Accessibility & Aging

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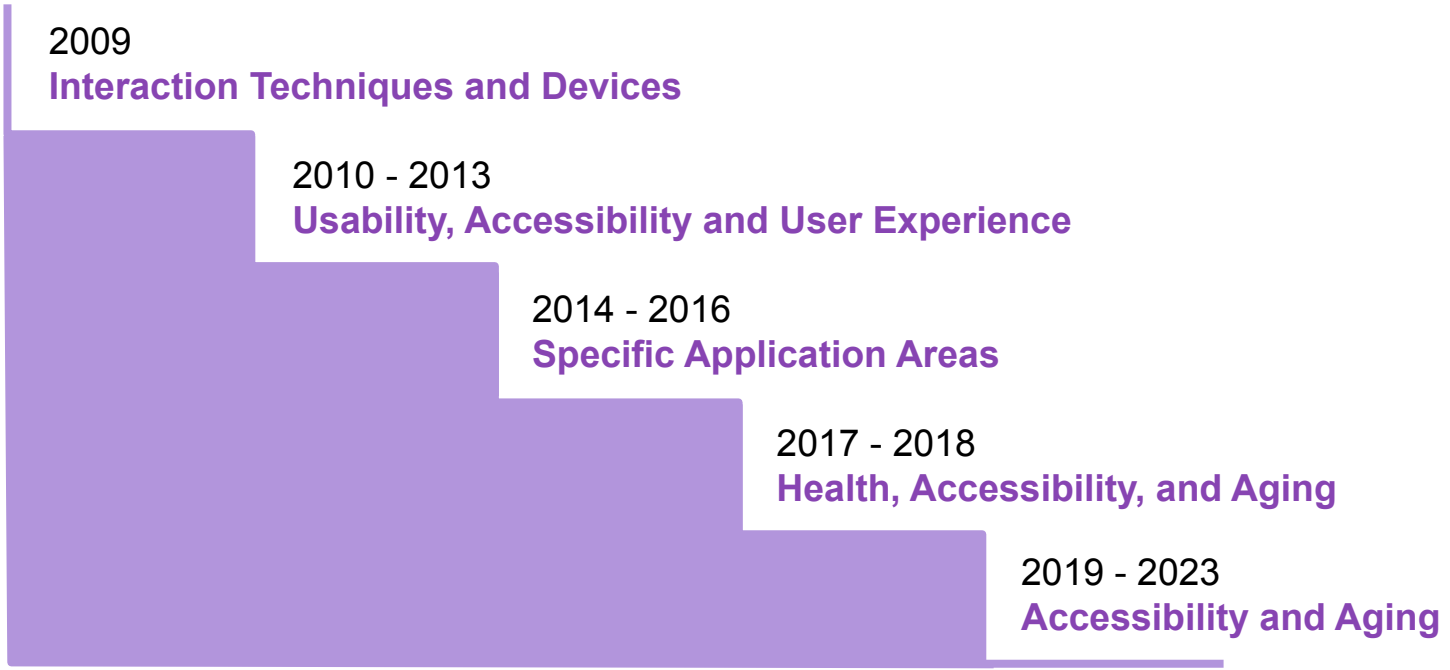
Overview Day

1 CHI Accessibility & Aging

2 ASSETS

3 Framing papers

History of CHI - Accessibility and Aging



Interaction Techniques and Devices
(CHI 2009)

This subcommittee will focus on contributions in the form of **new input or interaction techniques, or devices**. These contributions will be judged in part based on their novelty or on a demonstrated improvement in an existing interaction type of interest to the HCI community.

Keywords

- Input and Interaction Technology
- Universal (or Disability) Access
- Pen-based UIs
- Tactile & Haptic UIs
- 3D Interaction
- Pen and Tactile Input
- Touch & Multi-touch
- Tabletop Interaction
- Large Display Interaction

Usability, Accessibility and User Experience
(CHI 2010 - 2013)

This subcommittee is suitable for papers that contribute by **extending the knowledge, approaches, practices, methods, components and tools that make technology more useful, usable, desirable and/or accessible by people**. Successful papers will present results, practical approaches, tools, technologies and research methods that demonstrably advance our understanding and design capabilities for user experience, usability and/or accessibility. The focus is on **usability and accessibility of widely used technologies**. Applications targeting select user groups should be submitted to the Specific Applications subcommittee. Contributions will be judged substantially on the basis of their demonstrable potential for effective reuse and applicability across a range of application domains and/or design, research, or user communities.

