SLIVeR: A Narrative VR Experience for Immersive Lifelog Exploration

Liang Xu
liang.xu@dcu.ie
Dublin City University
Dublin, Ireland

Songkai Jia
songkai.jia@mymail.unisa.edu.au
University of South Australia
Adelaide, Australia

Cathal Gurrin
cathal.gurrin@dcu.ie
Dublin City University
Dublin, Ireland

Allie Tran
allie.tran@dcu.ie
Dublin City University
Dublin, Ireland

Abstract

We present SLIVeR (Someone else's Lifelog in Virtual Reality), an interactive system that reimagines lifelog data through narrative-based Virtual Reality (VR). Instead of passively viewing chronological data, users navigate personal history through cinematic scenes and existential prompts embedded in a memory-reconstruction storyline. Guided by life-oriented questions, users progress from disorientation to recollection using curated lifelog clips. Built in Unity and deployed on Meta Quest 3, SLIVeR transforms lifelogging into a reflective, game-like journey that blends storytelling, gamification, and immersive visuals to enhance user engagement.

CCS Concepts

• **Human-centered computing** → **Human computer interaction**; • **Information system** → *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

Personal data is abundant, but meaningful engagement with it remains elusive [6]. Lifelogging [2] — the recording of daily life through images, videos, locations, and biometrics — has long promised enhanced memory, identity reflection, and even therapeutic applications [1]. In practice, however, lifelog systems often reduce this data to searchable indexes with minimal visualisation [9]. Few systems have attempted to promote emotional or reflective engagement with lifelogs [1, 4], especially in immersive environments like Virtual Reality (VR) [7, 8], leaving personal data disconnected from lived experience.

SLIVeR reimagines lifelogging as an interactive narrative in VR. Instead of passive review, users enter a story where lifelog clips appear as memory flashbacks in a fictional plot about memory loss. Everyday moments become emotional fragments of a mystery. Through question-driven interaction, immersion, and gameplay, SLIVeR fosters deeper cognitive and emotional connection with personal data.

Our demonstration introduces: (1) A story-driven gameplay encouraging exploration through mystery and emotion. (2) A narrative arc of identity loss and recovery, creating a natural motivation for engaging with the lifelog. (3) An interface where questions guide discovery, simulating a personal dialogue with memory. (4) Cinematic metaphors like fog lifting and memory flashbacks to signal psychological and narrative progress. (5) Gamified interaction with curated video fragments from an anonymised lifelog dataset. SLIVeR transforms lifelog data into immersive storytelling, with potential in memory therapy, personal archiving, and emotionally intelligent multimedia.

2 System Description

SLIVeR fuses three distinct components: (1) real-world multimodal lifelog data, (2) immersive VR storytelling, and (3) interactive, game-based narrative design. Users explore a symbolic virtual world as a character with memory loss, guided by existential prompts (e.g., 'Who am I?', 'Who do I know?'), as seen in Figure 1, each unlocking curated lifelog clips framed as memory flashbacks. These prompts are grouped into thematic clusters such as Relationships, Movement, and Lifestyle, simulating cognitive recall through structured exploration. The system maps questions to clips, supports real-time interaction and adaptive transitions, and uses metaphors like fog, light, and sound to reflect shifting psychological states, turning passive review into narrative immersion.

2.1 Narrative Flow

SLIVeR runs on a Meta Quest 3 headset and unfolds in five stages:

Narrative Onboarding. Users begin in a foggy, surreal landscape (Figure 2) and encounter existential questions. Each choice

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Figure 1: Lifelogging Questions and Video

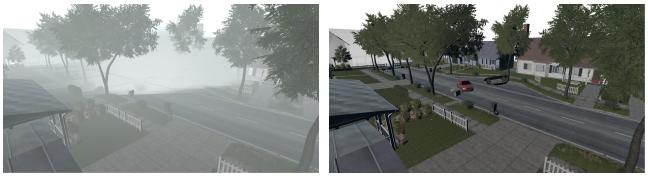

Figure 2: Mysterious Fog Effect

reveals lifelog clips as memory flashbacks, introducing a fractured identity.

