# Through Someone Else's Eyes: Lifelogging Meets Narrative Virtual Reality


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## Abstract

This paper presents a novel approach to lifelogging by transforming it into a narrative-driven Virtual Reality (VR) experience that we call SLIVeR (Someone else's Lifelog in Virtual Reality). The system situates users in an immersive, emotionally charged environment where they explore lifelog video fragments as part of a memory recovery narrative. Users begin disoriented, responding to existential prompts such as 'Who am I?' and 'What was the last thing I did?' — each unlocking cinematic scenes that reconstruct a car accident central to the character's identity loss. The experience transitions into a metaphorical space representing the fragmented mind, where users interact with floating lifelog questions organised by theme (e.g., relationships, movement, work). These interactions simulate a lifelog search interface embedded within a story arc, encouraging reflection and engagement. To evaluate SLIVeR, we conducted a mixed-methods study with 30 participants, analysing engagement using the User Engagement Scale (UES) and thematic reflection questions. Results showed that narrative coherence, visual interactivity, and identity-driven content enhanced user engagement. Social and emotionally resonant question types were rated as more meaningful than routine-based ones. This work demonstrates how VR, narrative framing, and lifelog data can be fused into a reflective, game-like experience that deepens both interaction and emotional connection.

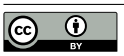


## CCS Concepts

• **Human-centered computing** → **Human computer interaction (HCI)**; • **Information systems** → **Information retrieval**; • **Computing methodologies** → **Computer graphics**.

## Keywords

Lifelogging, Virtual Reality, Serious Game, User Engagement, Reflective Systems, Personal Data, Interactive Storytelling



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## 1 Introduction

Virtual Reality (VR) has revolutionised the way we engage with personal experiences, offering immersive environments that foster deeper emotional connections. In lifelogging, personal data such as videos, photos, and other media are continually captured to chronicle an individual's life, which leads to a key challenge: users often experience disengagement due to the impersonal and static nature of traditional lifelogging systems. These systems present raw data without emotional context or narrative, making it difficult for users to meaningfully connect with their past experiences.

The goal of this work is to explore how such a narrative-driven, game-based lifelogging system in VR can enhance user engagement by tapping into the emotional resonance of memory recovery. Through this immersive framework, users interact with lifelog data as part of a personal journey, fostering a deeper, more meaningful connection to their past. By focusing on both the emotional and cognitive dimensions of engagement, this research contributes to the field of multimedia experiences, particularly in the context of VR's potential to enhance personal reflection.

To guide our investigation into how immersive, game-based lifelog systems affect user experience and reflection, we formulate the following research questions:

- **RQ1:** Does a narrative-driven, game-based lifelog system in VR have a positive effect on user engagement?
- **RQ2:** Does game-informed narrative framing and interactivity in VR enhance users' sense of immersion and personal connection?
- **RQ3:** Which types of questions are perceived as most meaningful when navigating lifelog data, especially in the context of unfamiliar or reconstructed memories?

This paper contributes a novel game-based VR system, SLIVeR (Someone else's Lifelog in Virtual Reality), that transforms lifelog data into a narrative-driven memory reconstruction experience. By integrating cinematic storytelling with question-based navigation, the system presents personal data as part of a gamified memory

reconstruction scenario. This work demonstrates how narrative framing, interactivity, and visual immersion can be used to enhance user engagement with lifelog content, even when the data is unfamiliar. Through a mixed-methods user study, we evaluate how different question types affect user engagement, immersion, and emotional responses. In doing so, we offer a design model for lifelog-based multimedia systems that prioritise narrative coherence, immersive interaction, and affective feedback, highlighting the potential of VR as a medium for memory support, personal storytelling, and reflective multimedia experiences.

## 2 Related Work

### 2.1 Memory and Identity Reconstruction

Lifelogging systems are not only tools for information retrieval but also deeply entwined with how individuals construct and maintain personal identity. Evidence shows that current self-views, beliefs, and goals shape what we recall, and in turn, those memories inform how we perceive ourselves [38]. Conway's Self-Memory System [8] proposes that the 'working self' dynamically interacts with an autobiographical knowledge base, shaping memory access to serve current goals and identity formation. This interaction suggests that lifelogging systems, by providing access to personal data, can aid in reconstructing personal identity. Notably, [37] reviewed clinical applications of lifelogging and found that reviewing images captured by wearable cameras significantly improved both subjective and objective memory performance in individuals with amnesia. These findings indicate that lifelogging serves not only as an external memory aid but also holds therapeutic potential for supporting autobiographical continuity. Consequently, lifelog systems can function as interventions that facilitate memory rehabilitation, narrative identity reconstruction, and personal reflection. This underscores the value of embedding lifelog data within emotionally immersive and narratively structured environments, such as the VR-based system proposed in this work.

