A Conversational Robot for Older Adults with Alzheimer's Disease

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Amid the rising cost of Alzheimer's disease (AD), assistive health technologies can reduce care-giving burden by aiding in assessment, monitoring, and therapy. This article presents a pilot study testing the feasibility and effect of a conversational robot in a cognitive assessment task with older adults with AD. We examine the robot interactions through dialogue and miscommunication analysis, linguistic feature analysis, and the use of a qualitative analysis, in which we report key themes that were prevalent throughout the study. While conversations were typically better with human conversation partners (being longer, with greater engagement and less misunderstanding), we found that the robot was generally well liked by participants and that it was able to capture their interest in dialogue. Miscommunication due to issues of understanding and intelligibility did not seem to deter participants from their experience. Furthermore, in automatically extracting linguistic features, we examine how non-acoustic aspects of language change across participants with varying degrees of cognitive impairment, highlighting the robot's potential as a monitoring tool. This pilot study is an exploration of how conversational robots can be used to support individuals with AD.

CCS Concepts: • **Human-centered computing** → *Empirical studies in HCI*; • **Computer systems organization** → Robotics;

Additional Key Words and Phrases: Assistive technology, dementia, human-robot interaction, dialogue

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1 INTRODUCTION

Alzheimer's disease (AD) is a neurodegenerative disease that primarily affects memory and leads to disorientation, loss of motivation, behavioural issues, and language problems [3, 4]. The decline

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