AI-Enabled Conversations to Measure Mental Status and Manage Psychotropic Medication Use

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PennAITech AD/ADRD Focus Pilot Core

The Problem

Continuous monitoring of cognitive function is
- **vital for early detection** and proper management of AD/ADRD.
- **time-consuming, costly**, infrequent, inconsistent, and imprecise

Lack of proper monitoring exacerbated by **staffing shortages, high turnover**, uneven competence among caregivers.

Lack of proper monitoring may
- lead to **missed care opportunities**
- have disparate impact on **populations with poor or irregular access to care**

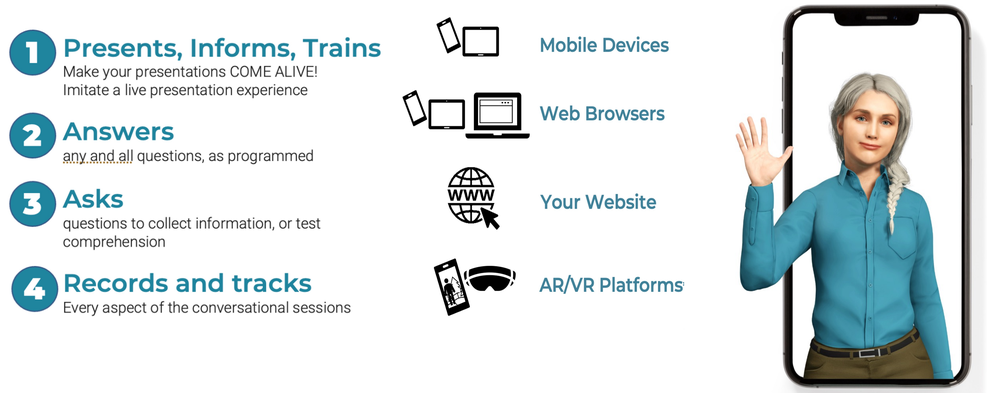
Project Goal

An AI application that uses digital "conversation companions" to monitor cognitive function reliably, accurately, and in real time

1. **Conduct conversations** between residents of four assisted-living facilities and digital "conversation companions"
2. **Combine the conversation transcripts with residents' socio-demographic and salient clinical-behavioral observations**, including measures of cognitive function and markers of AD/ADRD
3. Use the data set to **train machine-learning algorithms that detect clinically significant changes in cognitive function**

The Solution

Digital "conversation companions" that monitor cognitive function continuously, consistently, precisely.



Digital "conversation companions" work on multiple platforms and can be delivered to patients living in hard-to-reach settings.
- Use by an **untrained caregiver or the patients themselves**
- **Voice-capture recording and transcription** of the patient's questions and answers
- Interactions include **social conversations**, clinical assessments
- Digital avatars can be tailored to reflect the patient's and the provider's:
  - **cultural heritage**
  - **native language and dialect**
  - **location**
  - **race / ethnicity**
  - **general education and interests**

Study Population and Study Setting

More than 140 residents who can interact verbally
- with AD/ADRD diagnosis
- without AD/ADRD diagnosis but with 1+ AD/ADRD risk factor.

Study Sites: 4 Residential-Care Homes in Western New York State

Commercialization Potential and Impact

- **Remote patient monitoring** technology
- Ideal for **aging-at-home** population

Covers gaps in care
No training required
No equipment to buy or install
Detect ADRD, memory loss, depression early
Monitor disease progression
Measure intervention effectiveness
Manage psychotropic medication use

Stakeholder Groups

Clinicians such as chief medical officers of senior-living facilities and mental health professionals
- **Administrators of senior-living facilities**
- **Caregivers**, including home health aides
- **Family members**
- Patient advocacy organizations, including the **Alzheimer's Association**
- **State and local departments of health** and other regulatory and oversight agencies

Next Steps

- Test in larger, more diverse populations
- Business plan
- Patent applications
- FDA clearance

Acknowledgements

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