

Emotional Identity in Assistive Technology for Aging

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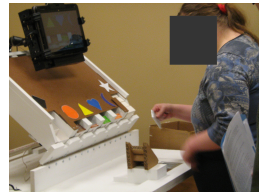
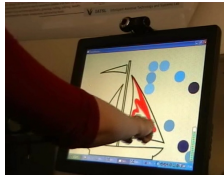


alzheimer's association



IATSL

Cognitive Assistive Technologies



ALIGNMENT

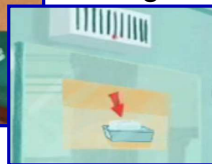
emotion
affect
culture



customisability
adaptivity
knowledge

FUNCTION

sensing
deciding
acting



COLLABORATION

Emotional Alignment

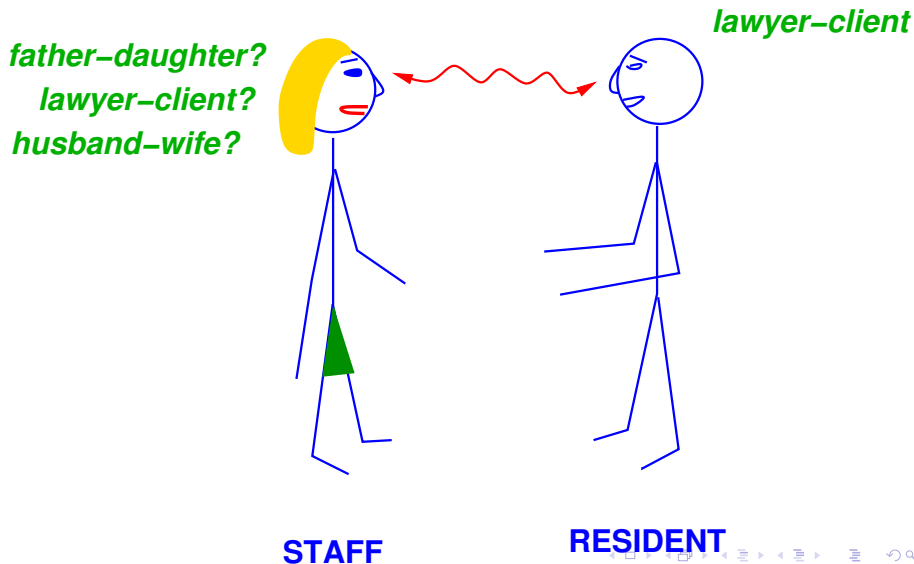
need to go **beyond the functional abilities** of the person and system, and start thinking about:

- ▶ *who this person believes they are, their **self**,*
- ▶ *how they are **feeling** about themselves, the caregiver, the system, the handwashing task, and*
- ▶ *how assistive technology will effect them **emotionally***

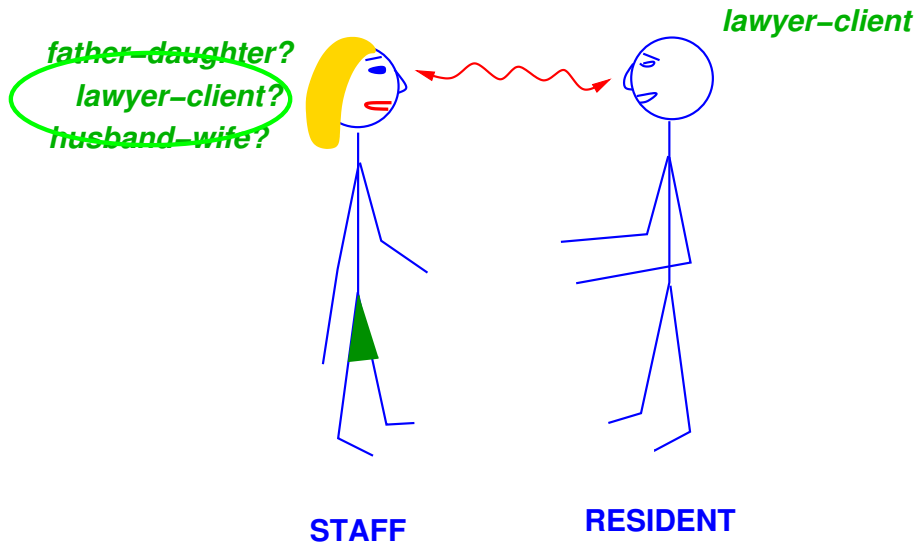
How do we build assistive technology that is:

- ▶ **emotionally aligned**, and
- ▶ fosters **uptake** and **adoption**?

