

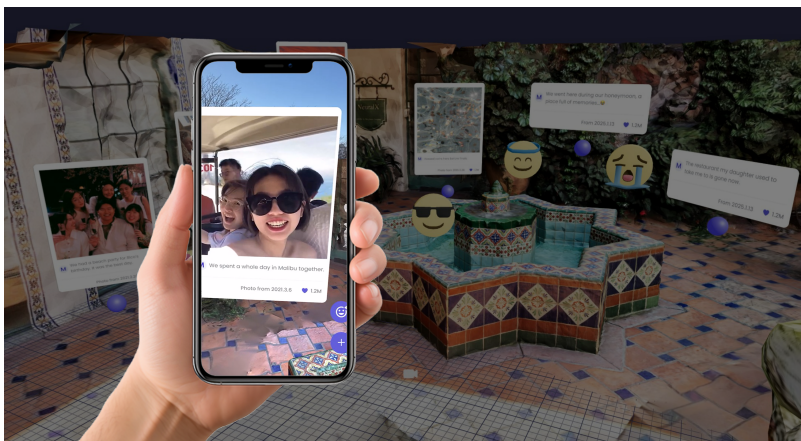
# Memoverse: A Spatial WebAR Social Platform for Memories

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**Figure 1:** Memoverse is a spatial WebAR social platform that enables users to upload, edit, and engage with memories through text, images, videos, and emojis.

## Abstract

The 2025 Los Angeles fire devastated over 40,500 acres, destroying vast neighborhoods and cultural landmarks. In response to the global grief caused by this tragedy, Memoverse, a spatial WebAR social platform, was prototyped to enable users to revisit 3D scans of lost sites and share memories through text, images, and videos. By reconstructing community memory through immersive spatial experiences, Memoverse fosters healing and connection after profound loss. Memoverse demonstrates the potential of extended reality (XR) technologies in addressing collective trauma and preserving cultural heritage in the wake of disaster.

## CCS Concepts

• **Human-centered computing** → **Interactive systems and tools**; **Social networking sites**; • **Computing methodologies** → **Mixed / augmented reality**.

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## Keywords

Augmented reality, WebAR, Social platform, Digital memory

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## 1 Introduction

Memoverse is a mobile WebAR social platform created in response to the collective loss of community memory following the 2025 Los Angeles fire [2]. The tragedy sparked widespread grief among both current and former residents as cherished places tied to personal and shared histories were lost.

The platform allows users to virtually revisit 3D scans of lost sites, explore shared memories, and contribute their own through text, images, and videos—all without requiring an app download or account. Users can also express emotions through emojis, fostering a supportive space for emotional expression and recovery. Unlike [4], Memoverse is an online social platform that supports interactive engagement.

Built with the Niantic Studio <sup>1</sup> and utilizing 3D scans from Scaniverse <sup>2</sup>, Memoverse emphasizes immersive engagement, safety, and

<sup>1</sup><https://www.8thwall.com/products/niantic-studio>

<sup>2</sup><https://scaniverse.com/>

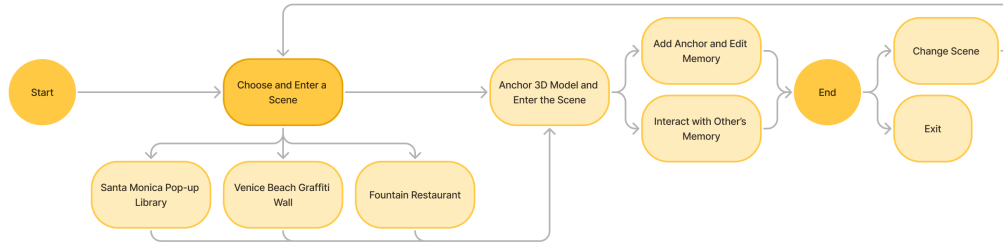


Figure 2: The interaction workflow of Memoverse.

accessibility. Without relying on real-time location data, it enables users to reconnect with lost spaces from anywhere, serving as a digital sanctuary for healing and community rebuilding.

