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Tackling Loneliness in Diverse Communities: Value Sensitive Design of Social Robotics for LGBT+ Elderly

International Symposium

The Future of Assistive Technologies in Dementia Care

An Interdisciplinary Dialogue

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Agenda

Social robotics within the wider context of automation

LGBT+ elderly study overview

Three stakeholder views

- Robotics engineers
- Healthcare professionals
- LGBT+ elderly

Discussion and conclusions

The wider context of automation

The importance of ethical considerations in engineering

Automation in healthcare is an emerging frontier

Google's DeepMind

A world leader in AI, responsible for many well publicised accomplishments (<https://www.deepmind.com/impact>)

- AI for faster identification of eye disease from common scans
- Diagnosis of acute kidney injury up to 48 hours earlier than other methods
- Increased accuracy of breast cancer identification

“Technology is not value neutral, and technologists must take responsibility for the ethical and social impact of their work” (<https://deepmind.com/blog/why-we-launched-deepmind-ethics-society/>)

Business process improvement through automation

Automation began in agriculture and has dominated in manufacturing

- Big data analytics
- AI
- Robotics
- Control systems
- Sensing
- Inspection of finished products
- Machine learning

Amazon

In 2013 Amazon bought a robotics company and today their main warehouse has over 300,000 robots working to fulfil customer orders.

From the time a customer clicks to complete an order, to its delivery takes only 2 days.

Customer demand is driving innovation

Healthcare is one of the new frontiers. Imagine a near future in which hundreds of different types of robots interact in smart hospital and aged care environments to improve care.

Automation in healthcare

All of the following are current, not futuristic

- In the last 12 months over 1 million procedures have been conducted by over 6,000 surgical robots around the world
- AI is used to diagnose medical images
- 3D printed implants
- Wearable devices to monitor glucose levels
- Gene sequencing
- Data analytics machine learning applied to hospital health records
- Telemedicine, which really took off through the COVID-19 pandemic

Social robotics within the wider context of automation

The emergence of adaptation

A social robot?

This is a form of automation that is autonomous or semi-autonomous, which **interacts** with people.

It is that **interactional** social behaviour design which needs to be considered from an ethical perspective.

Particularly for people with cognitive challenges such as dementia. As their disease progresses more of the burden of social interaction needs to fall on the automaton.

The social robot needs to adapt to the increasing challenges posed by the progression of the disease.

Elderly and dementia

General problems with current technology

- Elderly person's ability to use it
 - Persistent updating and patching of the software
 - Regular changes to the interface
- A person with dementia finds this even more frustrating than other elderly. Better would be for the technology to adapt to the person, rather than the person to the technology.
- Not all elderly with dementia are the same. There are diverse communities of elderly, including LGBT+ communities

LGBT+ elderly and dementia

Ethical problems with current assistive technologies

- Voice activation and assistants such as Siri and Alexa. At present these digital assistants remain rudimentary and frustrating
- Scandals surrounding 3rd parties listening to conversations have done nothing for trusting them.
 - Apple allowed 3rd parties to listen to discussions between doctors and patients, business deals, sexual encounters ... accompanied by user data showing location, contact details, and app data. (The Guardian, July 2019)
- This is particularly concerning for LGBT+ people who fear being listened to by unsympathetic ears who are then privy to their most private, domestic relations, habits and concerns

LGBT+ elderly and social robots

Social disparities and loneliness among LGBT+ elderly

- Globally, LGBT+ elderly suffer loneliness at levels higher than the general older population

Factors exacerbating loneliness among LGBT+ elderly

- Real and perceived social isolation
- Historical and social discrimination
- Estranged relationships with family
- Low levels of family support, friends support, and connectedness to the LGBT+ community
- Poor social care and exposure to violence

LGBT+ elderly and social robots

Barriers to existing social support

- LGBT+ elderly under-utilise social support services
- Lack of formal social support services in rural areas
- Discrimination and structural barriers
 - Trust issues
 - Lack of family support
 - Poor matching of social support volunteers to LGBT+ elderly

LGBT+ elderly and social robots

The case for social robots

- Technology-based social support frameworks are a popular alternative for LGBT+ elderly, including Skype, Facebook, FaceTime, and email
- Social robots and LGBT+ elderly loneliness is unexplored in the research literature
- User-driven, highly personalised, value sensitive solution

Value Sensitive Design (VSD)

VSD is about social informatics. It takes both the social and technical aspects of design seriously. It is a subset of the software engineering design process.

A value is something of importance to an individual or a group. The focus is on moral and social, not economic or usability values.

VSD is an **interactional** theory. Values are not embedded in the technology, nor simply transmitted as social forces. Values arise contextually in the interaction between the robot and the social forces.

- Not just privacy (moral) but interactional privacy in relational (social) contexts.
- The automaton needs to adapt and prioritise privacy interactions contextually.

LGBT+ elderly study

Sex, gender and sexual orientation

Sex, gender and sexuality should be treated as separate constructs

- Ensure respect is maintained for how individuals see themselves
- Ensure people are not 'othered' for not fitting normative categories
- Provide people with agency in a sensitive and inclusive manner

Sex represents the biological characteristics of the individual.

Gender is a socially constructed concept that signifies how individuals see and/or present themselves. Individuals may have a gender identity that departs from their sex.

Sexual orientation encapsulates sexual identity, attraction and behaviour.