### 2.2 Lifelog Systems and Data Visualisation

Lifelogging, the practice of digitally recording aspects of one's daily life, has evolved significantly with advancements in multimedia analytics. Although the concept dates back to Vannevar Bush's vision of the Memex [5], a personal information system enabling memory augmentation, it gained tangible form through early systems like MyLifeBits [15], which attempted to digitally capture a lifetime's worth of information. More recent efforts have focused on making this data searchable and structured, driven in large part by benchmarking initiatives such as the Lifelog Search Challenge [16] and the NTCIR lifelog tasks [40].

Despite this growing interest, much of the research has concentrated on information retrieval, helping users answer factual questions using their lifelog data. Systems like lifeXplorer [28] and MyScéal [35] exemplify this search-oriented approach, while MyEachtra [36] introduced question-answering functionalities to allow more natural interaction. These systems, although functionally rich, often lack emotional resonance or sustained user engagement. They present lifelog data as static artefacts to be searched, rather than lived experiences to be re-engaged with.

Some systems have begun to explore more immersive interaction paradigms. vitrivr-VR [31] and Duane's work [11] leverage VR to enable spatial navigation through image and video collections. These approaches demonstrate that VR can improve accessibility and exploratory engagement. However, they primarily treat VR as a navigational or display medium, rather than as a catalyst for deep emotional reflection or narrative interaction.

Other efforts have explored more creative interfaces. These include dashboard visualisations [12], card-sorting for lifelog storytelling [6], a story editor for third-party lifelog collections [7], and map- or time-based visualisations like memory walls [18]. One particularly relevant prototype [34], introduced a tunnel metaphor to allow users to 'walk through' their memories, viewing video slideshows of past events. While this suggests the emotional potential of VR in lifelogging, the focus remains on passive viewing rather than active narrative construction or gameplay.

In summary, existing lifelogging systems have made impressive strides in storage, retrieval, and visualisation. However, they fall short in fostering deep engagement, especially the kind that arises from narrative immersion, emotional reflection, and interactive decision-making. While current state-of-the-art lifelogging systems touch on aspects of usability and user experience, few focus on user engagement [33]. Moreover, most of these systems are designed for expert users already familiar with lifelogging and the tools they created, which limits their broader accessibility [33]. This gap highlights a need to rethink lifelogging not just as a data problem, but as an experiential one.

### 2.3 Multimedia Engagement: Gaming and VR

The intersection of gaming, VR, and multimedia systems has been used to create immersive environments that enhance user engagement, especially in contexts where users are exploring complex or personal content [1, 4, 11, 30, 34].

Games, in particular, have demonstrated a remarkable ability to engage players not only through entertainment but also by tackling serious topics such as education, therapy, and social awareness [3, 21]. These types of games, known as serious games, are designed to address more than just leisure — they aim to engage players emotionally and cognitively with the content [3]. A key advantage of serious games is their ability to encourage active participation and reflection through structured gameplay that allows users to explore meaningful concepts, making them particularly effective for tackling topics that may otherwise feel distant or difficult to engage with [24].

Storytelling is a crucial element in games and one of the primary ways they captivate players [26]. By weaving narratives into gameplay, serious games tap into the human affinity for stories, enhancing the emotional resonance of the experience [23]. The fusion of storytelling and gameplay enables users to form personal connections with the content, leading to deeper engagement [10]. Whether through quest-driven narratives or character-driven stories, users find themselves drawn into the game's world, where their actions shape the unfolding plot. This interaction is what sets narrative-driven games apart from static forms of entertainment and provides the emotional depth necessary for engaging with sensitive or personal subjects [14].

