

**Rethinking design processes for inclusion**  
**@ UXPA 2023**

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# Hello!

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**TAG**  
lab

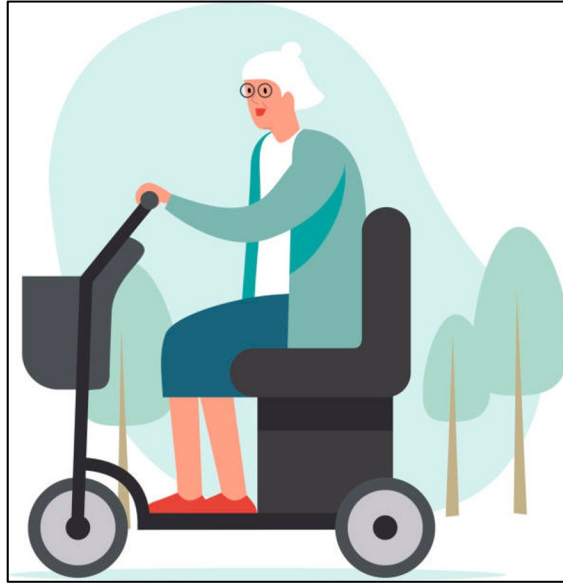


UNIVERSITY OF  
**TORONTO**

# “Inclusive Design” - Accessibility



# “Inclusive Design” - Technology for Specific Groups

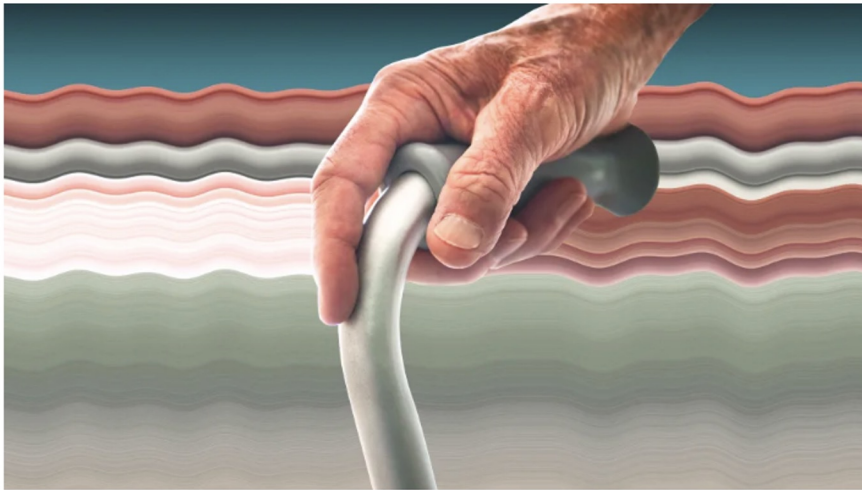




# Something is wrong with (the current state of) “inclusive design”

## I wrote the book on user-friendly design. What I see today horrifies me

The world is designed against the elderly, writes Don Norman, 83-year-old author of the industry bible *Design of Everyday Things* and a former Apple VP.



[Photo: Tetra Images/Getty Images]



BY DON NORMAN 7 MINUTE READ

More people than ever are living long, healthy lives. According to the

“Walkers, scooters, and shopping carts for the elderly tend to lack any semblance of grace or elegance. [...] If these devices are stylish and useful, they will empower everyone, from the very young to the very old. Moreover, once the stigma attached to devices that look medical is eliminated, we will see more elderly adding to their activities, and more 90-year-olds surfing.” – Don Norman

**Something is missing.**

# “Inclusive” Design?

Social Tensions? Social Isolation? Stigma to use?



# Socially Conscious Design (SCD)

- Incorporating sociotechnical (social + technical) perspectives into design practice
  - As opposed to only issues of engineering performance or accuracy
- Three Strategies:
  1. Considering Digital Design Marginalization (DDM)
  2. Applying a Sociotechnical Lens to Our Own Research
  3. Seeking Sociotechnical Perspectives

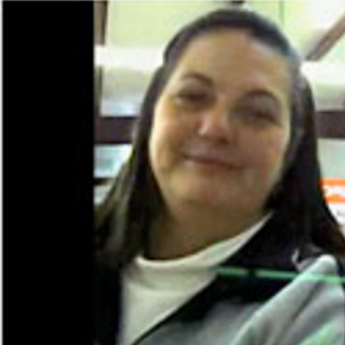
# **1. Considering Digital Design Marginalization (DDM)**

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# Design can marginalize people



# Digital designs can also marginalize people



YouTube  
Breakfast Yourself™ Home Videos Channels Shows  
HP computers are racist

JASON MCKEE BUSINESS 08.16.2019 09:00 AM

## Domino's and the Web are Failing the Disabled

Opinion: A potential Supreme Court case over ordering pizza could exclude 49 million Americans from the 21st century.

