The Future of the Past

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Abstract

There is a growing interest in novel interaction paradigms that reevaluate our relationship with time. This position paper discusses current and future work exploring the intersection of user experience design with innovative interfaces engaging temporal and cultural perspectives. We introduce three project perspectives for discussion and reflection.

Keywords

Time, Cultural heritage, Human-Computer Interaction, Intelligent User Interfaces

1. Introduction

Within contemporary human computer interaction studies, an area of growing interest is the development of novel interaction paradigms that reevaluate our relationship with time. In the following position paper, we discuss current and future work exploring the intersection of contemporary user experience design with a variety of innovative interfaces designed to engage with temporal and cultural perspectives. Each of the projects discussed below are designed to influence users' perceptions of time and the self, enhancing how we interact with the past and the present, ultimately evolving a vision for a new future experience of the past.

Our contribution to the 2024 Intelligent User Interfaces workshop on 'Past Meets Future' introduces three categories of projects exploring the idea of human computer interaction in the past. First, we would like to present our vision of TeleAbsence, which evokes the memory of lost loved ones through the tangible materials they have left behind. Secondly, we discuss interfaces that reconsider our relationships with our past and future selves. Finally, we discuss work exploring the potential of AI embodied in virtual characters, which can speak across time. These three project categories are described in detail below:
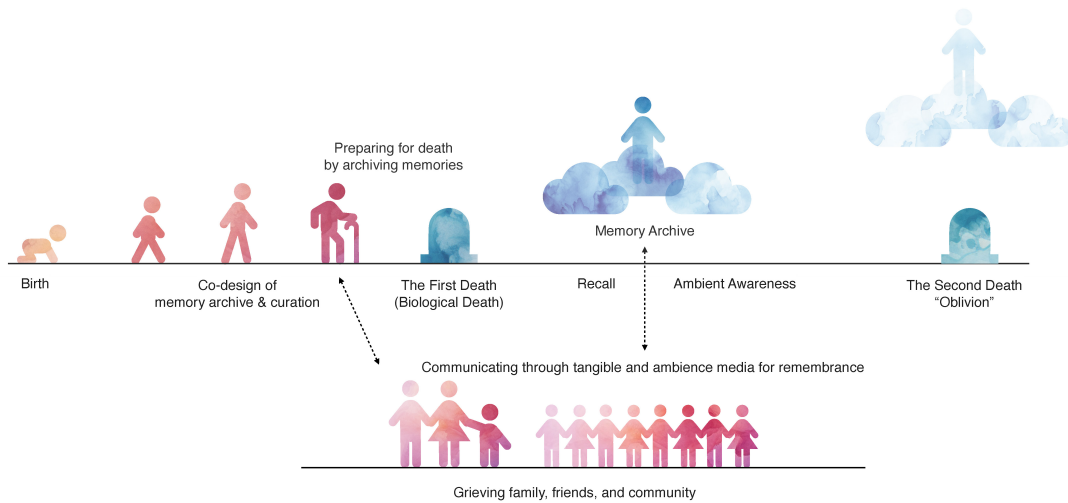
Figure 1: TeleAbsence Life Cycle Diagram

1. TeleAbsence Interfaces for Communicating through Time;
2. Human AI Interfaces for Integrating with Past, Future and Alternative Selves;
3. AI-Generated Characters as Digital Mementos;

2. TeleAbsence Interfaces for Communicating through Time

2.1. TeleAbsence Interfaces

Our vision of TeleAbsence is an interpretation of telepresence that, unlike telepresence's focus on asynchronous communication across physical distance, instead addresses emotional and temporal distance caused by the loss or fading memory of loved ones. TeleAbsence interfaces are designed to foster 'illusory communications', conjuring the feeling of being there with those no longer with us. Our vision of TeleAbsence questions how to be remembered and how to remember, a transcendent approach to HCI to integrate the human spirit with the design potentials of human-computer interaction, evoking ideas like traces of reflection [1] and remote time [2]. We will present future and present work within our TeleAbsence vision, including crowd sourced local histories of architectural environments in mixed reality environments and prompt-based storytelling technologies for memory re-enactment.

2.2. Crowd Sourcing Memories for Augmented Reality Interactions

Our development of TeleAbsence has primarily explored frameworks for enabling individuals to connect with personal relationships outside the boundaries of biological life. Current TeleAb-

Figure 2: Remote Time Interface Prototype

sence research focuses on crowd-sourcing photography, media, and ephemeral paraphernalia to document the architectural intelligence of the MIT Media Lab. Further current work introduces an interface for remembering the past at the intersection of photography, spatial media, and interactive simulation spaces. Notably, our vision of TeleAbsence abstains from relying solely on Artificial Intelligence, and in this way, offers a novel approach to connecting with the past.