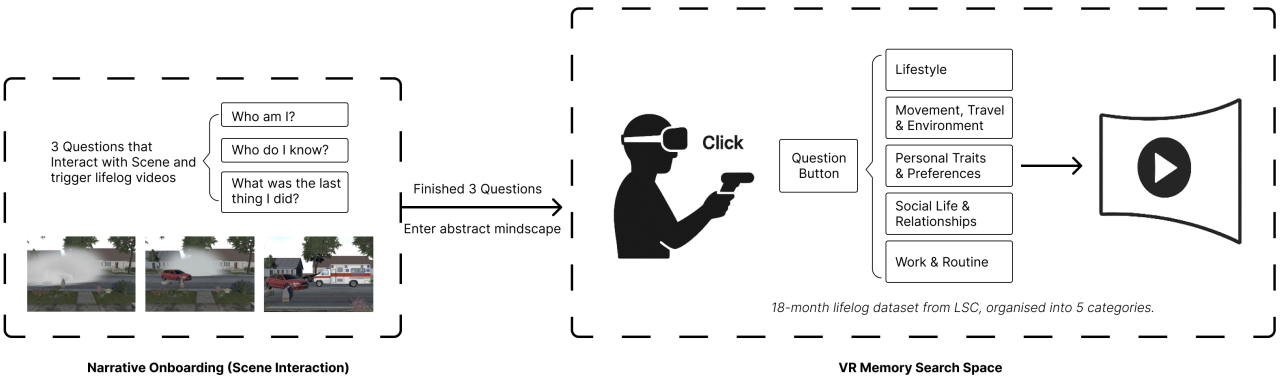


**Figure 1: System Architecture.**

VR, by definition, is a technology that enables users to engage with and explore an immersive, computer-generated environment that replicates either real-world or fictional scenarios [29]. It offers a compelling tool for enhancing engagement through its ability to create immersive, interactive environments that respond to the user's actions in real-time [25]. VR not only allows users to interact with content in a more natural and intuitive way but also provides a heightened sense of presence, making experiences more visceral and emotionally engaging [9]. Research has shown that VR can enhance emotional engagement and memory retention, as it provides users with a first-person perspective, making the experience feel more personal and impactful [13]. The sensory immersion afforded by VR helps bridge the gap between abstract data and meaningful, tangible experiences [2, 22].

This combination of games, storytelling, and VR presents a powerful opportunity to engage users with personal or lifelog data. Traditional lifelogging systems often present data in a disjointed, utilitarian manner, offering users limited interaction with their own past experiences. However, when these data points are embedded within a narrative-driven VR game, users are encouraged to engage with them on a deeper level. The game framework provides a context that transforms these data fragments into emotional and reflective experiences rather than mere records, by weaving them into a storytelling experience. In the context of this project, we explore how VR can be used to enhance the engagement of users with lifelogging data. Specifically, we aim to bridge the gap between the real-life data (such as lifelog videos) and an abstract virtual environment that incorporates both game design and storytelling elements. In this system, users interact with game objects in a virtual environment, and their interactions trigger the appearance of lifelog videos that are directly tied to the narrative. This fusion of real-life data with virtual environments creates a dynamic interplay between realism and abstraction, providing an engaging and emotionally immersive experience for users.

## 3 SLIVeR Overview: Lifelogging as Narrative VR Gameplay

This project introduces a innovative approach to lifelogging by transforming it into a narrative-driven VR experience. SLIVeR merges immersive VR with personal data, allowing users to engage with their past not just by revisiting events, but by actively participating in a narrative. They make choices and uncover emotional truths about themselves while solving the mystery of their identity. Figure 1 illustrates the system architecture.

The emotional stakes of the narrative are clear from the outset: the player-character has suffered from memory loss and must piece together fragments of their life story. This personal journey is both introspective and interactive, where each choice brings the player closer to understanding their true self. The game engages users emotionally by presenting fundamental existential questions, such as 'Who am I?' and 'What was the last thing I did?'. As users interact with the narrative, they unlock cinematic scenes that reconstruct key moments in the character's past, such as a car accident that may explain their memory loss.

This approach fosters deeper engagement as players are not passive observers of the narrative but active participants in uncovering the mystery. As users progress through the game, the system encourages them to reflect on their past through these interactive prompts, enhancing both emotional connection and user agency. By weaving lifelog data into this mystery, the game transforms the process of self-reflection into an emotionally immersive journey, where each memory fragment unveiled adds another layer to the mystery, thereby increasing user engagement and emotional investment in the storyline.

Through this immersive experience, users are invited not only to explore their game character's memories but also to reconnect with their past in a meaningful and reflective manner. The combination of a narrative-driven structure, emotional stakes tied to memory recovery, and interactive gameplay makes this approach to lifelogging more engaging and meaningful than traditional, static data exploration methods.

### 3.1 Game Narrative

The game opens with the player-character emerging in a fog-shrouded world, disoriented and suffering from memory loss (see Figure 2). The starting scene is misty and minimalistic, emphasising a sense of isolation and uncertainty that reflects the confusion of the game character's mind. To guide the player through the emotional and narrative journey, three fundamental existential questions are

**Figure 2: Lifelogging Questions and Video**

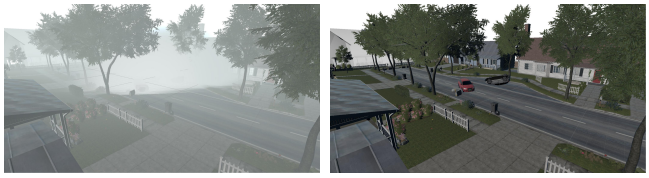

**Figure 3: Mysterious Fog Effect**

**Figure 4: Scene Changes**

posed, each reflecting key themes in lifelogging and serving as a starting point for self-reflection:

