do too much.

Finally, the team came to appreciate the diversity within ADHD users themselves. What works for one person may not work for another. This inspired them to think more broadly about customization and even consider how the tool could serve people outside the ADHD community. These lessons go beyond just this project, they are a reminder that truly impactful solutions come from empathy, listening, and a willingness to adapt.

Future Work

The upcoming development phase will prioritize several critical areas. Firstly, the integration of NLP for task breakdowns will be extended to automate the parsing and generation of subtasks. This will include refining the model to interpret a wide range of task descriptions while maintaining clarity. Additionally, the adaptive reminder system will be upgraded to provide prompts customized to individual productivity patterns, such as task-switching tendencies and completion rates.

Extensive user testing will be carried out across diverse ADHD subgroups, considering factors such as age and ADHD subtype (e.g., predominantly inattentive or hyperactive-impulsive). To enhance user engagement, gamification elements like rewards and motivational streak counters will be introduced.

Future developments will focus on integrating the tool with additional third-party platforms such as Google Tasks and Microsoft To-Do, along with introducing real-time collaboration features, including task assignment and live updates. Accessibility enhancements will emphasize voice input, screen reader compatibility, and colorblind-friendly interfaces, ensuring the tool is inclusive for all users.

These upgrades will position the Adaptive Task Manager as a powerful and scalable solution, empowering ADHD users and others to manage their tasks more efficiently and effectively.

9. WORK PLAN

Ayesha Ahmed: Developed the Focus Mode feature to help users concentrate better by minimizing distractions and providing a simplified, focused interface. Improved the app's overall UI, ensuring a visually appealing and user-friendly design tailored for ADHD users. Designed a customization interface for focus levels, allowing users to personalize settings to match their productivity preferences. Integrated functionality to fetch and display todo tasks from the backend, ensuring seamless data synchronization on the UI.

Nihar Chauhan: Added task creation functionality, allowing users to quickly and easily input new tasks and integrate them into their workflows. Designed and refined the Main Screen UI to ensure an engaging and accessible experience, with specific improvements tailored for ADHD users. Built timer control features to start, stop, and resume tasks, giving users full control over their time management. Enhanced the app's responsiveness and accessibility for ADHD users by improving interface consistency and intuitive interactions.

Shubham Chorage: Created the initial user interface design, laying a strong foundation for the app's usability and intuitive navigation, ensuring a positive first impression for users. Implemented reminders with push notifications to help users stay on track, ensuring timely task completion even for distracted users. Enabled the swapping of active tasks with todo tasks, allowing users to reprioritize their workflow on the go without losing progress.

Prakhar Singh: Designed a user-friendly Login screen ensuring a secure and seamless access experience for users, incorporating visual consistency with the app's overall theme. Added checkbox functionality for subtasks, enabling tasks to auto-complete when all subtasks are checked off, improving efficiency and reducing manual effort. Introduced a movable functionality to rearrange and prioritize tasks manually, giving users full control over task order based on importance.

Kexuan Shen: Used a Large Language Model (LLM) to break down complex tasks into smaller, manageable subtasks tailored to the user's focus level, improving task clarity and execution. Built the Complete Task feature and seamlessly integrated it with the frontend, ensuring a smooth transition from task completion to tracking. Logged details of completed tasks, including task name, completion time, and duration, enabling users to monitor their productivity effectively.

10. REFERENCES

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