The use of a social robot as an assistant for recording speech of patients with Alzheimer Dissese

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Abstract

This paper presents the utilization of a social robot, Furhat, as a tool for speech data collection from patients with Alzheimer's disease. Our primary objective was to employ a social robot to autonomously collect speech data from patients, ensuring a user-friendly experience while gathering data suitable for both individual patient diagnosis. In our experiment, we recorded 30 elderly individuals conversing with the Furhat robot. Following the interaction, participants completed a questionnaire to evaluate their experience. We adapted conventional Alzheimer's disease diagnostic tasks, such as phonation tasks ("a" and "pataka"), picture descrition etc. for the robot-human interaction. The questionnaire results indicated that participants were receptive to using a social robot for diagnostic purposes and found the interaction enjoyable. The robot effectively guided participants through the tasks, ensuring clear understanding and execution. Our findings demonstrate the feasibility of autonomous human-robot interaction for speech data collection. Participants were able to interact with the robot independently with minimal instruction, requiring only to sit, wear headphones, and follow the robot's guidance. We successfully recorded speech data of sufficient quality for subsequent transcription, acoustic analysis, and potential diagnostic applications. As a next step, we will refine the task instructions based on participant feedback and performance. The collected data will be annotated and analyzed to further develop diagnostic models. This research contributes to the development of innovative, patient-centered tools for early detection and monitoring of Alzheimer's disease.

Keywords