Recall & Reflect
An AI Memory Companion

Figure 1: Recall & Reflect insights dashboard showing pattern visualization, memory categories, and reflective observations.

Mariah Lopez
Technical Communication and Information Design
University of Colorado Colorado Springs
Colorado Springs, CO, USA
mariahllopez.co@gmail.com

Abstract — Recall & Reflect is a mobile-first web application designed to support everyday moments of forgetting through pattern recognition and reflective feedback. The system allows users to create a temporary profile, log memory lapses, and receive research informed suggestions for cognitive support. Rather than treating forgetting as failure, the application reframes these moments as meaningful data that can be used to understand cognitive patterns. The system is deployed as a live interactive website [8], demonstrating how AI-inspired technologies can augment human cognition while raising questions about accessibility, dependence, and self-awareness.

Index Terms — Artificial intelligence, cognitive augmentation, human-AI interaction, accessibility, and user-centered design.

I. Introduction

Accessibility is often framed in relation to physical or sensory limitations. However, cognitive processes such as memory and recall are equally important components of accessible system design. Many individuals experience routine memory lapses, particularly under conditions of stress or cognitive overload. Research suggests that cognitive changes often emerge through identifiable patterns over time [1], [2].

This project explores how a digital system can support cognitive accessibility by capturing and reflecting everyday memory-related experiences. By leveraging pattern recognition and user input, Recall & Reflect provides a structured approach to understanding memory behaviors while supporting self-awareness and reflection.

II. System Overview

A. System Overview

Recall & Reflect is a browser-based web application that enables real-time interaction and is publicly accessible online [8].

The system operates entirely on the client side using local storage, allowing users to create temporary profiles without requiring account creation. This design prioritizes accessibility, privacy, and ease of use.

B. User Interaction Flow

The system begins with an onboarding process where users define memory challenges and identify when these lapses occur.

As shown in Fig. 2, this process establishes a personalized foundation for identifying cognitive patterns over time.

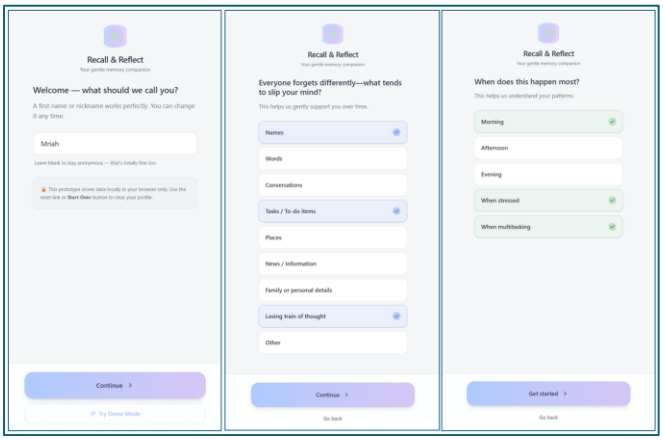

Figure 2: Onboarding workflow illustrating profile initialization, memory challenge selection, and temporal pattern identification in the Recall Reflect AI web application

Users can then log memory moments through a structured capture interface. As shown in Fig. 3, entries are categorized by type, time, and context. Over time, the system aggregates these entries to identify behavioral trends.

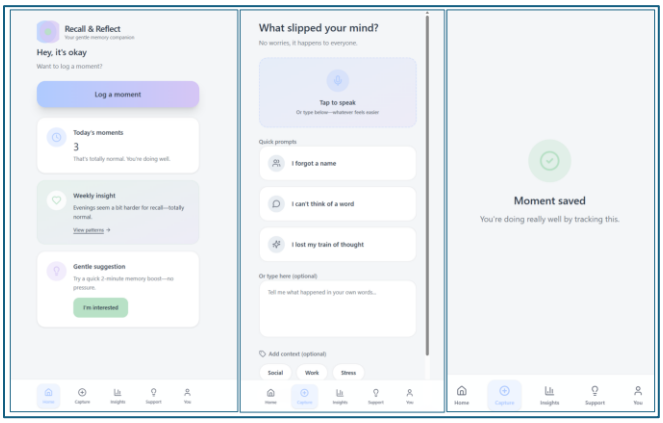

Figure 3: Memory capture workflow illustrating moment logging, category selection, contextual input, and confirmation in the Recall Reflect AI web application

The system presents insights and suggestions based on these patterns. As shown in Fig. 4, insights are presented in a simplified and non-judgmental format.

Suggestions may include cognitive exercises and lifestyle adjustments, supported by research on cognitive training and behavior change [3], [4].