f t ✉



Los Angeles Times

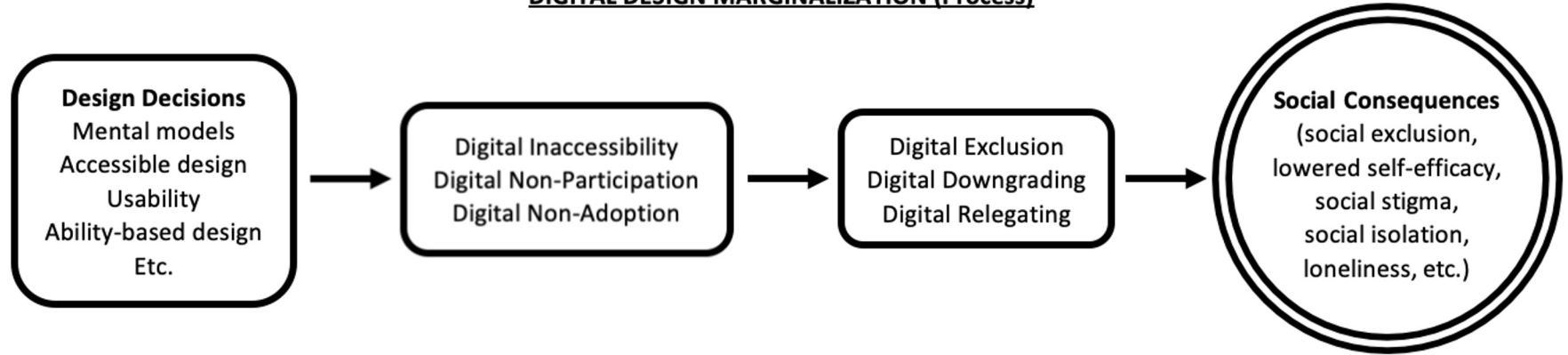
## Partial California: Why San Francisco cashless stores



Not accepted at Freshroll Vietnamese Rolls & Bowls in San Francisco. (Jeff Chiu /

# 1. Considering Digital Design Marginalization (DDM)

## DIGITAL DESIGN MARGINALIZATION (Process)



**DDM:** the process in which design decisions lead to exclusion and long-lasting offline social consequences



# Digital Design Marginalization Example: A Communication App for Ageing

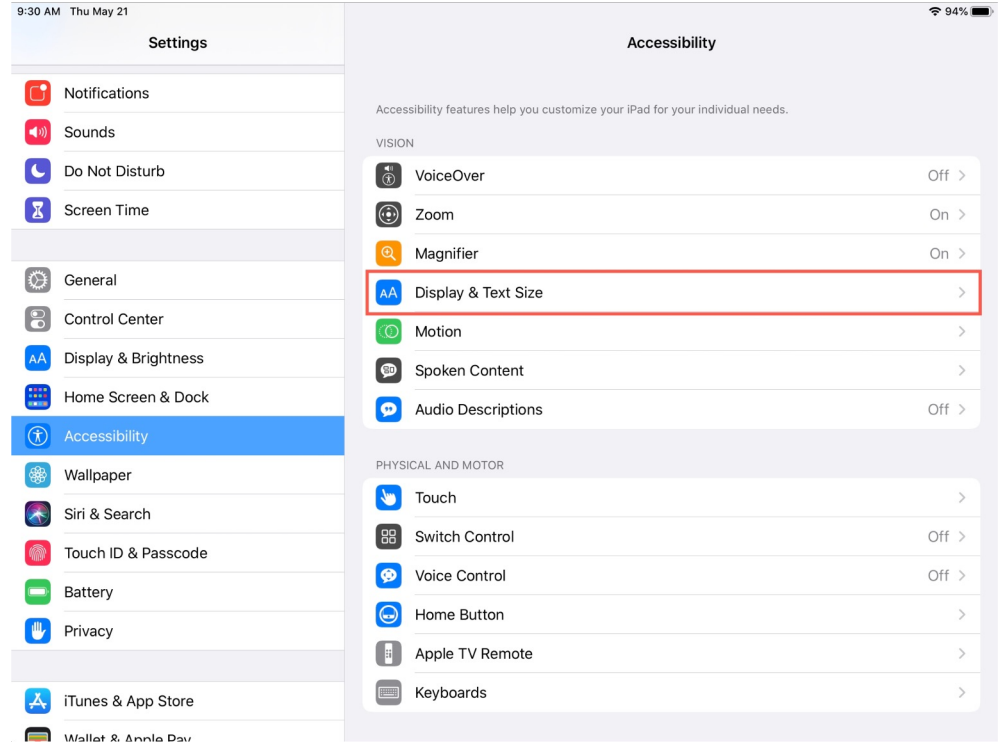




# A Communication App for Ageing

- Tensions from communication app usage. Older adults preferred text & audio messages. Relatives preferred to send pictures. Relatives preferred fast responses; older adults often had delays.
  - **Recommendation:** Should consider all the social agents outside of the primary user (older adults)
- Using standard iPads = hard-to-press on/off buttons
  - **Recommendation:** Need to account for accessibility issues beyond software. Could have engaged with care home staff better on these points.
- Users had an enhanced sense of frailty and family tensions.
  - **Recommendation:** Need a risk assessment plan and a mitigation plan.

# Digital Design Marginalization Example #2: “Accessibility” Features for Ageing



# “Accessibility” Features

- “Accessibility” features are seen as dumbed down, stigmatizing, and patronizing. Also, people with ability changes may not see themselves as “disabled” and needing accessibility features.
  - **Recommendation:** Consider rethinking usage of the term “accessibility”.
- Participants wanted social support to train, coach, or reinforce them trying out new features on devices. But asking for help with “accessibility” features may = loss of social status.
  - **Recommendation:** Consider ways to manage or work around the stigma.