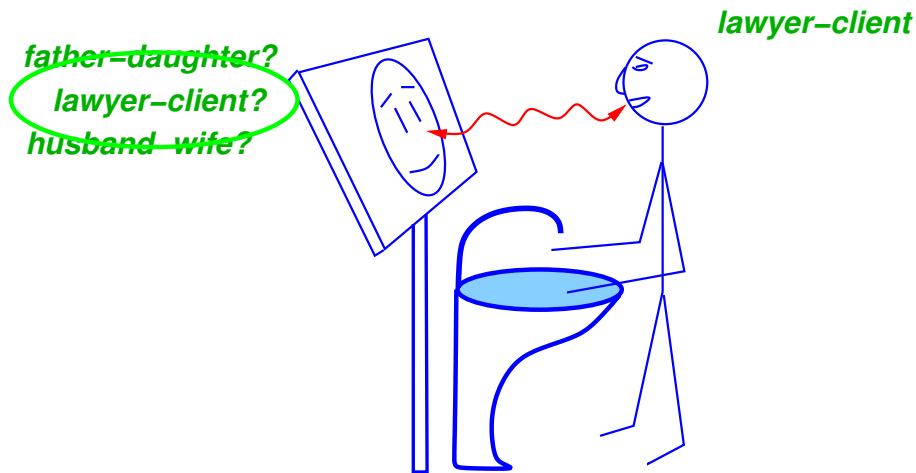
Emotional Alignment in Practice



Emotional Alignment in Practice



Emotional Alignment in Practice



COACH

RESIDENT

- ▶ **ACT@HOME** - Qualitative study of biographical identities in dementia
 - ▶ Alexandra König (Waterloo), Alex Mihailidis (Toronto)
- ▶ **EMOTEC** - Understanding perceptions of identity
 - ▶ Julie Robillard (UBC)
- ▶ **VIPCare** - Building applications for caregivers
 - ▶ Linda Francis (Cleveland State), Moojan Ghafurian (Waterloo)
- ▶ **NEATO** - Understanding biographical narratives
 - ▶ Heather Love, Heather Eustace, Renée Leung (Waterloo)

ACT@HOME - Qualitative Study

- ▶ Semi-structured interview
- ▶ **33 Residents**
- ▶ **20 Caregivers**
- ▶ **Biographical** Identities
- ▶ Current Identities
- ▶ **Loss** of identity
- ▶ Identity of **virtual human** →

RIA RESEARCH
INSTITUTE
for AGING

Kensington
HEALTH



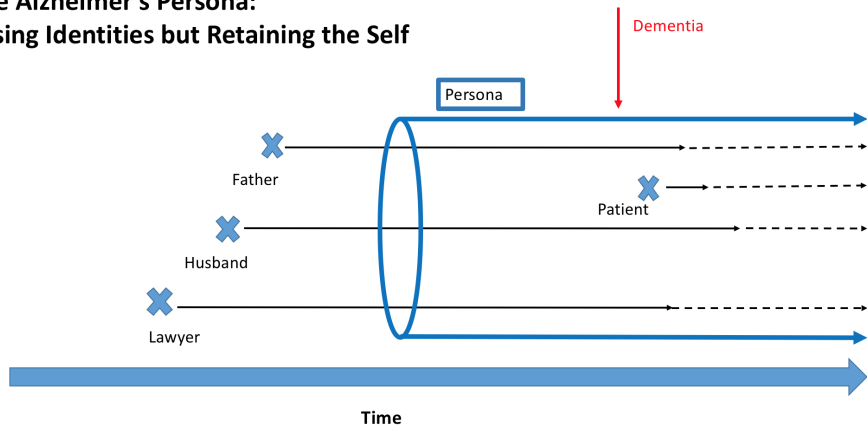
Interactive Assistance Lab,
University of Colorado @
Boulder