- Who am I? (revealing the memory of the character's identity)
- Who do I know? (unveiling memories of relationships)
- What was the last thing I did? (showing the memory of the last action performed, driving a car at dusk)

The question, 'What was the last thing I did?', is pivotal to the game's structure as it ties the narrative to a critical event — the character was driving before the car accident, linking the fictional game world to real-world lifelog data. The car accident functions as a narrative anchor: a disruptive event that frames the user's identity reconstruction journey. It is directly tied to this question, which reveals lifelog footage of driving a car at dusk (real), leading up to the crash (fictional).

These questions drive the player's exploration of the character's memories, with each selection revealing a lifelog video: fragmented flashbacks of the character's past. The videos are not detached from the VR experience; rather, they are revealed through spatial interaction, embedded as narrative events triggered by user agency. This supports the metaphor of flashbacks being triggered by memory recovery, following the central car crash event, which causes the protagonist's amnesia. As users explore the environment, they gradually uncover lifelog video fragments that reconnect them to their past, a structure inspired by memory metaphors often seen in narrative media, including games like Deemo by Rayark Games[1].

As the narrative progresses, the fog gradually lifts, symbolising the unveiling of memory (see Figure 3):

- First video: Some fog lifts, and a faint outline of a car becomes visible.
- Second video: More fog dissipates, revealing the front of the car on the road.
- Third video: The fog is completely lifted, revealing an overturned car in the distance, culminating in a flashback animation of the car accident — the likely cause of the character's memory loss. The animation shows two cars colliding, followed by an ambulance arriving at the scene (see Figure 4). The sequence is accompanied by sound effects, such as the crashing sounds and the ambulance siren.

This unfolding sequence builds suspense and emotional engagement through the gradual revelation of memories. As the fog lifts, players feel increasingly connected to the character's journey, each video fragment adding new emotional and narrative layers. By choosing which questions to explore first, users shape their own path through the story. This active engagement fosters a deeper emotional connection, as players discover rather than simply observe. The choice-driven structure makes each experience personal and unique. Our design is informed by Tanenbaum's concept of agency as interpretive and emotional commitment [32], where meaningful interaction arises not just from decision-making but from co-constructing narrative meaning. This principle guides our use of interactive lifelog questions.

Here, lifelog data functions as more than informational content — it becomes an emotional anchor. As memories surface, a dynamic interplay unfolds between real-world data and the abstract VR world. By combining storytelling, emotional milestones, and interaction, the system reimagines lifelogging as a deeply immersive and affective experience.

## 3.2 Transition to Search Interaction

After the cinematic sequence, the environment shifts to a minimalistic and abstract world, a metaphor for the character's fragmented mind. The white ground and dissolving surroundings reflect the instability of memory.

This is followed by a scene where users can choose from thematic categories. As the player selects a category, questions specific to that theme float toward them, inviting the player to explore different aspects of the character's life and enhancing the sense of immersion (see Figure 5). This process symbolises the gradual recovery of the character's memory and mirrors a cognitive process of recollection.

At this point, SLIVeR transforms into an interactive lifelog search engine embedded within the narrative. Questions are revealed through spatial interaction, turning the process of data retrieval into an emotionally immersive experience. This mirrors cognitive recollection while reinforcing user agency and thematic reflection.

The abstract, void-like environment represents the character's mental disorientation following the crash revelation. The floating questions, streaming in like fragmented thoughts, mirror the chaotic recovery process. Users actively engage by choosing which aspects of identity to explore, prioritising the themes that resonate most with them. This deepens emotional investment while allowing each player's journey to unfold uniquely.

[1]https://rayark.com/en/games/deemo/


**Figure 5: Coming Questions in VR View**

## 3.3 Design Philosophy: Gamification of Lifelogging

Unlike traditional lifelogging interfaces, this system introduces a narrative-driven, gamified VR structure designed to enhance user engagement. It offers:

- A compelling storyline that provides both context and emotional stakes for exploring lifelog data, turning it from a passive exercise into an engaging adventure.
- Rewarding mechanics, such as suspense, mystery-solving, and gradual discovery, that encourage active engagement and deepen the player's emotional connection.
- A puzzle-like structure where each piece of information (a lifelog video) acts as a clue leading to the ultimate revelation: the car accident and identity reconstruction.
- A game character (first-person narrative), controlled by the user, who functions as the agent bridging the fictional game world and real-world lifelog videos through the narrative.