# Benefits of Applying the DDM Lens

- Catching inclusive design aspects that might have been missed
- Helps understand the social implications of one's designs
- Justify inclusive design
- Not get in trouble for exclusionary designs :)

# More on Digital Design Marginalization

## Digital Design Marginalization: New Perspectives on Designing Inclusive Interfaces

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### ABSTRACT

We conceptualize Digital Design Marginalization (DDM) as the process in which a digital interface design excludes certain users and contributes to marginalization in other areas of their lives. Due to non-inclusive designs, many underrepresented users face barriers in accessing essential services that are moving increasingly, sometimes exclusively, online – services such as personal finance, healthcare, social connectivity, and shopping. This can further perpetuate the “digital divide,” a technology-based form of social inequality that has offline consequences. We introduce the term Marginalizing Design to describe designs that contribute to DDM. In this paper, we focus on the impact of Marginalizing Design on older adults through examples from our research and discussions of services that may have marginalizing designs for older adults. Our aim is to provide a conceptual lens for designers, service providers, and policy makers through which they can use to purposely lessen or avoid digitally marginalizing groups of users.

### CCS CONCEPTS

• **Human-centered computing** → HCI theory, concepts and models.

### KEYWORDS

Digital Design Marginalization, Older Adults, Marginalizing Design, Inclusive Design, Digital Inclusion, Digital Exclusion, Digital Inequality, Digital Divide, Social Exclusion, Social Marginalization

### ACM Reference Format:

Jaisie Sin, Rachel L. Franz, Cosmin Munteanu, and Barbara Barbosa Neves. 2021. Digital Design Marginalization: New Perspectives on Designing Inclusive Interfaces. In *CHI Conference on Human Factors in Computing Systems (CHI '21)*, May 08–13, 2021, Yokohama, Japan. ACM, New York, NY, USA, 11 pages. <https://doi.org/10.1145/3411764.3445180>

### 1 INTRODUCTION

Across numerous domains in the modern information society, essential life services, such as public services, are increasingly being migrated to digital, online, or mobile-only spaces. Brick-and-mortar stores are expanding into or exclusively switching towards e-commerce solutions. Established financial institutions have been progressively replacing their in-person services, such as those offered through existing physical branches, with digital alternatives such as mobile and online banking, which offer digital solutions for payment, banking, investments, insurance, and more recently, cryptocurrency management.

Users of the newer digital solutions experience many advantages, including increased ease of access to those services due to the overcoming of physical- and time-related barriers. Yet, the design of these systems can create access barriers for others. In other words, these systems can digitally exclude people, such as some groups of older adults (those aged 60+). For example, a website that uses complicated layouts, menu controls that require dexterity in operating a mouse, or dense passages of text can be categorized as not “user-friendly” for some older adults. Similarly, a mobile banking app that forgoes the use of textual information in favor of images and icons (or other elements that are non-compliant with assistive technologies, like screen readers) to convey its content [67] may appeal to the app’s brand identity but is not inclusive of blind or low-vision users, of which consists of not only older adults but people from other age groups as well. Finally, many photocentric social media platforms have the potential to help older adults’ stay connected and reduce their risk of social isolation, however they are designed with information workflows that might not match some older adults’ mental models [2].

These design decisions can actively create barriers that prevent such user groups from accessing and participating in services that continue to transition to online- or mobile-only formats. When it comes to older adults, these barriers leading to non-use and non-

# Digital Design Marginalization Thus Far

## Wearable Identities: Understanding Wearables' Potential for Supporting the Expression of Queer Identities

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### ABSTRACT

Queer identity research largely overlooks wearable technology. Most work exploring sociocultural considerations of wearable technology determines what is "socially acceptable" based on privileged bodies, excluding queer perspectives. We address this by establishing the foundations of a knowledge base for wearables that support queer expression. We conducted a two-phase qualitative study exploring queer expressive practices and wearable technologies through 16 semi-structured interviews and 15 body mapping workshops with the queer community. We observed themes framing the queer community's understanding of queer expression, wearable technology, and wearable technology for queer users. Providing design considerations and discussions on the potential of our methods, our work enables the creation of wearable technologies that offer meaningful user experiences for the queer community. CAUTION: This paper discusses topics that could trigger those with histories of homophobia, transphobia, gender dysphoria, racism or eating disorders. Please use caution when engaging with this work.

doubling in the United States [21, 63]. Despite growing public perception, queer Canadians continue to have quality of life concerns due to discrimination and a lack of acceptance [7, 30, 84, 105]. Despite these tragic realities, the queer community continues to practice diverse methods of community-wide resistance [6, 7, 21, 36, 63, 84, 105].

One of the pivotal aspects of queer lived experiences is thus the expression of one's queerness. When we use the term *queer*, we understand *queer* as "relating to a sexual or gender identity that does not correspond to established ideas of sexuality and gender, especially heterosexual norms" [111]. Authentic expression thus allows queer individuals to experience a heightened sense of community, mental well-being, and a feeling of assertion, accuracy, and joy in one's gender and physical bodies (i.e., gender and bodily euphoria) [1, 8, 50, 103]. As the body has always been one of the largest canvases for queer expression [12, 59, 103], it is unsurprising that body-worn technology (hereinafter referred to as *wearables*) has begun to offer numerous explicitly queer components [2].

