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Proposta de Projeto Eng. de Computadores e Informática (2023-2024)

Remote Speech and Language Therapy for Active Ageing at Home

Keywords: eHealth, Speech and Language, Communication, Virtual Meetings, Assessment, Rehabilitation, Speech Therapy, Smart Homes, Active ageing.

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CONTEXT

The population in many countries, including Portugal, is ageing. Also, there is a decrease of human resources in healthcare. It is essential to invest in prevention, creating conditions for older adults to stay longer in their homes and remain active.

Age affects communication and activity/participation due to physiological changes in the auditory, speech and voice systems, reducing the quality of communication and communicative opportunities and can lead to feelings of loneliness.

Smart homes and remote professional interventions have the potential to provide better assessment and continued rehabilitation. To serve as a proof-of-concept for this new paradigm, University of Aveiro in partnership with OLI company, Rovisco Pais Rehabilitation Center, and several companies associated with INOVADOMUS, is exploring novel solutions for an older adult smart home. A key part of this project is the construction of a real home (with the main infrastructure already in place).

OBJECTIVES

Development of a platform for the smart home in construction capable of collecting and analyzing users' information (mainly speech) to support assessment of communicative capabilities (expression and comprehension) and virtual speech and hearing therapy sessions. The platform should support therapy sessions, providing transmission of speech and video between the patient(s) and therapist as well analysis of the communication during the session.

Additionally, if time allows, the platform should provide tools for linguistic and cognitive stimulation between remote therapy sessions., presenting the user various linguistic and cognitive stimulation tasks.

TENTIVE WORK PLAN

- Acquisition of knowledge regarding the state-of-the-art.
- Getting acquainted with the existing proofs of concept for meetings (for example (Brás, 2022)).
- Definition of main requirements and system architecture.
- Selection of tool(s) for the development
- Iterative development of the platform and its main components (remote session support and continued recording of information).
- Iterative and user-centered development of a first proof-of-concept for the stimulation tool.
- Demonstrations.
- Writing documentation and reports.

REFERENCES

Brás, J. (2022). *Virtual Assistant for Meeting Coordinators.* Dissertação de Mestrado em Engenharia de Computadores e Telemática, Universidade de Aveiro.

Barros, F., Valente, A. R., Teixeira, A., & Silva, S. (2022, November). Harnessing the Role of Speech Interaction in Smart Environments Towards Improved Adaptability and Health Monitoring. In *International Conference on Wireless Mobile Communication and Healthcare* (pp. 271-286). Cham: Springer Nature Switzerland.

NUMBER OF STUDENTS

4 or 5

RELATION WITH PROJECTS

This proposal is related to project Casa Viva+, funded in its initial phase (2022-2023) by OLI and INOVADOMUS associates.