Interviews

Demographic information	Biographical identities (Persona)	Persona sentiments
male,63 Young-onset moderate dementia	father,husband, brother Canadian, lawyer	Father- E:1.8/P:1.8/A:0.0 Lawyer- E:0.2/P:2.1/A:0.1 Husband- E:1.2/P:1.0/A:0.1
male,82 Moderate dementia	different jobs, manager, lost father in war,widow, husband - lover, father, brother	Father- E:1.8/P:1.8 /A:0.0 Salesman- E:0.3/P:0.2/A:0.7 Husband- E:1.2/P:1.0/A: 0.1 Gentleman- E:2.2/P:1.2/A:0.6
female,93 Mild dementia	English, immigrant, housewife, mother, sister	Briton- E:1.3/P:0.4/A:0.3 Mother- E:2.2/P:1.8/A:0.3 Housewife- E:1.5/P:-0.2/A: 0.3

ACT@HOME - Qualitative Study

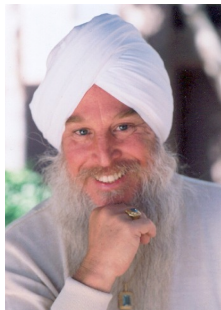
The Alzheimer's Persona: Losing Identities but Retaining the Self



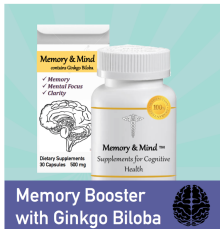
People remember ***“how they should feel, not who they are”***

EMOTEC (AGEWELL)

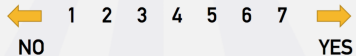
- ▶ **Tapestry Retirement Living** (Vancouver)
- ▶ 2018: **Non-demented** residents
- ▶ **identities** of “memory supplement” sellers



- ▶ **identities** of residents/caregivers
- ▶ Future: integration into **prompting** system



Would you purchase this product?





Dr. Dharma

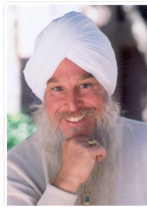
Dr. Dharma is a Doctor of Medicine (M.D.), an ordained minister and yogi. He is also a best-selling author.

He is dedicated to fighting Alzheimer's disease and finding a cure through research and prevention.

He is one of the original voices on the integrative medical approach to the prevention and treatment of memory loss. He recently called on Congress to fund a national campaign to inform the public of the benefits of an integrative medical approach to Alzheimer's.

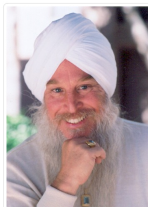
Dr. Dharma spearheaded research studies on healthy subjects, in conjunction with the Amen Clinic. He also helped design several additional groundbreaking scientific research studies with prestigious Universities, and the renown Karolinska Institute.

<http://www.dr-dharma.com/Public/Supplements/MemoryCare/index.cfm?trac=592>

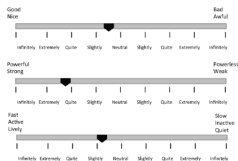


<http://www.dr-dharma.com/Public/Supplements/MemoryCare/index.cfm?trac=592>

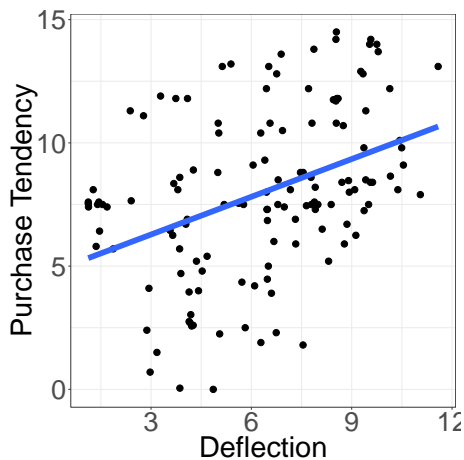
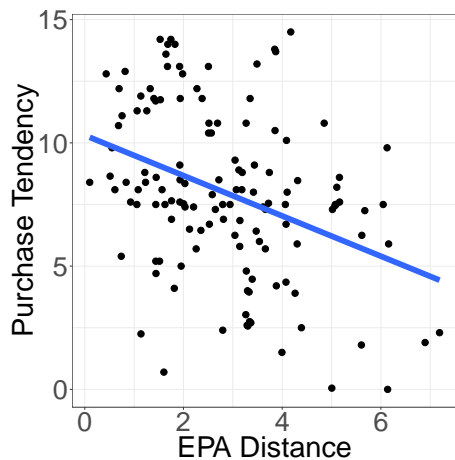
Would you purchase the product from Dr. Dharma?