The queer-inclusive nature of commercial wearables, however,

## Mobility Instruction for Blind or Low Vision

### Digital Technologies In Orientation And Mobility Instruction For People Who Are Blind Or Have Low Vision

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ODED NOV, New York University, USA

This paper investigates the tools and practices used by Orientation and Mobility (O&M) specialists in instructing people who are blind or have low vision in concepts, skills, and techniques for safe and independent travel. Based on interviews with experienced instructors who practice in different O&M settings we find that a shortage of qualified specialists and restrictions on in-person activities during COVID-19 has accelerated interest in remote instruction and assessment, while widespread adoption of smartphones with accessibility support has driven interest in assistive apps. This presents both opportunities and challenges for a practice that is traditionally conducted in-person and assessed through qualitative observations. In response we identify multiple opportunities for HCI research in service of O&M, including: supporting a 'physician's assistant' model of remote O&M instruction and assessment, matching O&M instructors' clients with guide dogs, highlighting clients' progress towards O&M goals, and collaboratively planning routes and monitoring clients' independent travel progress.

## Wearable Technology for Queer Expression

JOURNAL OF E-LEARNING AND KNOWLEDGE SOCIETY  
Vol. 18, No. 3 (2022), pp. 83-95

### Digital marginalization, data marginalization, and algorithmic exclusions: a critical southern decolonial approach to datafication, algorithms, and digital citizenship from the Souths

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(submitted: 3/5/2022; accepted: 14/11/2022; published: 31/12/2022)

### Abstract

This paper explores digital marginalization, data marginalization, and algorithmic exclusions in the Souths. To this effect, it argues that underrepresented users and communities continue to be marginalized and excluded by digital technologies, by big data, and by algorithms employed by organizations, corporations, institutions, and governments in various data jurisdictions. Situating data colonialism within the Souths, the paper contends that data ableism, data disablism, and data colonialism are at play when data collected, collated, captured, configured, and processed from underrepresented users

## Decolonial Approaches to Datafication in the Souths

# Socially Conscious Design (SCD)

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- Three Strategies:
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  - 2. Applying a Sociotechnical Lens to Our Own Research**
  3. Seeking Sociotechnical Perspectives

## **2. Applying a Sociotechnical Lens to Our Own Research**

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## 2. Applying a Sociotechnical Lens to Our Own Research

Using sociotechnical themes:

- Determine a set of sociotechnical themes
- Apply them to our own research

## 2. Applying a Sociotechnical Lens to Our Own Research

Using sociotechnical themes:

- **Determine a set of sociotechnical themes**
- Apply them to our own research





Source: <https://www.youtube.com/watch?v=0nZ9vK1uaj8>

# Determining a Set of Sociotechnical Themes

site: <website URL address> (“voice user interface” OR “VUI” OR “conversational agent” OR “conversational interface” OR “conversation agent” OR “chatbot” OR “alexa” OR “google home” OR “siri” OR “cortana” OR “voice assistant” OR “virtual agent” OR “interactive voice response” OR “IVR”) AND (“older adult” OR “senior” OR “aging” OR “ageing” OR “elderly”)



# Sociotechnical Focus Areas in VUIs for Ageing



## News Articles Analysis: High-Level Themes & Comprising Themes



### High-Level Theme 1: Perceptions of Adoption of VUIs by Older Adults

- Older adults are a potential target market
- Adoption of VUIs by older adults has seen mixed results
- Societal and ethical implications are vital to consider
- Older adults should be wary about institutions and data privacy



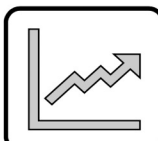
### High-Level Theme 2: Embeddedness in Older Adults' Lifestyles

- VUIs have features that meet older adults' needs
- VUIs support a range of mobility
- Compatibility between VUI devices and other owned tech is important
- Social Support for VUI Use is important
- Limits to VUIs' usefulness to older adults



### High-Level Theme 2: Changes that VUIs Can Bring to Older Adults' Lives

- VUIs can help with managing and improving one's health
- VUIs can decrease social isolation and loneliness
- VUIs can support convenience, comfort, independence, & improved quality of life
- VUIs can be integrated with smart home devices for enhanced safety and security



### High-Level Theme 4: Impact of Trends Towards VUIs

- Emerging market for VUIs
- Government support matters
- VUIs are connected with the digital divide

# Other places to look for themes

- User reviews
- Blog articles
- Design Books / Guides / Tutorials
- Design Talks
- Case Studies
- UXPA???
- But perhaps not sources you can manipulate (e.g. interviews, surveys)
  
- Can be “quick and dirty”

## 2. Applying a Sociotechnical Lens to Our Own Research

Using sociotechnical themes:

- Determine a set of sociotechnical themes
- **Apply them to our own research**



# Apply themes to our own research: User Research / Deployment Studies



## New Articles Covering Themes:

1. "What is a Smart Speaker?"
2. "Voice-activated technology can help you live better"
3. "Dr. Alexa: Amazon's Alexa will soon provide health advice in the UK"
4. "Which smart home product you should get your grandma, child, and everyone in between"
5. "AI monitoring elderly in South Korea for signs of 'loneliness or insecurity'"