2.3. TeleAbsence Interfaces for Remote time

To store the past in a simulation may enable greater understanding of ourselves, our stories, and our past histories. Our project proposes techniques and technologies that will enhance an individual's ability to remember the present in the future, to mourn the loss of time, and to remember and commemorate past experiences. Taking as our source a dataset of human narratives derived from physical records and ephemera, we aim to examine the potential of interfaces focused on the TeleAbsence principle of 'remote time' by creating toy AI simulations of architecture. We present two example scenarios that explore generative human narratives through artificial simulations of the past. In each scenario, we are exploring ways to relocate lost spaces and places in a person's life.

3. Interacting with Past, Future and Alternative Selves

Our experience of the body and our experience of the mind relate in ways which are not always synchronous or seamless. Projects discussed below explore the multiplication of the self through the use of artificial intelligence as well as simulated conversations between versions of the self
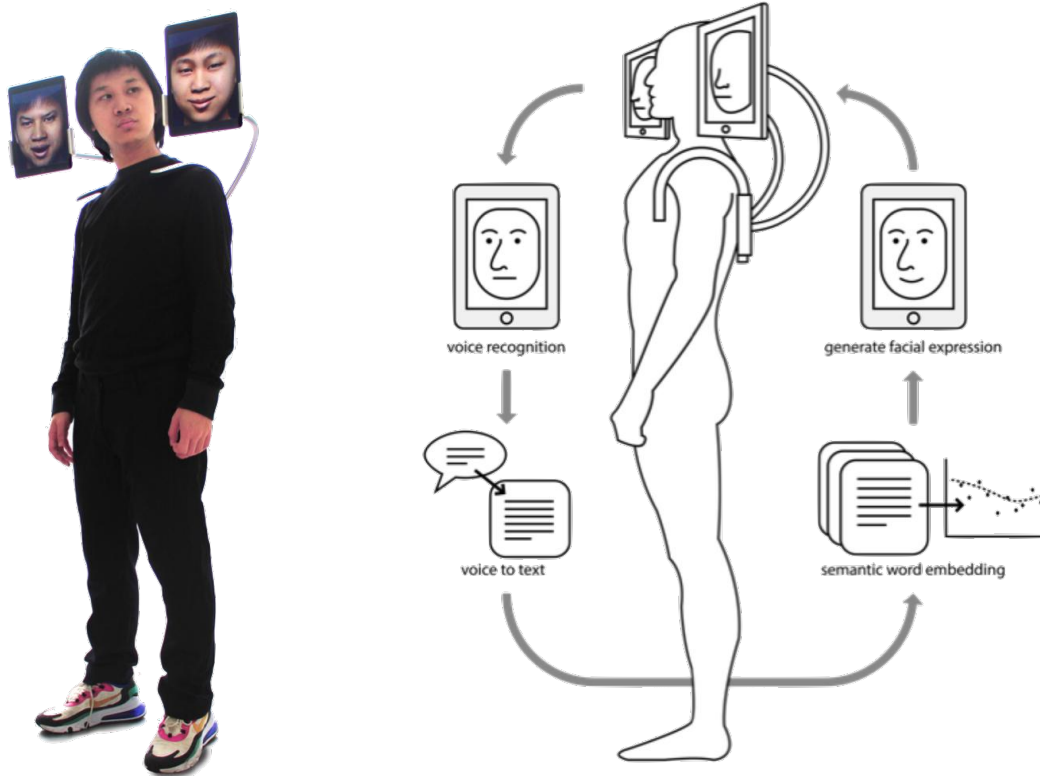
Figure 3: Machinoia Design and Documentation

across time. In these projects and others we explore the implications of human/AI interaction for past, future and alternate versions of the self.

3.1. Machinoia

Recent findings have demonstrated that our minds can phenomenologically inhabit multiple bodies throughout the duration of an individual's life. As an exploration of this concept, we present Machinoia [3], a symbiotic augmentation that extends a user's persona with two additional heads, each of which are unique variations of the user's identity: who you once were, and who you'll eventually become. We used a generative adversarial network to synthesize life-like human faces which were controlled through artificial attitude models extracted from social media data of the wearer. The resulting wearable interface achieves a visualization of "artificial personal intelligences" of the wearer, bringing to life past and future versions of oneself.