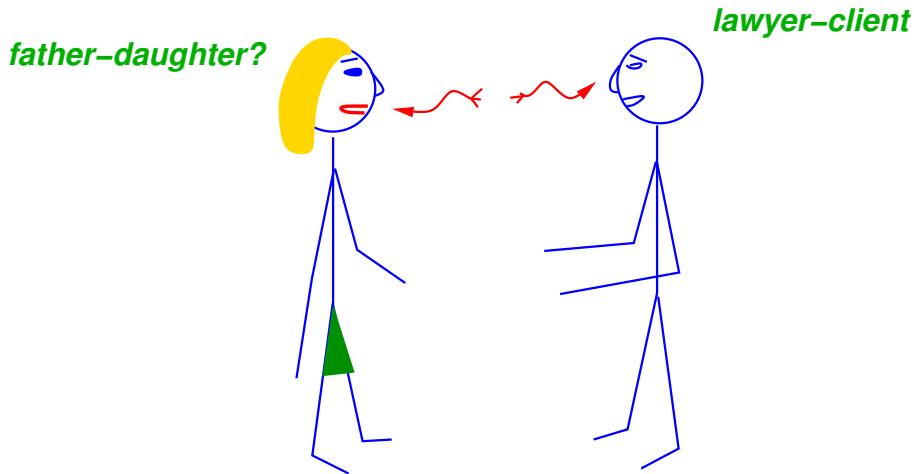
<http://www.dr-dharma.com/Public/Supplements/MemoryCare/index.cfm?trac=592>



EMOTEC



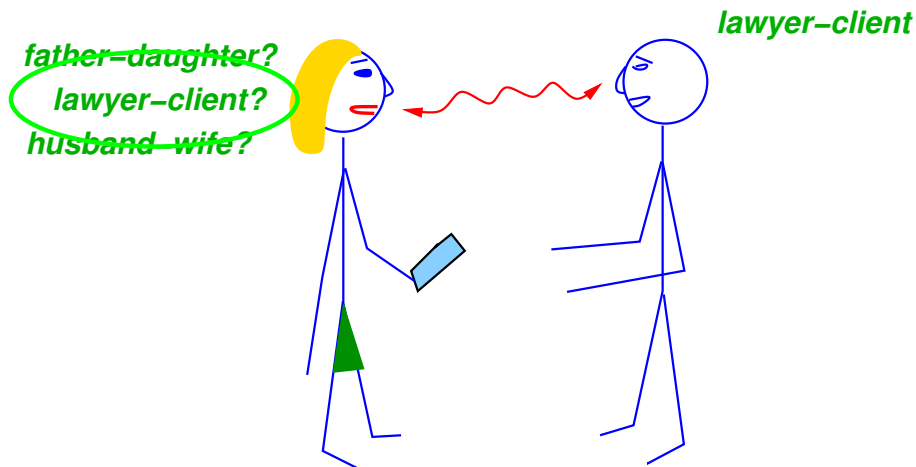
Emotional Alignment in Practice



New Staff/Family member

RESIDENT

Emotional Alignment in Practice



New Staff/Family member

RESIDENT

VIPCare (Alzheimer's Association)

- ▶ **Avon Oaks Caring Community** (Cleveland)
- ▶ 9 sessions with **18 professional staff**
- ▶ **Focus groups** (2 sessions)
- ▶ **Co-Design** (7 sessions)
- ▶ Staff learns through **trial and error**

