FACULTY OF ENGINEERING AND ARCHITECTURE

IDLab
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IDLab - AIRO

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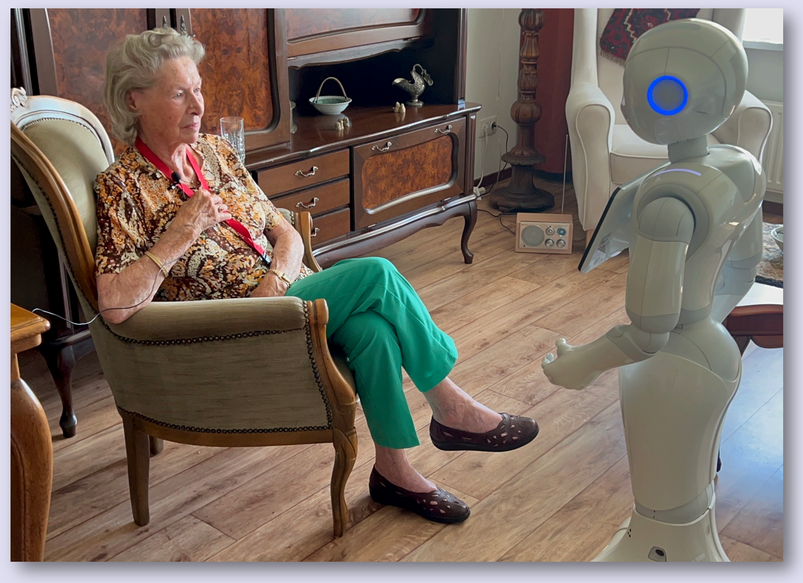
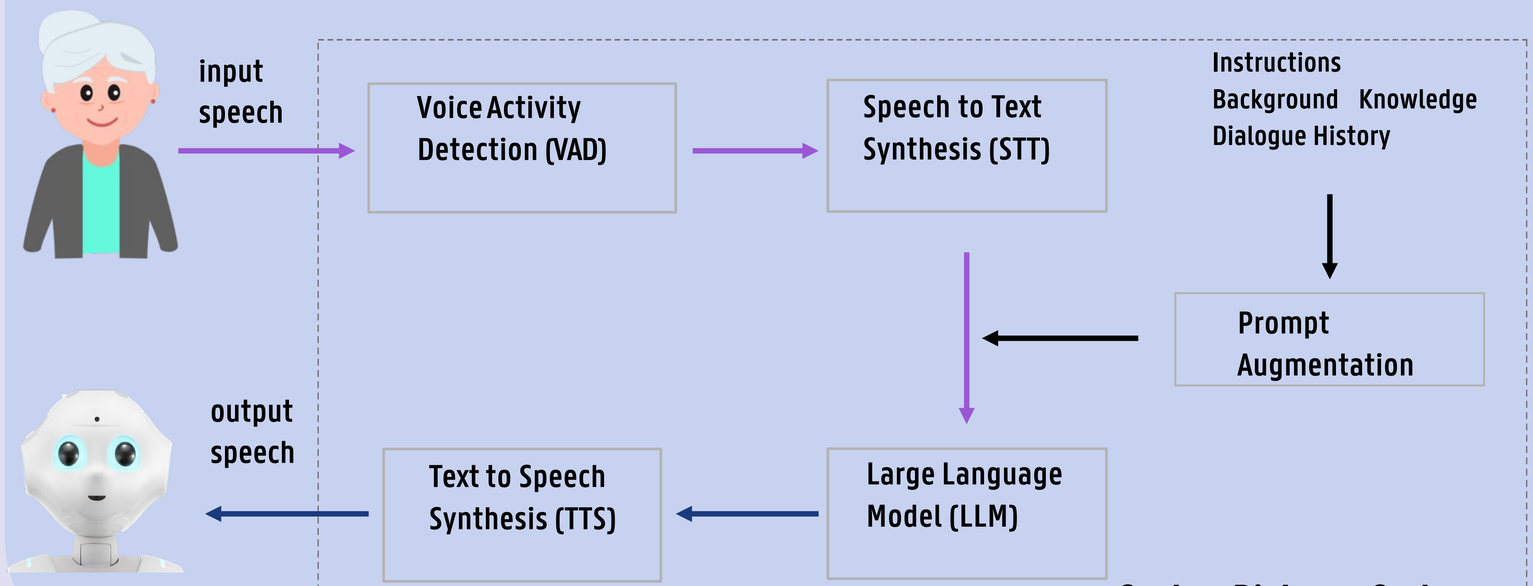
Large Language Models In Social Robots: The Key To Open Unconstrained Human-robot Conversations?