3.2. Future You

"Future You" is an AI platform that enables users to interact with a customized digital twin, using a tailored Generative Pre-trained Transformer (GPT) to simulate a real time virtual version
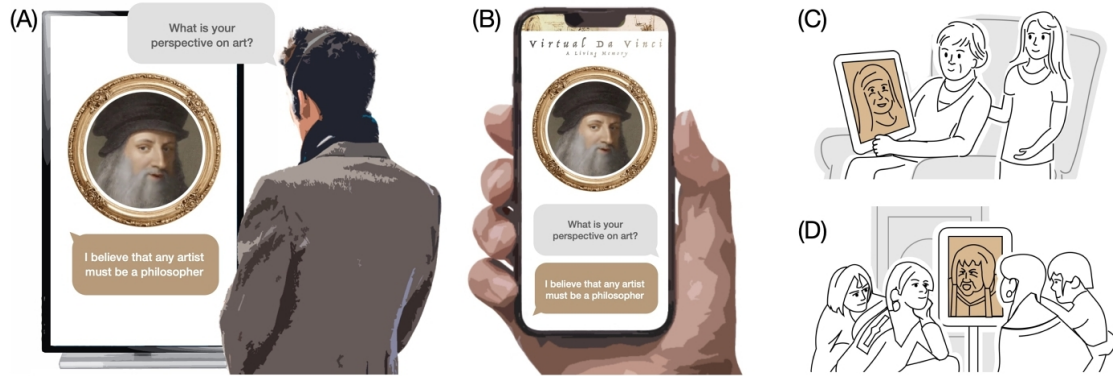
Figure 4: Living Memories, Diagram of Interaction Sequence

of a user's future self. The platform was inspired by a psychological theory that found having a clear vision of one's future self can influence positive long-term behavior and an overall higher quality of life. The 'Future You' system generates synthetic memories for users' future selves, representing a potential version of their life story at age 60. This enables users to engage with different virtual selves at various ages. Initial study results showed that 70% of 188 participants reported feeling as if they had conversations with their future selves. This suggests potential benefits for the application of AI systems such as this in reducing negative feelings and anxiety, while fostering positive emotions and motivation.

4. AI-Generated Characters as Digital Mementos

Every human culture has developed practices and rituals associated with remembering people of the past - be it for mourning, cultural preservation, or learning about historical events. To remember individuuals, we have explored a variety of interfaces, including digital mementos and interactive installations.

4.1. Living Memories

To investigate the application of artificial intelligence to our experience of personal recollections, we explored the concept of "Living Memories"[4]: interactive digital mementos that are created from journals, letters and data that an individual has left behind. Like an interactive photograph, living memories can be talked to and asked questions, making the knowledge, attitudes and past experiences of a person easily accessible. To demonstrate our concept, we created an AI-based system for generating living memories from any data source. In our initial study, we implemented living memories of the three historical figures, "Leonardo Da Vinci", "Murasaki Shikibu", and "Captain Robert Scott".

Figure 5: Newell Simon Simulation Installation View, From Left to Right: Image of Apple IIGS desktop interface, Detail view of interactive archive application, Commodore Pet Computer and Oscilloscopes

4.2. Newell Simon Simulation

In our TeleAbsence research, we have also explored well known public figures, such as in the mixed reality installation Newell Simon Simulation, which questioned how we can access and enter the mental spaces of those that we admire or know from a collective and cultural perspective. The project Newell Simon Simulation demonstrates further possibilities of placing TeleAbsence experiences in physically located spaces using augmented reality interfaces to explore human/AI interaction. This TeleAbsence Interface focused on two lost historical figures, Allen Newell and Herbert Simon, who in the 1950s' developed the first artificial intelligence program that could "solve problems like a human", a program named "The Logic Theorist". In 1956, they presented their ideas at a computer science conference at Dartmouth, a conference that has since been widely considered to be "the birth of artificial intelligence". The Newell Simon Simulation installation incorporated both computer-generated and analog interactive experiences in a large-scale mixed-reality environment. This room scale interface provided an engaging way for visitors to learn about the origins of artificial intelligence, by "embodying" the original researchers point of view, while interacting with their research in an AI-integrated augmented reality format.

4.3. Conclusion

In anticipation of the future of new interfaces for interacting with the past, our exploration of novel interaction paradigms within contemporary human-computer interaction studies has led to exciting works that reevaluate our relationship with time. This position paper presents three categories of projects at the forefront of these conversations.

Our TeleAbsence vision focuses on fostering illusory communications through interfaces that address the emotional and temporal distance caused by loss, with forthcoming projects on crowd-sourced architectural histories and interactive memory experiences, each which interrogate our connection to past places and lost loved ones. Interacting with past, future, and alternative selves in projects like 'Machinoia', or "Future You," an AI platform simulating users'

future selves, are each projects that stimulate user-centered relationships across time. Finally, works on AI-Generated Characters as Digital Mementos such as "Living Memories," featuring interactive digital mementos created from personal data, and the Newell Simon Simulation, exploring historical figures in a mixed-reality environment.

These projects collectively contribute to evolving a vision for a new future experience of the past, redefining human-computer interaction through innovative interfaces and temporal perspectives. In these projects and others, we ask many questions. What new cognitive affordances do these interactive interfaces with time enable? How will human/AI interaction transform cultural studies, anthropology, and our approach to looking back at the past, in a future that is even more saturated with artificially intelligent interfaces?

References

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