Framed as a detective-style investigation (evoking the tone of Disco Elysium [39]), the system taps into players' curiosity. The mystery of the character's lost identity drives exploration, while emotional themes of self-discovery and memory recovery enhance immersion.

This design integrates storytelling, symbolic interaction, and emotional resonance, transforming lifelogging into a reflective, narrative game. As players piece together fragmented memories, they not only solve a mystery but experience a personal journey. Each new clue strengthens the narrative connection and emotional payoff, making the act of lifelog retrieval meaningful and rewarding.

# 4 System Implementation

## 4.1 Dataset and Narrative Curation

This project uses the Lifelog Search Challenge (LSC) dataset [17], a large-scale, multimodal resource for lifelog retrieval research. Spanning 18 months, it includes images, biometrics, spatial data, and semantic annotations — offering rich coverage of everyday activities such as work, social interactions, and leisure. All data is anonymised to protect the privacy of the lifelogger and others. The dataset is available upon request[2].

[2]http://lifelogsearch.org/lsc/2022/lsc_data/

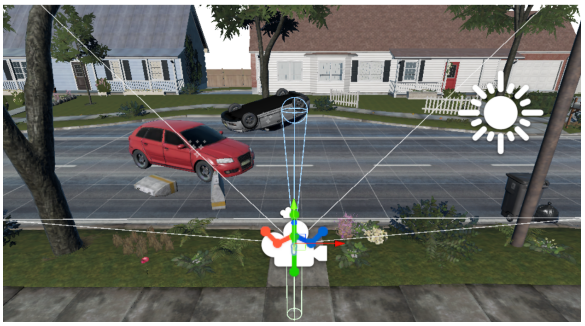

**Figure 6: Fixed Position**

While extensive, the dataset represents only a slice of a person's life. This temporal limitation restricted the number of life-defining moments available for narrative use, necessitating some simplification to ensure emotional coherence in the VR experience.

Lifelog videos used in the system were selected using the MyEachtraX search engine [36], a tool designed to retrieve image segments in response to lifelog-related questions. Due to the abstract nature of some narrative prompts (e.g., 'Who am I?' or 'What do I value?'), fully automatic retrieval was not always feasible. Instead, the system was used in an exploratory, curator-driven manner to gather relevant evidence for each question.

In total, 25 videos were created by stitching together image sequences from selected events at 5 frames per second — a pace chosen to mimic the rhythm of memory: continuous, yet reflective. Final video lengths range from 20 seconds to just over one minute.

## 4.2 VR Development

SLIVeR is developed using Unity 6 (version 6000.0.41f1) and is deployed on Meta Quest 3. The system's interaction design is built using Unity's UI components, leveraging a canvas-based UI to accommodate VR interaction. Users can interact with the environment by selecting memory buttons, which appear as prompts or quests. The user is fixed in a position and the locomotion system is also disabled in this VR environment to maintain immersion and minimise motion sickness (see Figure 6).

**Figure 7: Car Crash Animation**

For reconstruction of the crash scene, the project uses Unity's physics engine to simulate realistic vehicle dynamics, including motion trajectories and collision responses. The crash animation sequences are recorded using the Unity Recorder tool (see Figure 7). To enhance the storytelling element, the Animator system was used to reverse-play the animation, with the aim of facilitating recall of the incident scene.

The system maps each question to a curated lifelog video and presents them as interactive buttons in VR. When a user selects a question, the system lifts the fog and plays the corresponding video, enabling narrative exploration through direct interaction (Figure 4). This approach smooths the transition between the virtual world and real lifelog content, avoiding abrupt switching.

In the second phase, the system becomes a freely explorable VR memory database. Five thematic categories appear as floating buttons (Figure 5). Selecting a category triggers a random set of related questions, each placed randomly in the scene. When a question is selected, the associated lifelog video plays. This shifts the interaction from a linear Q&A to spatial exploration, enabling memory retrieval through thematic discovery.

# 5 User Study

## 5.1 Setup

This study aimed to examine how different types of questions in a lifelog exploration system affect users' perceptions of engagement, aesthetics, usability, and reflective potential, using a mixed-methods approach. A total of 30 participants were recruited via convenience sampling. They were all adults, mostly from computing and media backgrounds. After providing informed consent, participants were introduced to a VR lifelog system that presented simulated (or anonymised real) lifelog data through a narrative-driven game in VR.

Participants were instructed to explore the system freely for 10–15 minutes, focusing on different lifelog question types (e.g., 'Who am I?', 'What did I do?', 'Where do I work?', etc.). No specific task was assigned, and exploration was unguided to reflect natural engagement. Immediately after the session, participants completed an online survey that included:

- 12 Likert-scale items adapted from the User Engagement Scale (UES) [27],
- 5 ratings on the perceived meaningfulness of lifelog question types,
- 6 open-ended questions capturing qualitative reflections.