## Sample Interview Questions:

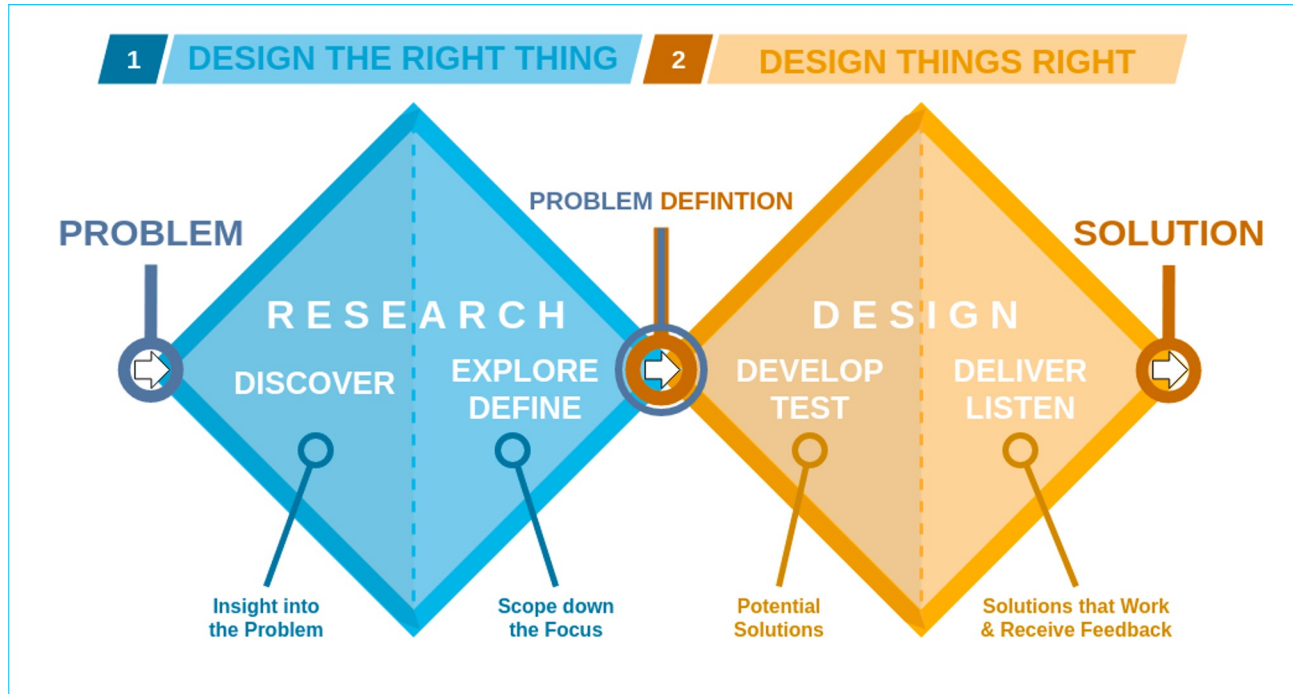
- The media predicts that the use of smart speakers can help increase **social connections**... What do you think about that, based on your experience with smart speakers?
- How do you perceive smart speakers relate to your **independence**? Do you believe that the smart speaker will enable users to accomplish everyday tasks with more or less independence? Why or why not?
- What is your perception of using a smart speaker for **personal safety and security** in your home?

# Apply themes to our own research: User Research / Deployment Studies



Theme	Subthemes
<b>VUIs Are Too Primitive for Serious Use</b>	<ul style="list-style-type: none"> <li>• VUIs meet expectations for simple tasks, with only a few caveats</li> <li>• VUIs do not meet complex or essential tasks</li> <li>• <b>VUIs' communication abilities are too primitive</b></li> </ul>
<b>Media's Interpretations</b>	<ul style="list-style-type: none"> <li>• VUIs have more shortcomings than envisioned</li> </ul>
<b>Missing Prerequisites for Full Use of VUIs</b>	<ul style="list-style-type: none"> <li>• Subscription requirements is a barrier to full use of VUIs</li> <li>• <b>Setup is more difficult than imagined</b></li> <li>• <b>There is less guidance on how to use VUIs than expected</b></li> <li>• VUI need to be more pervasive than expected to be useful</li> </ul>
<b>Trust in VUI Content</b>	<ul style="list-style-type: none"> <li>• The sources behind VUIs affects trust in VUIs</li> </ul>

# Sociotechnical thinking can be applied during any stage of the design process.



## Older Adults' Perception and Use of Voice User Interfaces: A Preliminary Review of the Computing Literature

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### ABSTRACT

Voice User Interfaces (VUIs) are quickly becoming ubiquitous. The natural language interface of VUIs may be more usable for some groups of users, such as those who may face challenges using physical input methods including older adults and people living with a disability. This study explores research on the use of VUIs by one such group, older adults. We conducted a systematic literature review of research published in the Association of Computing Machinery Digital Library that addresses perception and use of VUIs by older adults. We identified an emerging body of research examining older adults' use and perceptions of VUIs. This research revealed several potential benefits of voice interaction for older adults while also highlighting how the novelty of the technology may be a barrier to adoption. We conclude with a call for further HCI research in this area.

### CCS CONCEPTS

• **Human-centered computing** → **Natural language interfaces**; *HCI design and evaluation methods*; • **General and reference** → *Surveys and overviews*.

## Voice Assistants and Older People

### Some Open Issues

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### ABSTRACT

Voice Assistants (VAs) like Amazon Echo and Apple Siri are an increasingly popular way of interacting with a range of applications. VAs are also currently gaining traction in the HCI community. Yet, and despite a growing ageing population, work on VAs with older people is scant. In this CUI 2019 provocative paper we aim to encourage research on VAs with and for older people (aged 65+). We outline several important open issues to address when researching this population, such as perceptions and barriers to VAs use, aspects of Conversational User Experience tied to VAs response design, and anthropomorphic design. We also raise some 'provocative' and yet-to-be-addressed research questions, hoping to operationalize the issues discussed and spark debate and discussion about them during and after CUI 2019.

