

## Publication

## Intelligent Assistive Technology for Alzheimer's Disease and Other Dementias: A Systematic Review

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Abstract Intelligent assistive technologies (IATs) have the potential of offering innovative solutions to mitigate the global burden of dementia and provide new tools for dementia care. While technological opportunities multiply rapidly, clinical applications are rare as the technological potential of IATs remains inadequately translated into dementia care. In this article, the authors present the results of a systematic review and the resulting comprehensive technology index of IATs with application in dementia care. Computer science, engineering, and medical databases were extensively searched and the retrieved items were systematically reviewed. For each IAT, the authors examined their technological type, application, target population, model of development, and evidence of clinical validation. The findings reveal that the IAT spectrum is expanding rapidly in volume and variety over time, and encompasses intelligent systems supporting various assistive tasks and clinical uses. At the same time, the results confirm the persistence of structural limitations to successful adoption including partial lack of clinical validation and insufficient focus on patients' needs. This index is designed to orient clinicians and relevant stakeholders involved in the implementation and management of dementia care across the current capabilities, applications, and limitations of IATs and to facilitate the translation of medical engineering research into clinical practice. In addition, a discussion of the major methodological challenges and policy implications for the successful and ethically responsible implementation of IAT into dementia care is provided.

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