The User Engagement Scale (UES) is a validated instrument for assessing subjective engagement with digital systems [27]. The short form of this scale includes 12 items divided into four engagement factors: Focused Attention (FA), Perceived Usability (PU), Aesthetic Elements (AE), and Reward Factors (RW). Each item is rated on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Items related to Perceived Usability were reverse-coded, as recommended by the authors. The UES has been applied in various immersive media contexts, including studies of VR tourism [19, 20], where aesthetic appeal and narrative absorption were central to user experience. Our adaptation used the original subscales with minor wording adjustments for domain relevance.

## 5.2 Quantitative Results

Figure 8 presents boxplots for the four UES subscales. Participants reported high engagement, with medians around or above 4 for PU (4.33), AE (4.00), and RW (4.00). Mean scores were similarly high — $PU = 4.12$, $AE = 3.92$, $RW = 3.94$ — with low SDs ($PU = 0.95$, $AE = 0.88$, $RW = 0.80$), indicating consistent positive perceptions. FA had a lower mean (3.57), median (3.67), and slightly more variability ($SD = 0.77$), suggesting some difficulty sustaining attention or reaching flow, likely due to session length or question load. AE and RW scores affirm the experience was visually appealing and personally worthwhile, echoing feedback on immersion and emotional impact. PU was also rated positively, despite minor usability concerns. Overall, the system succeeded in delivering an aesthetically engaging and emotionally resonant experience, though immersion could be further improved.

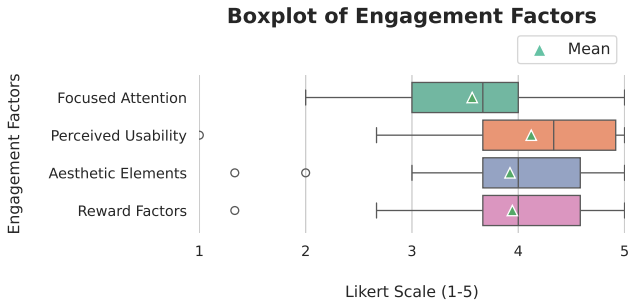


**Figure 8: Boxplot of User Engagement Scale (UES-SF) factors: Focused Attention, Perceived Usability, Aesthetic Appeal, and Reward Factor. Each subscale is an average of three items.**

Figure 9 shows meaningfulness ratings for five lifelog question types. Participants rated all categories favourably (means $M = 3.93$–$4.24$), with *Social Life & Relationships*, *Personal Traits & Preferences*, and *Movement, Travel & Environment* rated most meaningful ($M = 4.24$, $SD = 0.79$; $M = 4.07$, $SD = 0.84$; $M = 4.10$, $SD = 0.82$), showing narrow IQRs and frequent top ratings. In contrast, *Work & Routine* and *Lifestyle* received slightly lower, more variable scores. Work & Routine had the lowest mean ($M = 3.93$, $SD = 1.00$), while Lifestyle scored $M = 4.07$, $SD = 0.70$. Broader IQRs and outliers as low as 1 suggest these categories were less consistently engaging. This aligns with qualitative feedback noting that routine or generic activities (e.g., meals, waking times) felt less emotionally or cognitively valuable than relationship-based or identity-focused content. Overall, the results reinforce that narrative, emotionally resonant, and socially contextualised content contributes more meaningfully to engagement in lifelog-based memory systems.

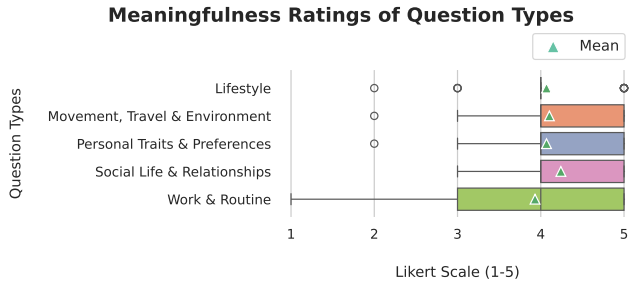


**Figure 9: Distribution of meaningfulness ratings for different lifelog question types.**

To explore how participants navigated the VR environment, we analysed the order in which questions were selected. Figure 10 shows a heatmap of the first three questions selected by participants, with the most common first question category highlighted in Figure 10. The vast majority of participants ($n$ = 22) selected 'What was the last thing I did?' as their third question, suggesting that users may have intuitively interpreted it as a kind of narrative culmination. In contrast, identity-establishing questions like 'Who am I?' and 'Who do I know?' were typically explored first or second, indicating a perceived need to first ground themselves in personal and social identity before revisiting a pivotal event. This natural sequencing aligns with Conway and Pleydell-Pearce's self-memory system, in which autobiographical memory retrieval begins at a conceptual level — anchored in self and identity — before progressing to specific events or emotional episodes [8].