### CCS CONCEPTS

• **Social and professional topics** → Age → Seniors • **Human-centered computing** → Human computer interaction → Interaction paradigms

## Use of Intelligent Voice Assistants by Older Adults with Low Technology Use

ALISHA PRADHAN and AMANDA LAZAR, University of Maryland

older people (aged 65+). Why? Previous research on older adults and digital technologies suggests a number of reasons, from stereotypes to a lack of attention to older adults [24, 25, 37, 39, 47]. This paper aims to encourage research on VAs with and for older people. Based on our analysis of the literature and interdisciplinary research on later life, technologies and voice interfaces, we outline critical issues to address when researching this population.

### 2. VOICE ASSISTANTS AND OLDER PEOPLE

VAs are an increasingly popular way of interacting with a range of applications [33], experiencing huge growth worldwide. It is estimated that there will be around 8 billion commercial VAs in use by 2023 [27]. In the US, monthly voice assistant users on smartphones equal 90.1 million, and smart speakers reached 57.8 million users last year [53]. In East Asia, smart speakers are expected to surge in 2019, with significant predicted growth in adoption rates [59]. It seems that "the hottest thing in technology is your voice" [60].

VAs are currently gaining traction in the HCI community. Examples are papers published in CHI 2019 (e.g. [2, 6, 8, 9, 12,

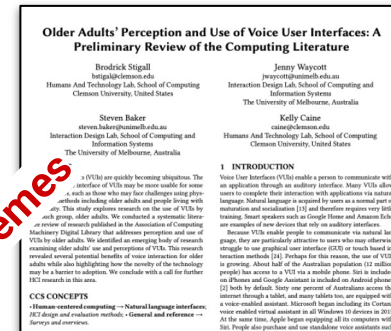
, Amazon Echo, Google Home) enable voice-based interaction with mobile or desktop computing. Hence, these voice assistants, including individuals who are not interested or able to use voice assistants, we conducted a 3-week field deployment with older adults. While some types of usage dropped over the consistent usage for finding online information. Given that finding emphasizes the need to revisit concerns about credibility. Although features to support memory (e.g., setting reminders), the actual usage was unexpectedly low due to reliability to other user groups along with design implications and interfaces.

→ *Human computer interaction (HCI); Empirical studies in natural interfaces, voice assistants, smart speakers, low technology*

# Applying themes to what we already know



Compare



Topic	News	Academic Articles
Commercial interest interplay with older adults' adoption of voice user interfaces (VUIs)	There is a growing interest in VUIs for, e.g., underfunded care homes, health services, etc.	None.
How to design for e-governments that employ VUIs	VUIs can bring government services to older adults.	None / No evidence to support.
The impacts of cost and (lack of) internet access on VUI adoption	Internet access affects adoption.	A lot of research is with older adults who have wireless connections.

# Sociotechnical Focus Areas: To Learn More...

## VUI Influencers: How the Media Portrays Voice User Interfaces for Older Adults

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### ABSTRACT

Voice User Interfaces (VUIs) such as smart speakers hold promise for older adults (OAs) in terms of usability and convenience. However, their adoption and the extent of their benefits to OAs may be influenced by mass media, as this is a primary source of technology education for OAs. Thus, we aim to obtain a better understanding of how VUIs' value and utility for OAs are portrayed in the media.

We conducted a systematic review and thematic analysis of articles published in ten popular digital news outlets that focus on VUIs and older adults. The analysis reveals several design and engineering factors that are portrayed in media as being relevant or encouraging to older adults' adoption of VUIs. Given the media's influence of the consumer adoption of new technologies, this analysis brings to light several sociotechnical aspects that are dominant threads within the media discourse related to VUIs. Through this, we suggest areas of focus for the research and design of VUIs that account for these influencing factors.

### CCS CONCEPTS

• Human-centered computing; • Natural language interfaces; HCI design and evaluation methods;

### KEYWORDS

Older Adults, Meta-Analysis/Literature Survey, Mass Media, Voice User Interfaces, Sociotechnical

### ACM Reference Format:

Jaisie Sin, Cosmin Munteanu, Numrita Ramanand, and Yi Rong Tan. 2021. VUI Influencers: How the Media Portrays Voice User Interfaces for Older Adults. In *CHI 2021 - 3rd Conference on Conversational User Interfaces (CHI '21)*, July 27–29, 2021, Bilbao (online), Spain. ACM, New York, NY, USA, 13 pages. <https://doi.org/10.1145/3469595.3469603>

### 1 INTRODUCTION

Voice user interfaces (VUIs) enable users to communicate with devices using voice or speech for input and output. They are becoming an increasingly popular way of interacting with technology [31], and older adults (those 65+) are among the largest growing group of users of VUIs [2]. This may be because VUIs are easier to use for older adults compared to graphical interfaces, which in contrast may pose visual, auditory, physical, and motor-based barriers to interaction [19, 55]. As a result, older adults may benefit from the use of VUIs and the addition of VUIs to existing products and services for accessibility [55]. However, the design and adoption of VUIs is not without its challenges, and there is still a gap in understanding the barriers and drivers of older adults' perceptions of VUIs [45].

