PRESERVING IDENTITY AND ENHANCING EMOTIONAL WELL-BEING:
An AI-Powered Conversational Assistant for Dementia Care

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1   BACKGROUND AND OBJECTIVES

Dementia, a progressive neurological disorder that impairs memory and cognitive behaviour of an individual is ranked as the second leading cause of death, presently affecting over 400,000 individuals in Australia (Brown, Hansnata, & La, 2017; Chin, 2023; See et al., 2023; Bokhari et al., 2025). Such memory loss and communication challenges can cause inability to share personal histories thereby stripping individuals of their identity and emotional well-being (Rose & Harrison Dening, 2023; Dellkvist et al., 2024). To address this, our paper presents an intelligent conversational assistant, outlining its design, key components, and practical application scenarios. Our study introduces a novel, empathetic, voice-based conversational assistant using innovative technologies such as Conversational AI designed to engage users in natural, memory-evoking dialogue.

2   PROPOSED METHODOLOGY AND DESIGN FOR AI-POWERED CONVERSATIONAL ASSISTANT

Our proposed methodology and human-centric design facilitates memory-based interactions through natural and voice-enabled dialogues to aid preservation of life stories. Figure 1 shows an overview of our proposed conversational assistant.
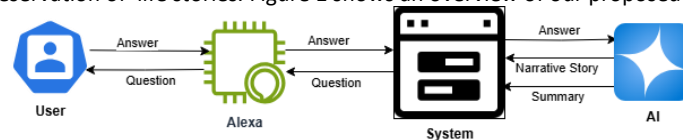

Figure 1: Overview of the proposed AI-Powered Conversational Assistant

Through personalised prompts—like "Tell me about your first job" or "What was your childhood home like?"- the AI-powered assistant encourages dementia patients to recall and share meaningful moments. The assistant records, transcribes, and securely stores these spoken responses and generates a coherent personal narratives of individuals as life stories that can preserve their identity. The system architecture is composed of three integrated components that collectively form the voice component, a centralised database, and the story builder component, as shown in Figure 2. The process workflow of the proposed conversational assistant is designed to enable natural and memory-driven dialogue while progressively building a digital archive of the human life experiences, memories and stories, as demonstrated in Figure 3.
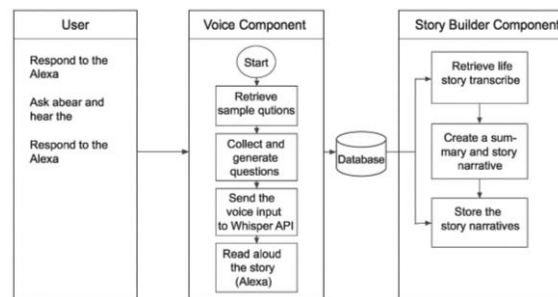

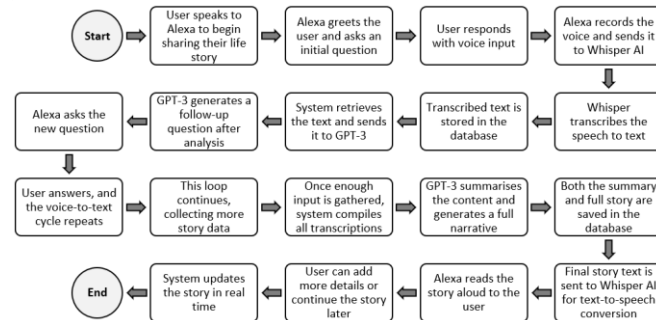Figure 2: Components of the Architecture of the Proposed Conversational Assistant

Figure 3: Process Workflow of the Proposed Conversational Assistant

3   CONCLUSION

In this study, we presented an intelligent voice-based conversational assistant that has a meaningful impact by preserving life stories and identity, helping to reduce agitation, and supporting caregivers in delivering empathetic dementia care. It aligns with the Industry 5.0 paradigm, prioritising human-centric, ethical, and scalable AI, for enhancing both emotional well-being and quality of care for dementia patients.

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