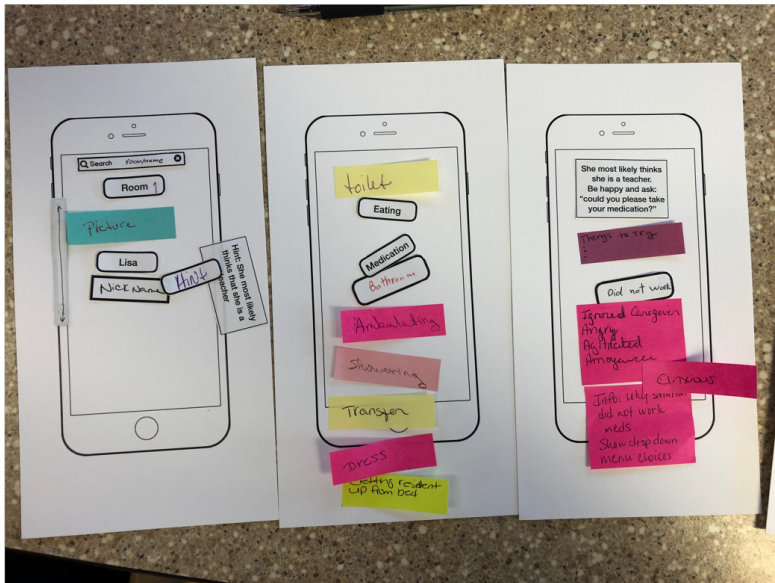
“I think that would help people in the community, because a lot of people, especially when they are new, even after they are new for a while, they don't know how to talk to the people”

- ▶ **Role Playing**

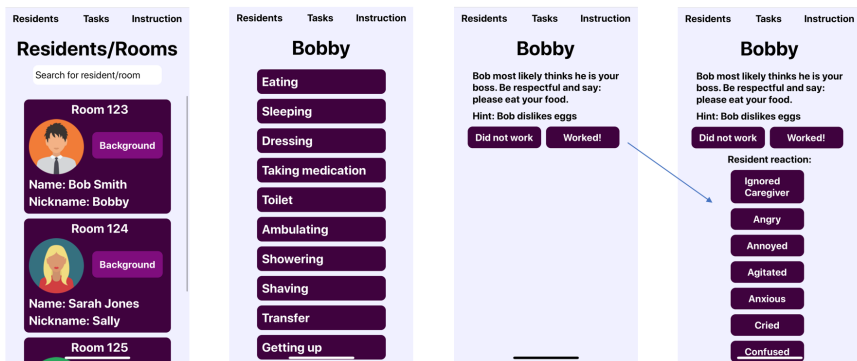
“...there are 30 residents, and you live in 30 different realities in a matter of 24 hours, so you have to figure out which one you are in.”

“We had a lady who we called grandma but she would call us granny... I would play like the granny role and say ‘grandma, come on, I have made this for you’ and then she like trust me”

VIP early results

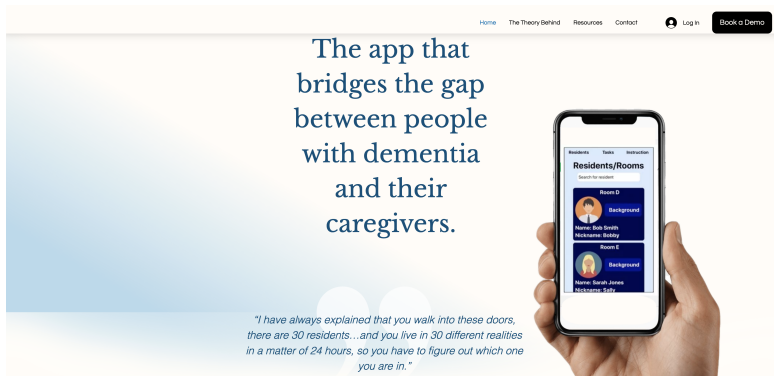


VIP early results



Moojan Ghafurian, Derek Tao, Elen Mullaj (Waterloo)

VIP early results



The app that bridges the gap between people with dementia and their caregivers.