## 2 Overview

Figure 2 illustrates the interaction workflow of Memoverse. Upon launching the application, users are prompted to select a scanned scene. In this prototype, the Fountain Restaurant serves as an example environment. Once inside the scene, users can navigate and interact with the virtual space. Specifically, they can place anchors and upload memories in various formats, including text, images, and videos. Additionally, users can view these memories, which dynamically zoom in and move toward them upon selection. If the memory is a video, playback is initiated automatically. Furthermore, users can engage with memories by adding 3D emoji reactions. Since Memoverse is a WebAR application, exiting the experience is as simple as closing the web browser.

## 3 Implementation

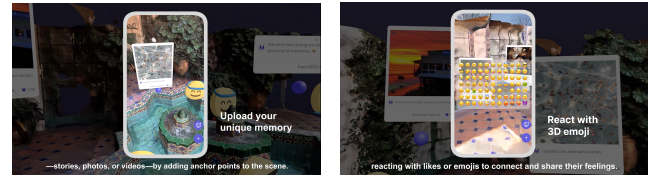
Memoverse, developed using Niantic Studio, is a WebAR platform that operates without a dedicated headset. Its UI combines 2D HTML elements (e.g., splash screens, progress bars, buttons) with 3D spatial anchors like emojis and multimedia memory cards.

Scenes are generated from real-world data using Scaniverse, a LiDAR scanning app, to capture high-fidelity scans of locations in California. The raw data undergoes mesh simplification, texture mapping, and optimization for performance, with certain environments enhanced through custom props and lighting.

Designed as a memory-based social platform, Memoverse allows users to upload, edit, and react to digital memories. As a WebAR application, it runs in mobile browsers, ensuring accessibility without additional hardware or installations. Figure 3 highlights the two primary functional features of the platform.

## 4 User Evaluation

To evaluate the usability and immersiveness, we utilized two established questionnaires: the System Usability Scale (SUS) [1] and the Igroup Presence Questionnaire (IPQ) [3], targeting usability and immersiveness, respectively. The user study was conducted remotely with 11 participants (6 female, 5 male), aged between 24 and 39 years ( $M = 27.7$ ,  $SD = 4.0$ ), recruited from online communities. Participants were first briefed on the study procedures, interacted with the Memoverse platform, and completed questionnaires. The entire session typically lasted approximately 20 minutes.



(a) Uploading spatial memory

(b) Reacting with 3D Emoji

Figure 3: Primary features of Memoverse.

Results indicate that **81.8%** of participants found the system easy to use (mean SUS score: 86.6); **90.9%** reported that no technical assistance was required during use; **72.7%** expressed a willingness to engage with the platform again.

The results of the IPQ questionnaire showed moderate to high levels of presence and realism in the AR experience. Participants reported a mean score of 5.07 ( $SD = 1.39$ ) for Spatial Presence, 3.96 ( $SD = 1.12$ ) for Involvement, and 4.59 ( $SD = 1.07$ ) for Experienced Realism. Notably, **72.7%** of participants reported feeling “captivated” by the AR experience, while **63.6%** perceived the memory environment as “highly consistent with reality.” Qualitative feedback highlighted appreciation for the freedom in uploading content and the emotional resonance of viewing shared memories.

Suggestions for improvement included enhanced map navigation, refined content filtering, and improved visibility control. These insights informed subsequent design enhancements, such as the integration of a memory-tagging system, the addition of seasonal revisit prompts, and the initiation of cultural partnerships aimed at curating long-term public memory archives.

## 5 Conclusion

Memoverse represents a preliminary investigation into the use of extended reality technologies to address collective trauma and support the preservation of cultural heritage in post-disaster contexts. Future work will evaluate usability and emotional impact across age groups. Additional site-specific scenes will be incorporated to enhance the platform’s generalizability and promote inclusive engagement.

## References

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