Mass media influences users' perceptions, behavior, and adoption with respect to new technologies [52]. Some of this impact is mediated by marketing influences. However, the media often also has its own agenda and is a reflection of societal trends. Thus, the media is a proxy for a wider snapshot of factors (including tech industry marketing) that may influence the perceptions of voice user interfaces. In particular, older adults also rely heavily on the media for their knowledge of technology [8], and this relationship can contribute to their adoption (or lack of adoption) of such technologies [23]. As VUIs are an emerging technology that is growing in prevalence in commercial and public spaces and can be of benefit to older adults [51], we wanted to ask: how are VUIs portrayed within the media discourse, particular with respect to VUI adoption by or suitability for older users?

In other words, our goal with this study is to understand how VUIs are portrayed in media. By focusing on the sociotechnical factor of adoption via media influence, we hope to gain a better understanding of the general factors that influence older adults' adoption of VUIs. As such, we conducted an inductive thematic analysis of articles on VUIs for older adults from ten major news

## Does Alexa Live Up to the Hype? Contrasting Expectations from Mass Media Narratives and Older Adults' Hands-on Experiences of Voice Interfaces

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### ABSTRACT

Voice user interfaces (VUIs) are advertised as easy to use and beneficial to older adults (OAs). Disparities between expectations and OAs' hands-on experiences with VUIs may discourage OAs' further use of VUIs and widen digital divides. To understand such disparities, we conducted two-week in-home field deployments of the Amazon Echo Dot with OAs. We interviewed participants before and after deployment on their perceptions of VUIs in relation to prevailing media-derived expectations about VUIs. Our analysis revealed mismatches between expectation and hands-on experiences with VUIs; namely, VUIs were found to be more primitive than expected, there were more limitations to VUIs than expected more prerequisites were required to fully make use of VUIs, and it sources that VUIs drew from fell short in earning trust. Our findings contribute aspects to be considered to close the gap between expectations and experiences related to VUIs for older adults.

### CCS CONCEPTS

• Human-centered computing; • Natural language interfaces; HCI design and evaluation methods;

HUMAN-COMPUTER INTERACTION  
<https://doi.org/10.1080/07370024.2022.2098129>



## Avoiding mixed messages: research-based fact-checking the media portrayals of voice user interfaces for older adults

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**KEYWORDS** Older adults; voice user interfaces; sociotechnical  
**ARTICLE HISTORY** Received 16 October 2021; Revised 01 June 2022; Accepted 04 June 2022

### 1. Introduction

It is often suggested that older adults (those 60 years or older) constitute a viable target market for voice user interfaces (VUIs) and that VUIs can provide many benefits for older adults. The mass media has been found to support this view, based on recent investigation on mass media's portrayals of VUIs for older adults (Sin, Munteanu et al., 2021). The mass media was also found to suggest that older adults' perceptions, acceptance, and adoption of VUIs rest on issues of data privacy, trust in the organizations behind VUIs, life fit and benefits conferred by VUIs, and market and government actions. This messaging can directly and indirectly influence older adults' perceptions, and subsequent adoption, of voice user interfaces (Boothroyd, 2014; Rogers, 2010), much in the way that mass media has influenced adoption of other technologies when they emerged, such as smartphones (Yoo et al., 2010) and television (Weber & Evans, 2002).

However, it is not yet known to what degree the claims made by the mass media about VUIs are supported by current academic research. It is possible that the mass media is propagating claims about VUIs that are not supported by academic literature. This is important because discrepancies between media messaging and academic findings may highlight aspects related to VUI adoption that are either not yet investigated by academic research or are portrayed in the mass media in a manner not supported by (or even contradictory to) scientific knowledge. Shedding light upon these knowl-



# Socially Conscious Design (SCD)

- Incorporating sociotechnical (social + technical) perspectives into design practice
  - As opposed to only issues of engineering performance or accuracy
- Three Strategies:
  1. Considering Digital Design Marginalization (DDM)
  2. Applying a Sociotechnical Lens to Our Own Research
  3. **Seeking Sociotechnical Perspectives**

# **3. Seeking Sociotechnical Perspectives**

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# What are we teaching students?


- Applying the Digital Design Marginalization (DDM) framework to Design Education
- 7 design educators / case studies, various levels of inclusive design expertise




# Digital Design Marginalization (DDM) in Design Education

- Course-based community partner relationships
- Defining the user / personas
- Risks of students graduating w/o understanding social implications of design
- Only considering disability/accessibility for one user group (e.g., deaf or hard of hearing)

# More on DDM in Education

 **frontiers** | Frontiers in Computer Science

TYPE Original Research  
PUBLISHED 27 July 2022  
DOI 10.3389/fcomp.2022.822090

 Check for updates

## OPEN ACCESS

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SPECIALTY SECTION  
This article was submitted to  
Digital Education,  
a section of the journal  
Frontiers in Computer Science

RECEIVED 25 November 2021  
ACCEPTED 07 July 2022  
PUBLISHED 27 July 2022

CITATION  
Sin J, Munteanu C, Nixon M,  
Pandeleiev V, Tigwell GW, Shinohara K,  
Tang A and Szigeti S (2022) Uncovering  
inclusivity gaps in design pedagogy  
through the digital design  
marginalization framework.  
*Front. Comput. Sci.* 4:822090.  
doi: 10.3389/fcomp.2022.822090

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## Uncovering inclusivity gaps in design pedagogy through the digital design marginalization framework