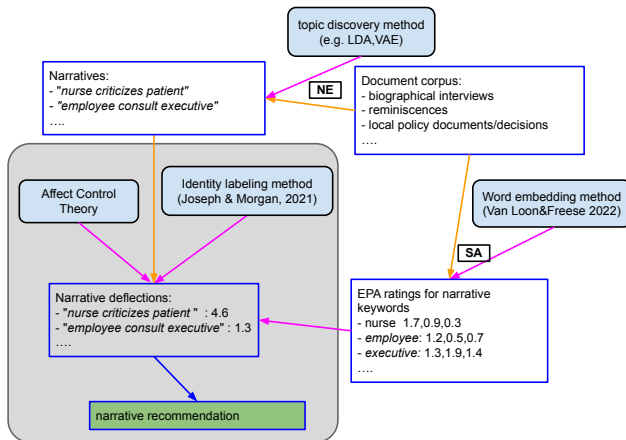
"I have always explained that you walk into these doors, there are 30 residents...and you live in 30 different realities in a matter of 24 hours, so you have to figure out which one you are in."

The screenshot shows a mobile app interface with a navigation bar at the top containing 'Residents', 'Tasks', and 'Instructions'. Below the navigation bar is a section titled 'Residents/Rooms' with a search bar. The main content area displays two entries: 'Room D' and 'Room E'. Each entry includes a profile picture, a 'Background' button, and a list of residents with their names and nicknames. For Room D, the residents are Bob Smith (Nickname: Bobby) and Sarah Jones (Nickname: Sally). For Room E, the residents are Sarah Jones (Nickname: Sally) and Bob Smith (Nickname: Bobby).

<http://vip-care.ca>

Moojan Ghafurian, Derek Tao, Elen Mullaj (Waterloo)

NEATO: Narrative Engagement for Adoption of Technology by Older Adults



Key Questions

- ▶ What **affective identities** are held by persons with Alzheimer's disease?
 - ▶ How quickly and by how much do these identities **change**?
 - ▶ Can we **track** changing/different identities?
 - ▶ Do affective prompts make a **difference**?
 - ▶ Can **virtual humans** or other artifacts be used effectively for prompting?
-
- ▶ How can modeling of **sentiments and emotions** lead to more **acceptable adaptive technologies** for assistance with dementia?

Past and Current Collaborators:

- ▶ Alex Mihailidis (Toronto)
- ▶ Tobias Schröder (Potsdam)
- ▶ Linda Francis (Cleveland State)
- ▶ Julie M. Robillard (UBC)
- ▶ Heather Love (Waterloo)
- ▶ Kimberly B. Rogers (Dartmouth)
- ▶ Kathryn Lively (Dartmouth)
- ▶ Mary Step (Cleveland State)
- ▶ Sarel Van Vuuren (Colorado)
- ▶ James Tung (Waterloo)
- ▶ Rosalie Wang (Toronto)
- ▶ Neil MacKinnon (Guelph)
- ▶ Alexandra König (INRIA)
- ▶ Stefan Teipel (Rostock)
- ▶ Francois Michaud (Sherbrooke)



Current Students/Postdocs (Waterloo):

- ▶ **Renée Leung**
- ▶ **Heather Eustace**
- ▶ **Elen Mullaj**
- ▶ **Moojan Ghafurian**
- ▶ **Zahra Sheihkbahae**
- ▶ **Quentin Roy**
- ▶ **Joshua Jung**
- ▶ **Neil Budnarain**
- ▶ **Alex Sachs**
- ▶ **Rahul Iyer**
- ▶ **Alex Yun**
- ▶ **Daniel Tchori**
- ▶ **Aarti Malhotra**
- ▶ **Derek Tao**

- ▶ American Alzheimer's Assoc.
- ▶ Research Institute for Aging
- ▶ AGEWELL Canadian NCE
- ▶ NSERC
- ▶ SSHRC
- ▶ CIHR
- ▶ MITACS
- ▶ CCNA



More Information:

- ▶ Bayesian Affect Control Theory: bayesact.ca
- ▶ VIP-Care: vip-care.ca
- ▶ Jesse Hoey  @drjessehoey  jhoey@cs.uwaterloo.ca