Persode: Personalized Visual Journaling with Episodic Memory–Aware AI Agent

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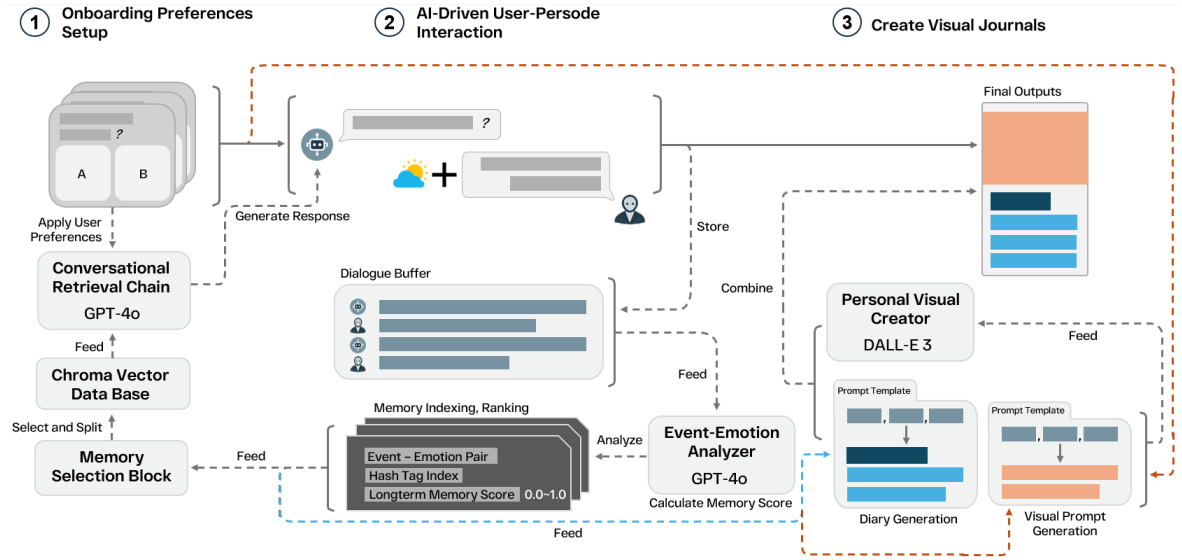

Fig. 1. Overview of Persode's architecture, illustrating how user onboarding, memory scoring, retrieval-augmented prompting, and dual-modality generation interact to support personalized, emotionally resonant journaling.

Abstract— **Existing digital journaling apps often fail to sustain engagement among young users, offering limited emotional resonance and little personalized feedback. We present Persode, a memory-aware journaling system that reflects users' daily experiences through conversational interaction and personalized visual storytelling. As users recount their day, Persode retrieves emotionally salient memories using an automated scorer that accounts for recency, intensity, and frequency, and integrates them into the dialogue via a retrieval-augmented generation (RAG) pipeline. It then generates diary entries in a user-customized narrative tone, along with illustrations generated via prompt-based diffusion models guided by few-shot exemplars chosen during onboarding. We plan a pilot study with Gen Z participants to evaluate perceived authenticity and sustained engagement compared to text-only baselines.**

Keywords— **Visual journaling, retrieval-augmented generation, episodic memory, personalization**

I. INTRODUCTION

Reflective journaling is widely recognized for its benefits in enhancing self-awareness and emotional regulation. Yet AI-assisted journaling tools fall into two camps: text-generation systems that offer writing prompts but lack structured memory reference [1–3], and memory-centric frameworks that retrieve past events but provide neither visual immersion nor narrative coherence. The absence of image-augmented narratives contributes directly to this early churn, even though visual journaling has been shown to boost engagement in educational settings [5].

To respond to this challenge, we propose Persode (from "personal" + "episode"), an AI-powered journaling service that enables users to produce diary entries combining personalized text with custom-generated illustrations reflecting their narrative style, aesthetic preferences, and emotional tone. By maintaining awareness of past experiences and emotional contexts, the system aims to deliver tailored, contextually relevant interactions that transform journaling from a routine task into a more engaging, emotionally resonant practice.

To achieve this, Persode integrates (1) a brief onboarding questionnaire capturing each user's visual identity, preferred assistant tone and verbosity, and stylistic preferences; (2) a cognitive-inspired memory-strength scorer and weighted RAG pipeline that selects only the most emotionally salient event–emotion fragments; and (3) a dual-template pipeline that generates paired diary entries and bespoke illustrations in under five seconds per entry. These components work in concert to transform users' conversational reflections into emotionally resonant outputs that align with their personal identity and journaling style.

