Voices of the Past: The Promise and Perils of VUIs for Home-Based Memory Recall

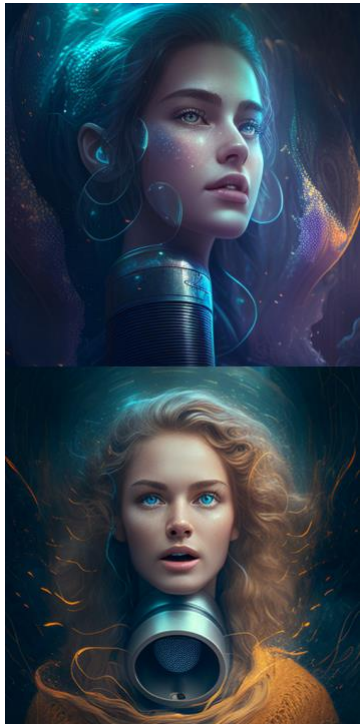

Figure 1: How Midjourney Bot imagines users' mental time travel through voice user interfaces

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Abstract
Voice user interfaces (VUIs) offer a natural and accessible means of interacting with technology that has the potential to facilitate memory recall for individuals of all ages and abilities within the comfort of their homes. Nonetheless, employing VUIs to preserve and retrieve memories in such a private context also raises significant ethical concerns, including issues of privacy, consent, and the possibility of misuse. This position paper aims to examine both the potential advantages of this approach especially for the marginalized groups, and the ethical concerns involved with it. Our goal is to establish a foundation for future research in this direction. We trust that this paper will stimulate a broader interdisciplinary dialogue concerning the ethical, social, and psychological dimensions of inclusive voice-mediated memory recall.

Author Keywords
Voice user interfaces; reminiscence; ethical concerns; digital memory; user-centered design

VUIs and Home-based Memory
Memory plays an essential role in human culture and identity, allowing us to reflect on the past and connect with our personal histories (e.g., [5, 14, 17]). Memories formed in the home hold a particular significance, as they are intimately tied to our sense of belonging and shape our understanding of ourselves [11]. Over time, our ability to recall events may diminish, but the practice of creating and collecting mementos can help us preserve our memories and ensure that they remain a vital part of our lives [13, 16, 20].

With the rise of digital photography and the integration of technology into the home environment, new opportunities for the preservation and retrieval of memories have emerged [13, 16]. Using voice interaction instead of traditional methods like typing, tapping, or swiping, Voice User Interfaces (VUIs) provide a particularly promising avenue for effortless memory creation, storage, and retrieval. This is

especially critical for marginalized groups (e.g., older adults or people with disabilities) who may encounter difficulties with conventional interfaces. The use of voice interaction design as a memory aid for marginalized groups has been explored in previous studies (e.g., [1, 9, 15, 18]). For instance, Jesus-Azabal et al. showed the advantages of using voice-based interaction through Alexa to remind elderly users of their daily medication doses [9]. Ferland et al. [4] also examined the potential of voice-activated assistive technology for addressing memory loss, while Ennis et al. [3] developed a solution that combined commercial voice assistants with a smart bathroom cabinet to support independence in older adults. Similarly, Thakur and Han [19] implemented virtual assistants to provide increased independence to people living with dementia, using flexible and minimal interactions.

As we continue to navigate the evolving landscape of technological advancements, it is crucial to recognize the potential of VUIs in preserving and retrieving memories, especially for those who may face difficulties with conventional interfaces. However, the use of VUIs to capture and recall memories also gives rise to important ethical issues that require careful consideration. For instance, there are concerns about safeguarding the privacy of recorded memories, obtaining consent when sharing memories with others, and the potential for sensitive information to be misused or abused. In the subsequent section, we explore some of the ethical concerns that arise in this context.

Some Ethical Concerns

If we reflect on the character of oral cultures and how the nature of information changed when it could be recorded, transmitted, and recalled through paper, we can expect that using voice as a modality will vastly increase the amount of data available for different types of memory work. This increase in available information will likely cause new problems of storage, assemblage, and other aspects of use, which will require careful consideration.

One significant issue is the question of who will select, organize, and dispose of these memories. Will it be up to the individual, or will there be centralized platforms that collect and organize memories on our behalf? Additionally, memory recall at home raises specific issues surrounding the issue of 'normativity' and the exercise of memory-holding rights. Who has the right to hold family memories, and how do they exercise it? This is particularly important for marginalized users and might increase the risk of discriminatory practices.

Furthermore, the potential for misuse or abuse of sensitive information is another critical ethical consideration. For instance, how can we protect the privacy of recorded memories, and when memories are shared with others, what kind of consent is necessary for the marginalized group of users? All of these, we think, are design relevant questions that need to be taken into account to ensure that the benefits of VUIs for memory preservation are balanced with the ethical considerations associated with the use of this technology.

Designing Ethical VUIs for Memory Recall

Designing VUIs for home-based memory recall requires a responsible and ethical approach. Different ethical frameworks can be applied to ensure that these

interfaces are designed with user privacy, data ownership, and inclusivity in mind [10].

A deontological approach [12] to designing VUIs for memory recall would focus on following ethical principles that prioritize user privacy and data ownership. For example, a designer might follow the principles of General Data Protection Regulations (GDPR)[6] and ensure that users are fully informed about how their data will be collected, stored, and used, and that users have control over their own data. This approach can ensure that marginalized user groups have autonomy over their personal data and can trust the VUI to handle their information responsibly.

A consequentialist ethical approach [2] would focus on maximizing the positive outcomes of preserving users' memories while minimizing any negative consequences. For example, a designer might prioritize the ability of the VUI to capture and preserve important memories and moments in a user's life, while ensuring that user data is protected and secure. This approach can ensure that marginalized user groups have access to memory recall technology that benefits them while minimizing any potential harms, such as privacy breaches.

A virtue ethics approach [7] to designing VUIs as memory aid would emphasize the importance of designing interfaces that promote positive character traits or virtues, such as respect for privacy, transparency, and honesty. For example, a designer might ensure that the VUI is transparent about how it is collecting and using user data, and is honest with users about any potential risks or downsides to using the interface. This approach can ensure that marginalized user groups are treated with dignity and respect and that the VUI is designed to promote their well-being.

And finally, a feminist ethics approach[8] to designing VUIs for memory aid would focus on ensuring that the interface is designed in a way that is inclusive and sensitive to the needs and experiences of all users, regardless of gender. For example, a designer might ensure that the VUI is not biased towards or against any particular gender, and that it is designed to be accessible and usable by all. This approach can ensure that marginalized user groups are not excluded from using memory recall technology due to gender biases or other forms of discrimination.

Conclusion and Future Work

Inevitably, the proliferation of voice technology in our homes signifies a profound transformation in the ways we engage with, store, and retrieve our memories. The advantages of using VUIs for memory recall are manifold, ranging from providing greater accessibility and independence for elderly and disabled individuals to preserving cherished family memories. Nevertheless, the ethical considerations that accompany the use of this technology must be taken into account. By carefully weighing these ethical concerns against the advantages of using VUIs for memory recall, we can ensure that this technology is employed in a responsible and ethical manner, ultimately enhancing our capacity to remember and preserve the experiences that shape us.

As the field of VUIs and memory preservation continues to mature, several avenues for future research emerge. One such area of inquiry involves exploring the potential of VUIs for collaborative memory, where multiple individuals can contribute to and access a shared memory bank. This could lead to new

possibilities for intergenerational sharing of memories, facilitating communal experiences of recall, and enabling greater opportunities for collective and inclusive learning and understanding.

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