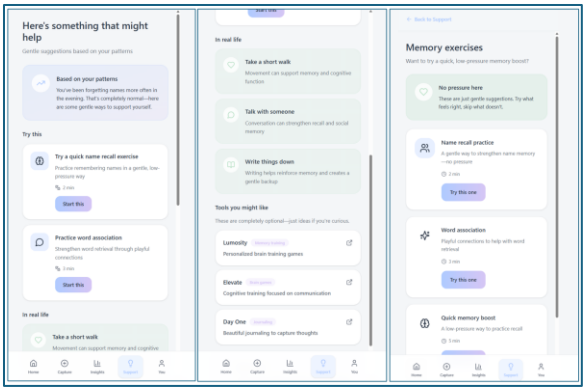

Figure 4: Insights and support interfaces illustrating pattern visualization, reflection summaries, and personalized recommendations in the RecallReflect AI web application

III. Implementation/Development Process

The system was developed using a combination of design and AI-assisted tools. Interface concepts were created using Figma, followed by implementation in React and Vite with assistance from GitHub Copilot. The final application was deployed using GitHub Pages as a live interactive system [8].

This process reflects a critical approach, where the act of building the system provides insight into how AI tools shape both design decisions and user experiences.

IV. Accessibility, Usability, and User Experience

Recall & Reflect emphasizes cognitive accessibility and emotional usability. The interface uses high-contrast visuals, readable typography, and simplified navigation to reduce cognitive load. Interaction flows are designed to minimize steps, and language is intentionally supportive and non-technical.

As shown in Fig. 5, users can customize the interface based on their individual needs. This aligns with research indicating that lifestyle factors and adaptive strategies play a role in cognitive health [6], [7].

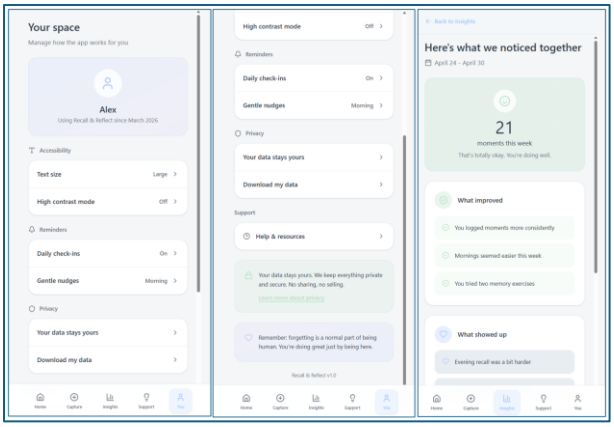

Figure 5: User settings and accessibility interface illustrating personalization options, reminders, and privacy controls in the Recall Reflect AI web application

The system also includes a dashboard that reinforces reflection and engagement. As shown in Fig. 6, the system avoids performance-based feedback and instead promotes awareness through supportive reflection.

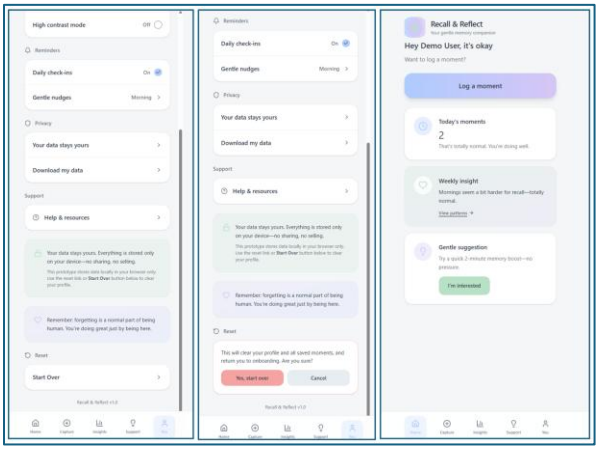

Figure 6: Home dashboard and system feedback interface illustrating activity summaries, supportive messaging, and privacy-related controls in the Recall Reflect AI web application

V. User Feedback and Iteration

User testing was conducted to evaluate both usability and user response to the system's intentionally supportive tone. Because the application is designed for individuals who may feel frustration around memory lapses, the language was written to be reassuring. Testing helped assess how this tone was perceived.

A. Usability and Interaction

Testing revealed that some interactive elements were not immediately recognizable, such as the "Continue" button. Features like demo navigation required clearer affordances, and users were unsure whether previously logged entries could be revisited. These findings highlighted the need for improved clarity and system transparency.

B. Tone and User Perception

Feedback on tone indicated that some phrases, such as "It's okay" and "Take your time," were perceived as overly reassuring. Suggestions included simplifying labels such as "Gentle Suggestions" and reconsidering terminology like "Support." These responses were not treated as issues requiring full revision, but as insight into how supportive language may be interpreted differently across users.

Users also suggested incorporating structured features such as daily checklists or exercises to better connect reflection with real-world application.

VI. Discussion

Recall & Reflect demonstrates how digital systems can support self-awareness by helping users identify patterns in everyday memory lapses. Research shows that while cognitive training can be beneficial, its effectiveness depends on real-world application [5]. This informed the system's focus on real-life memory events rather than abstract exercises.

At the same time, the system raises important considerations regarding privacy, data ownership, and dependence on digital cognitive support. These tensions reflect the broader role of technology as both a supportive tool and a source of complexity in human experience.

VII. Conclusion

Recall & Reflect illustrates how AI-inspired systems can support cognitive accessibility by transforming everyday forgetting into opportunities for reflection and learning. The project integrates research, design, and development into a cohesive system while contributing to ongoing discussions about human-AI interaction and cognitive augmentation.

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