I am biologically male, my gender identity is male
and my sexual attraction is to women

Methodology

VSD study

1. Conceptual investigation

- Draft values from professional ethics sources, e.g., codes of conduct and IEEE standards
- Design value sensitive social robots

2. Empirical investigation – Semi-structured, in-depth interviews

- Elicit new values and meanings from stakeholders
- Re-design value sensitive social robots

Stakeholders

Robotics engineers – know how a robot ought to interact with users generally

Healthcare professionals – know how one ought to interact with LGBT+ elderly to ensure care

LGBT+ elderly – know what they want from a robot in a social role

Building a safe robot



Building a caring robot



Building a valued robot

Three stakeholder views

- Robotics engineers
- Healthcare professionals
- LGBT+ elderly

Stakeholder voices

On meaningful technology

- *With technology and creating a robot that is mindful on having a balance between I want to engage people to a degree that is healthy engagement with the technology, but also motivate them to do different things. (Social roboticist)*

On meaningful care

- *People want to be treated in the same way as far as dignity and respect goes. That is an absolutely everyone is equal in that kind of behaviour. But when it comes to service delivery, equity has to come into being; you cannot treat everyone the same...we do not expect that every vegetarian that walks into our setting is going to eat meat because we're going to treat them equally. (Aged care consumer engagement coordinator)*

On meaningful interactions

- *I appreciate where I come from, and that there were certain aspects of that that was still a part of who I am you know, how much time I had there, that was important to me to hold onto. (Gay man, 70-74)*

Importance of value meaning – beyond physical safety

Cultural safety

- *There are a lot of needs in terms of cultural safety, not being outed, connection with other people who might share an identity, such as connecting trans women with other trans women. (LGBT+ outreach program provider)*

Safe spaces

- *We ran a couple of dedicated LGBT+ screening sessions to people in the community to come and train amongst other people in the community and creating a safe space that people feel comfortable. (Diversity and inclusion manager)*

Information security

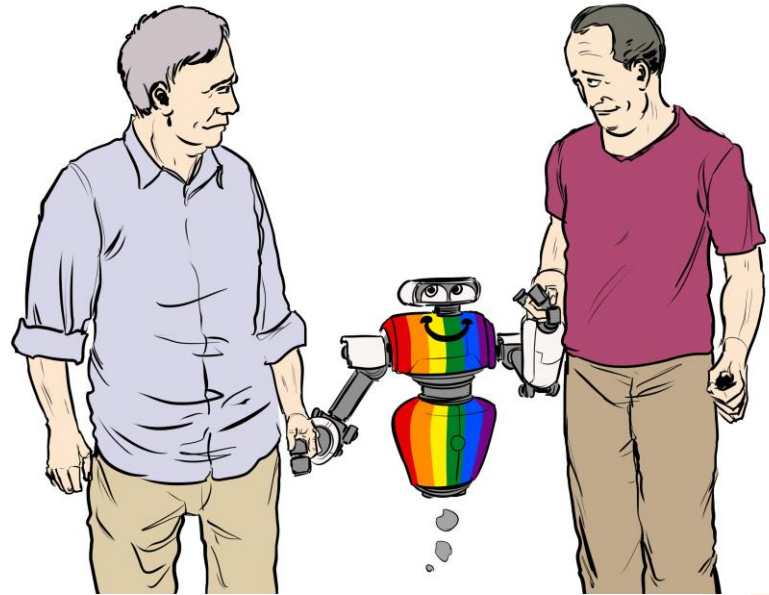
- *Even in social care robots, the safety, I think it has a different interpretation because in that case, maybe they communicate with elder people and then the information they receive or they communicate, there is just like the safety of information...they keep it confidential. (Robot and mechanical engineer)*

Discussion and conclusions

Key values

Robotics engineers and healthcare professionals

- Health and wellbeing
- Cultural and physical safety
- Privacy
- Social connectedness
- Dignity



LGBT+ elderly

- Safe spaces
- Advocacy
- Companionship
- Independence
- Respect
- Openness

New values and meanings identified

Care values	Social values	Community values
<ul style="list-style-type: none">• Appreciating difference• Feeling needed• Keeping active	<ul style="list-style-type: none">• Avoiding discomfort	<ul style="list-style-type: none">• The LGBT+ connection• Wider community engagement• Online community

New design recommendations to add value for LGBT+ elderly

Robot role	Design recommendations	Value add
Conversation (chat robots)	Avoid topics or interactions that point out differences in social groups	Not tolerance, acceptance
Encouragement (chat robots)	Encourage LGBT+ elders to explore their gender identity and provide support	Appreciating difference
Companionship (animal robots)	Be dependent on user input by whimpering/barking that requires some user intervention to quieten	Feeling needed

Conclusion

Technology is not value neutral

Care is not value neutral

Robots in care are not value neutral

It's important that the robot has like, a unique history of interactions with that particular person, they might be able to capture the preferences of the person...to automatically extract certain values, norms, wave patterns of interaction, and then be able to apply those in a robot. (Social facilitation roboticist)

Conclusion

Accounting for adaptation by designing value sensitive robots in care

- Values in Motion Design
- Some values ought to be unchanging (built in)
 - Safety
 - Dignity
- Other values ought to be ‘at play,’ with the robot able to recognise and adapt to
 - LGBT+ elderly (diverse community) values
 - People living with dementia
 - Personal values