INTRODUCTION

Human-robot interaction has evolved, with social robots offering companionship and support, especially in healthcare. A challenge is the limited autonomy and natural conversation ability of these robots. Large Language Models show promise in improving conversational skills, but challenges include their text-based design and difficulties in multi-modal interactions.

SYSTEM DESIGN – EVALUATION

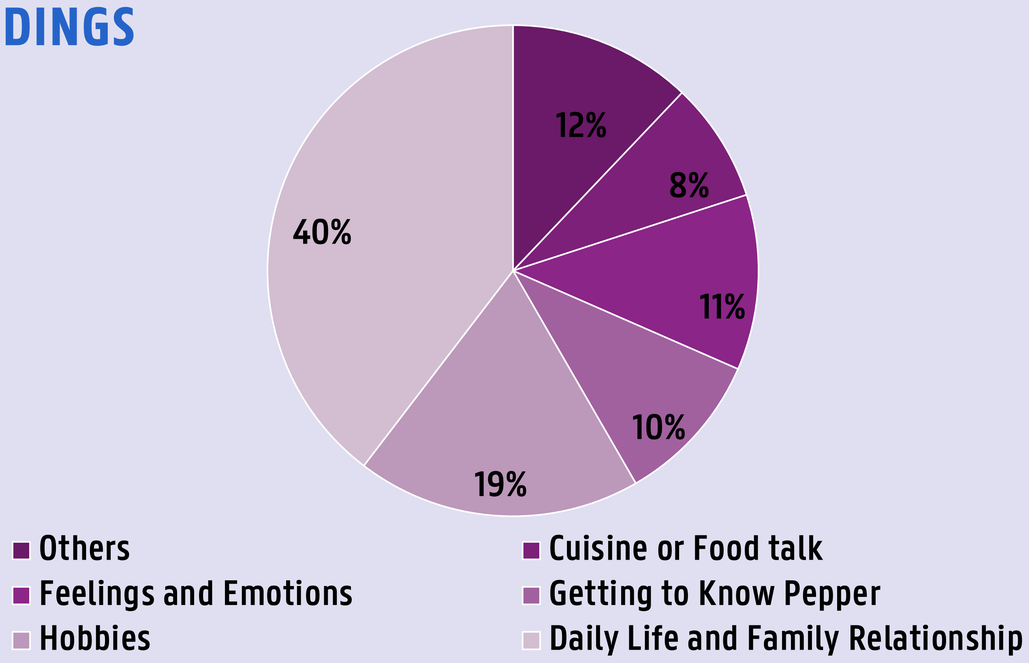


Participants: seven Dutch-speaking older adults (77.57 ± 3.82 years old)

Interaction	I	II
Conversation (min.)	11:12	09:38
Average Response (sec.)	6.93	6.89
Turns exchange	19.71	15.71
Interruptions (%)	15.97	10.32
STT Accuracy (%)	89.93	91.27

Table I. Quantitative Overview of Interaction Metrics during Interaction with Pepper

FINDINGS



Pepper's interactions were perceived as human-like, particularly in voice tone and its ability to provide empathetic, contextually relevant responses.

The high reported levels of trust, leading to sharing secrets, suggest an evolving dynamic in human-robot relationships.

Participants compared Pepper to pets or childhood toys, indicating a strong connection.

CHALLENGES

Multimodality presents distinct challenges in HRI. Core issues revolve around achieving seamless and natural interactions that encompass audio, visual, and gestural cues.

Individual differences in response speeds, especially in older adults, hinder the effectiveness of fixed-time breaks for turn-taking.

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