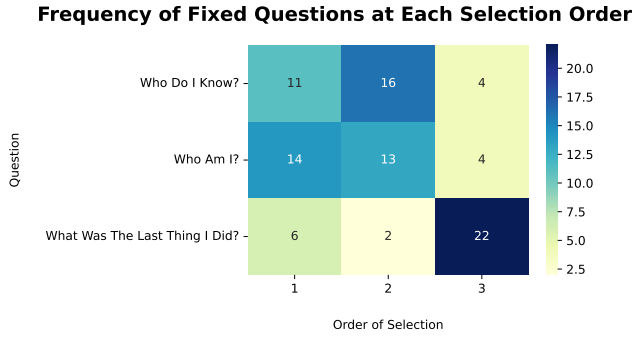


**Figure 10: The order of selection for the first three questions that were tied with narrative of the game.**

We also examined the first question selected by participants after the initial narrative questions. Figure 11 shows a heatmap of the first three questions selected, with the most common first question category highlighted in Figure 11. According to the graph, lifestyle questions are dominantly the first selected question type, suggesting participants were drawn to everyday or emotionally resonant content (e.g., food, events) once given agency. However, this is also the first category from left to right in the game, indicating that it might have been the first one seen by the participants. Coupled with the fact that this category was not rated as the most

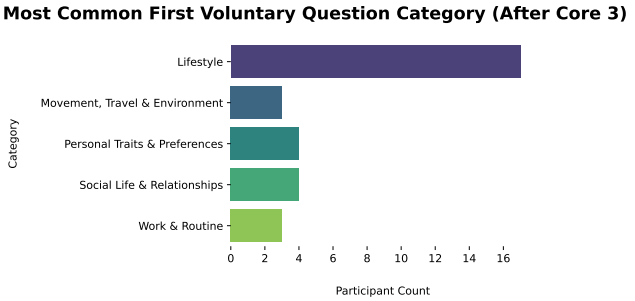


**Figure 11: Most common first question category selected by participants in the second stage.**

meaningful overall in Figure 9, this suggests that while lifestyle questions may be engaging at first glance, they may not evoke the same depth of reflection as other categories. In contrast, categories like Personal Traits & Preferences and Movement & Environment received higher average ratings but were explored less frequently at the outset. This highlights a potential distinction between what feels easy or natural to access in the moment versus what users reflect on as meaningful after the experience.

## 5.3 Qualitative Reflections on Engagement and Meaningfulness

Five key themes emerged across the open-ended responses.

**Narrative grounding and identity recovery.** Participants ($n$ = 10) frequently described the early sequence as emotionally and cognitively engaging. These moments were often framed as foundational in helping reconstruct a coherent sense of self within the scenario. Six participants emphasised the gradual reveal of identity and memory as a compelling arc: *'I particularly enjoyed the initial stages, discovering who I was, and the accident,'* one wrote. Others highlighted the emotional effectiveness of the unfolding structure: *'More and more information about the player was revealed.'*

**Emotional resonance through familiarity.** Moments involving personal hobbies ($n$ = 3), social relationships ($n$ = 6), and recognisable locations (e.g. pubs, parks) ($n$ = 3) were cited as emotionally resonant, even when the participant knew the story was not their own. Participants expressed a sense of shared experience *'It felt like watching someone else's life from a first-person perspective… which created a shared experience'*. Hobbies like 'playing guitar' or 'exercising in familiar settings' also triggered connection.

**Selective meaningfulness of question types.** Participants drew clear distinctions between lifelog questions they found personally meaningful and those they did not. Social, identity-based, and personality-related questions were more likely to evoke emotional or reflective responses. In contrast, questions about daily routines or ambiguous details (e.g., food, work, bike ownership) were described as redundant, vague, or irrelevant for reconstructing identity ($n$ = 9): *'Transport scenes were repetitive… there was less to explore'*. Other raised concerns about ambiguous prompts like *'Who is my best friend?'* where blurry images and weak visual context hindered meaning-making.

**Barriers to connection and immersion.** Seven participants did not feel connected to the simulated identity. Barriers included lack of context, unclear visual information, or limited interactivity. Some users expressed a desire for richer 3D environments or more emotionally expressive data to deepen immersion: 'It was not that immersive for me,' one participant noted, '*but I think if it were more interactive…I would have felt more connected.*' The inability to clearly identify people (due to anonymisation) reduced both emotional resonance and perceived narrative coherence.