We aim to investigate whether Persode's mechanisms could enhance the perceived authenticity of journal entries and maintain user engagement.

II. SYSTEM DESIGN

Persode extends prior memory-focused tools such as Memolet [7] by integrating user-defined stylistic preferences and multimodal visual output into a unified journaling pipeline. During onboarding, it captures each user's aesthetic and narrative preferences, which are later used to guide text and image generation. The system extracts event–emotion pairs from conversations, computes salience scores, and indexes key fragments into long-term memory. These memories, combined with user profiles, inform the generation of personalized diary entries and illustrations using dual templates. The subsections that follow summarize the key algorithmic steps and data flows behind each component.

A. ONBOARDING AND PREFERENCE CAPTURE

Users complete a brief questionnaire selecting visual identity cues (e.g., hairstyle, attire), narrative tone (empathetic, concise), and visual preferences (color palette, scene composition). These inputs form lightweight metadata profiles that initialize both text and image generation templates, ensuring consistency across all diary artifacts.

B. MEMORY-AWARE CONVERSATIONAL AGENT

Persode's agent enhances a standard RAG pipeline with cognitively motivated memory strategies grounded in forgetting curve and salience theory. We apply a time-based decay mechanism drawn from the Ebbinghaus forgetting curve to phase out older fragments [4]. Each event–emotion pair is then scored by combining emotional intensity and recency weighting following LUFY's approach to prioritize high-arousal content [6] extended to incorporate recall frequency and contextual relevance. At query time, only the top-ranked fragments are filtered through an emotional-topic alignment check before being assembled into the prompt, reducing hallucination and maintaining coherence.

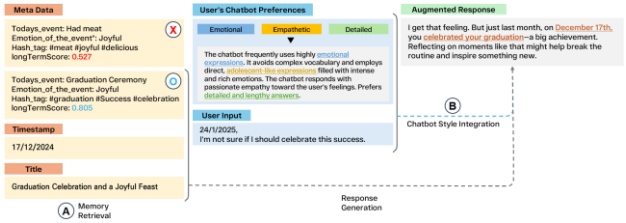

Fig. 2: Integration of chatbot preferences and memory retrieval for personalized responses

$$S = \frac{w_E \cdot E + w_R \cdot R + w_C \cdot C}{w_E + w_R + w_C} \quad (1)$$

Equation (1) defines each fragment's memory strength as a weighted combination of emotional intensity, recall frequency and contextual relevance. Fig. 2 shows how chat entries are converted into scored event–emotion pairs, filtered by strength, and reintegrated -- alongside user preferences -- into the final response prompt.

C. DUAL-TEMPLATE VISUAL GENERATION PIPELINE

The text template distills retrieved memories into first-person diary excerpts, preserving user voice. The visual template merges onboarding metadata with extracted tags to construct few-shot prompts for an image generation model. Resulting illustrations reinforce emotional tone,

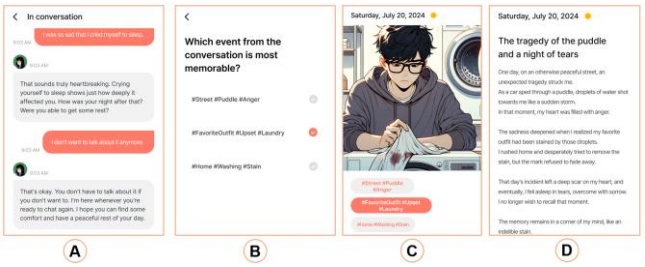

Fig. 3. End-to-end journaling pipeline: (A) user–agent conversation, (B) tag-based interface for selecting key event–emotion pairs, (C) personalized illustration, and (D) generated diary narrative.

contextual setting, and stylistic coherence, aligning visual output with the user's journaling identity.

The pipeline is implemented as a modular backend that handles conversational input preprocessing, memory fragment indexing via vector embedding, and orchestrates asynchronous API calls to external LLM and image generation services.

III. CONCLUSION AND FUTURE WORK

Persode presents a unified framework that combines cognitive-inspired memory scoring with dual text–image templates for personalized journaling. The system demonstrates that memory-aware visual storytelling can enhance contextual coherence and emotional resonance in near real time.

Following its App Store deployment, we plan a within-subject study to compare perceived authenticity and sustained engagement with text-only baselines. Future work will extend Persode's memory module toward long-term narrative adaptation and refine its salience scoring through affective embeddings and conversational feedback. We also aim to explore new storytelling modalities (e.g., animated or audio-based reflections) to deepen emotional resonance and broaden multimodal self-expression.

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