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Designers play a key role in the design of inclusive and socially conscious interfaces. Thus, it is imperative for designers to be thoughtful of the ethical and social implications of design. However, gaps in the foundational training that designers receive (e.g., as university students) can negatively impact their ability to consider the social implications of their design practice. This can result in consequences such as digital marginalization, which, as defined by the Digital Design Marginalization (DDM) framework, is the “pushing away”, whether intentional or not, of a defined group of users from a digital or online service or system, where the exclusion has additional, indirect, and long-lasting social consequences on that particular user group. Designers can contribute, even unintentionally, to digital marginalization through their design practices and the design choices they make. We argue that our role as educators includes ensuring not only that our design pedagogy is inclusive, but that the designers we train now are prepared to conduct their future design practice in a manner that is inclusive to all users. As such, we propose to use the

# Who are we hiring?

- How socially conscious are our hiring candidates?
- How socially conscious is our design department?
- How socially conscious are we, ourselves?

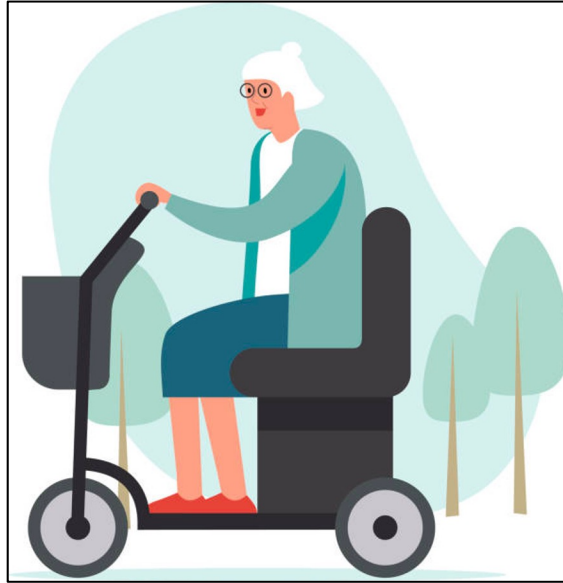
# Socially Conscious Design (SCD)

- Incorporating sociotechnical (social + technical) perspectives into design practice
  - As opposed to only issues of engineering performance or accuracy
- Why?
  - Helps concretely justify practicing inclusive design [Long-term Effects]
  - Helps understand why people might not use a design [Adoption]
  - Not get in trouble for exclusionary designs :) [Cost Litigation]
  - Design and technology is becoming increasingly social and embedded in our day-to-day life (systems for voting, self-driving cars)

# Socially Conscious Design (SCD)

- Incorporating sociotechnical (social + technical) perspectives into design practice
  - As opposed to only issues of engineering performance or accuracy
- Three Strategies:
  1. Considering Digital Design Marginalization (DDM)
  2. Applying a Sociotechnical Lens to Our Own Research
  3. Seeking Sociotechnical Perspectives

# Designs aren't inclusive if they stigmatize people.



**Thanks!**

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## **SOCIALLY CONSCIOUS DESIGN (SCD):**

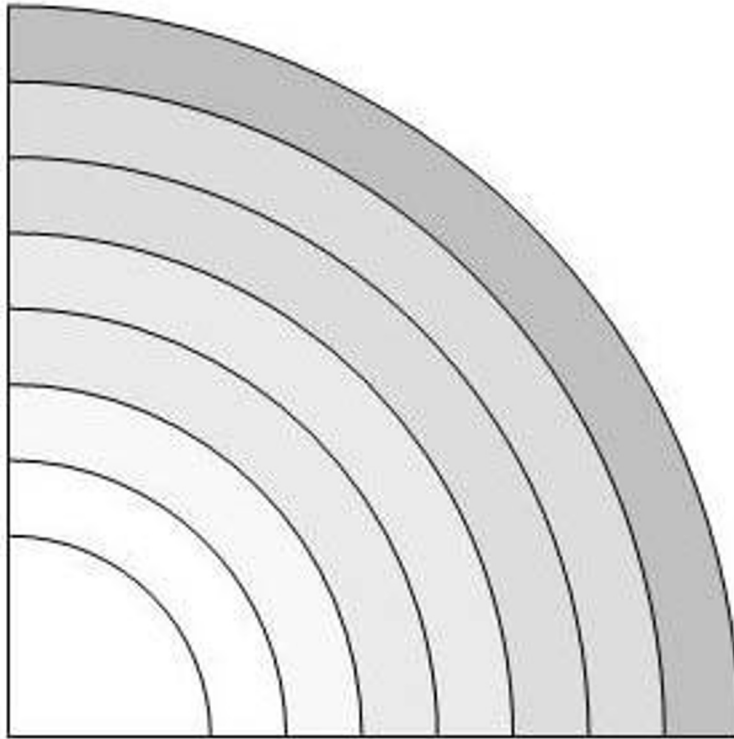
- 1. Considering Digital Design Marginalization (DDM)**
- 2. Applying a Sociotechnical Lens to Our Own Research**
  - Determine a set of themes
  - Apply them to our own research
- 3. Seeking Sociotechnical Perspectives**
  - What we teach
  - What we look for when hiring

**The Scooter for Life**





# Access Rainbow



7: Governance

6: Literacy/ social facilitation

5: Service/ access provision

4: Content/ services

3: Software tools

2: Devices

1: Carriage facilities