**Reflective potential and future use.** All ($n = 30$) participants agreed the system had reflective value, particularly as a memory aid or journaling tool. Responses described its potential for reliving forgotten moments, understanding one's lifestyle, or revisiting meaningful events ($n = 18$). Two framed it as especially useful for older users or in clinical settings. Two others mentioned it could be helpful for processing traumas and bad experiences such as breakups. Improvements to structure and semantic coherence were mentioned to enhance the system's reflective depth. However, two participants explicitly urged caution, warning that such emotionally charged footage could be overwhelming or triggering.

Overall, participants were positive to the core concept of the system, particularly when the content was emotional, contextualised, and narratively structured. However, the variability in responses also points to the importance of semantic clarity, personal relevance, and emotional safety in designing reflective lifelog systems.

## 6 Discussion

Our findings address three key research questions related to lifelogging in immersive environments.

**RQ1: Does a narrative-driven, game-based lifelog system in VR have a positive effect on user engagement?** Quantitative engagement scores were high across most User Engagement Scale items, especially those related to aesthetic appeal and personal reward. Participants reported losing track of time and feeling absorbed in the experience. However, reverse-coded items (e.g., frustration, confusion) revealed some variability, suggesting that minor usability issues or cognitive load may affect immersion for some users. These findings are consistent with prior studies on VR immersion in memory contexts [19, 20].

**RQ2: Does game-informed narrative framing and interactivity in VR enhance users' sense of immersion and personal connection?** Open-ended responses revealed that participants appreciated the narrative arc of the system — particularly the structured flow from disorientation ('Who am I?') to personal discovery and closure ('What did I do?'). Interactive elements like visual transitions and video prompts contributed to a sense of agency and curiosity. Several participants described moments as 'emotional,' 'immersive,' or 'real,' even when the identity was fictional. This supports the role of narrative coherence and visual feedback in fostering emotional engagement.

**RQ3: Which types of questions are perceived as most meaningful when navigating lifelog data, especially in the context of unfamiliar or reconstructed memories?**

Participants consistently rated questions related to *Social Life*, *Personal Traits* as more meaningful than those focused on *Work* or *Routine*. Both Likert ratings and qualitative reflections revealed that identity-oriented and emotionally resonant content was more engaging and reflective than generic or repetitive topics like meals, commuting, or work tasks. Questions about self-identification, social connections, or significant events (e.g., weddings, hobbies, personal preferences) were seen as valuable for supporting reflection and reconstructing a sense of self. Several participants described how these questions helped them recognise patterns, revisit overlooked moments, or imagine personal parallels to the simulated life. This suggests that emotionally and socially grounded question types are more likely to support both narrative immersion and personal reflection, especially in systems designed for reminiscence or memory reconstruction. In contrast, prompts with limited visual variation or weak semantic links (e.g., transportation or food, shown repeatedly with little context) were viewed as less meaningful.

## 7 Conclusion

This work presents a novel approach to lifelog interaction by integrating narrative structure, immersive VR, and personal data into a unified multimedia experience. Our system, SLIVeR, reimagines lifelogging not as passive data review, but as an emotionally engaging, game-informed reconstruction of identity. Through cinematic storytelling and question-based interaction, users are guided through a memory recovery scenario that enhances both their cognitive focus and emotional connection.

Our user study reveals that narrative coherence, social context, and emotionally resonant question types significantly influence perceived meaningfulness and engagement. These findings contribute to ongoing discourse in multimedia systems by demonstrating how structured narrative and immersive environments can deepen user involvement with complex, multi-modal data. In doing so, we advance the ACM Multimedia themes of *Engagement* and *Experience*, showing how lifelogging can be transformed from a utilitarian task into a reflective and interactive journey.

Nonetheless, several limitations remain. First, crafting affective narratives from abstract lifelog data relied on manual curation, limiting scalability. Future versions will explore automated clustering by emotion or topic. Second, our fixed-position interface reduced cognitive load for short sessions, but longer use may require pacing aids and progressive interaction. Third, achieving semantic and spatial coherence between virtual and lifelog elements remains technically challenging, though emerging techniques (e.g., 3D generation from 2D images, Gaussian splatting) show promise. Finally, our findings are based on a small, homogeneous sample; broader studies are needed to validate generalisability.

Looking ahead, we plan to explore adaptive narratives, deeper 3D integration, and emotion-aware interactions to further personalise the experience. Applying SLIVeR to real user data could support memory rehabilitation, personal storytelling, or emotional wellbeing. Ultimately, we see this work as a step toward emotionally intelligent multimedia systems that support not just information access, but meaningful human connection with one's own past.

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