Cinematic Flashback. A pivotal event, a car accident, is revealed through a flashback animation. This moment serves as a narrative catalyst, symbolising the trauma behind the protagonist's amnesia.

Exploratory Search. The world shifts to a minimalist void with floating, themed questions (e.g., 'Where do I work?', 'Who is my best friend?'). Users navigate these to unlock related lifelog fragments.

Dynamic Playback. Each question triggers a video drawn from the LSC dataset, presented as an emotionally resonant memory fragment. Transitions adapt in real time to user input.

Final Reflection. The experience ends with a reconstructed identity shaped by the user's choices, encouraging emotional insight and connection to the lifelog.

While SLIVeR adopts a fictional amnesia scenario to structure the narrative flow, this framing is not prescriptive. It serves as a dramatic scaffold to guide exploration and emotional engagement. In future iterations, alternative narrative models such as personal growth, life milestones, or self-reflection may be explored to align more closely with everyday lifelogging motivations and broaden the system's applicability beyond memory impairment contexts. A current limitation is the use of a single user's 18-month lifelog, which restricts generalisability. Future work could incorporate multi-user datasets for broader applicability.

2.2 Technical Overview

SLIVeR is developed using Unity 6 (version 6000.0.41f1) and runs on the Meta Quest 3. Interaction design uses Unity's canvas-based UI tailored for VR environments, where question prompts appear as interactive floating objects that respond to gaze and controller input. Users remain stationary, with locomotion disabled to maintain immersion and minimise motion sickness.

Data Pipeline. The system uses lifelog data from the Lifelog Search Challenge (LSC) [3], which spans 18 months of daily activities. Lifelog segments are curated using MyEachtraX [10], a semantic question-answering search engine designed to retrieve contextually relevant content. Selected image sequences are then stitched into video clips at a frame rate of 5 FPS to simulate simulate memory pacing as flashbacks.

Narrative Engine. Scene transitions between narrative stages, such as the foggy world, crash site, and question interface, are handled via Unity's scene loader and trigger systems. Key narrative events, including crash scenes, are animated using Unity's Animator in conjunction with the Physics Engine to simulate collisions, which are subsequently played in reverse to represent memory recall. Immersion is enhanced through layered ambient soundscapes and real-time effects like sirens and impacts.

Interactivity Design. The demo offers an interactive experience that merges visual storytelling, question-driven navigation, and motion-triggered responses. To ensure comfort and support smooth gaze-click interaction, users are fixed in place, minimising motion-related discomfort in VR. User interactions dynamically alters the virtual world — lifting fog, shifting lighting, or triggering embedded video playback. These transitions are tightly linked to narrative flow, such as fog lifting or colour changes reflecting memory states. Spatial metaphors are employed to convey mind states (e.g., empty void = amnesia, floating questions = cognitive search, lifelog clips = memory flashbacks).

3 User Study Insights

A user study with 30 participants evaluated SLIVeR using the User Engagement Scale (UES) [5] and open-ended feedback. Quantitative results showed high ratings for Aesthetic Appeal and Reward Factors, indicating strong emotional engagement. Qualitative responses described the experience as 'emotionally immersive,' 'mysterious,' and 'deeply personal,' with prompts related to identity and social connections rated most meaningful, whereas routine topics like meals or commuting were less engaging. Several participants likened the system to 'watching someone else's life from inside their head.' Overall, the findings highlight the emotionally resonant content and narrative depth in the immersive experience.

Although the current prototype uses pre-collected anonymised data, the underlying architecture supports potential extensions to personal lifelogging contexts. For example, users could import their own data from mobile lifelogging apps or wearable devices, enabling use cases such as digital journaling, reflective storytelling, or mood tracking. These applications require no clinical framing and may appeal to users exploring identity, habits, or relationships through immersive interaction.

Future work could expand support for procedural narrative generation. In particular, Incorporating AI context recognition technology could enable the automated generation of interactive narrative content. This would reduce the reliance on manual content production while also improving the consistency and immersion between interactive scenes and context.

4 Conclusion

SLIVeR redefines lifelogging in multimedia research by combining game design, immersive VR, and interactive storytelling into a single reflective experience. The demo showcases a working prototype that offers an emotionally compelling, technically innovative way to explore personal data through narrative immersion.

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