Specific Application Areas
(CHI 2014 - 2016)

This subcommittee will focus on papers that **extend the design and understanding of applications for specific application areas or domains of interest to the HCI community.** Example application areas and user groups are listed below. Submissions will be evaluated in part based on their impact on the specific application area and/or group that they address, in addition to their impact on HCI. During the Program Committee meeting, **this subcommittee will split into three groups based on areas/domains of expertise; submissions will be discussed by the most appropriate group.** A submission's primary keyword will be the main determinant of the group to which it is assigned.

Example user groups: **older adults**, children, families, people in developing countries, and **people with perceptual, cognitive, learning, or motor impairments**.

Example application areas: education, health, home, **accessibility,** sustainability, ICT4D, security, privacy, creativity, software development tools, crowdsourcing, data visualization, and visual analytics.

cf) User Experience and Usability
This subcommittee is suitable for papers that contribute by extending the knowledge, approaches, practices, methods, components and tools that make technology more useful, usable and desirable.

Health, Accessibility, and Aging
(CHI 2017 - 2018)

This subcommittee is suitable for **contributions to independent and healthy living over a lifetime.** It combines the areas of **(i) accessibility for people with disabilities, (ii) health, wellness, and aging; and, (iii) technology for and studies involving older adults.** Submissions to this subcommittee will be evaluated in part based on their inclusion of and potential impact on their target user groups and other stakeholders. This subcommittee balances the rigor required in all CHI submissions with awareness of the challenges of conducting research in these important areas.

Accessibility papers are those that deal with technology design for or use by people with disabilities including sensory, motor, and cognitive impairments. We have indicated below which ACs will handle the "health" papers and which will handle "accessibility and aging"; **please add the keyword "health," "accessibility," or "older adults" as appropriate to your submission in PCS so that we can be sure to direct your submission to the appropriate subset of this committee.** Note that if your paper primarily concerns interactions of older adults with their healthcare providers, then the *Health* keyword is probably a better fit.

This subcommittee welcomes all contributions related to health, accessibility, and aging, including empirical, theoretical, conceptual, methodological, design, and systems contributions.

Accessibility and Aging
(CHI 2019 - 2023)

This subcommittee is suitable for contributions related to the design or study of technology for people with disabilities and/or older adults. **Accessibility papers are those that deal with technology designed for or used by people with disabilities including sensory, motor, mobility, and intellectual or learning disabilities. Aging papers are broadly categorized as those dealing with technology designed for or used by people in the later stages of life.** Relationships with technology are complex and multifaceted; **we welcome contributions across a range of topics aimed at benefiting relevant stakeholder groups and not solely limited to concerns of making technology accessible.** Note that if your paper primarily concerns interactions with health data or with healthcare providers, then the Health subcommittee is probably a better fit, whereas **papers reflecting on how technologies are used and/or on designing interfaces and interactions suited to specific needs are a better fit for this subcommittee.** We strongly suggest that authors review this Accessible Writing Guide in order to adopt a writing style that refers to stakeholder groups using appropriate terminology. Submissions to this subcommittee will be evaluated in part based on their inclusion of and potential impact on their target user groups and other stakeholders. This subcommittee balances the rigor required in all CHI submissions with awareness of the challenges of conducting research in these important areas. This subcommittee **welcomes all contributions related to accessibility and aging, including empirical, theoretical, conceptual, methodological, design, and systems contributions.**

ASSETS

The ASSETS conference is the premier forum for presenting research on the **design, evaluation, use, and education related to computing for people with disabilities and older adults.** Submissions should present significant contributions to **design, systems, tools, scientific understanding, methodology, or social issues**. Relevant topics include (but are not limited to) **new enabling technologies, studies of how technologies are used by people with disabilities, explorations of barriers to access, and evaluations of accessibility education methods.** It is expected that, in most cases, a paper's research contributions will be validated through research activities conducted within the target user groups. We will **prioritize papers that report work involving people who have accessibility needs.** For papers that focus on older users, we will **prioritize papers that focus on specific accessibility concerns of older users.**

Authors of papers with a primarily technical contribution should make it clear in their background section how the technical design is motivated by representative users' documented needs and concerns, while following the anonymity requirements for submissions.

CHI vs. ASSETS?

CHI Accessibility and Aging

- Generally accessibility-related: “welcomes all contributions related to **accessibility and aging, including empirical, theoretical, conceptual, methodological, design, and systems contributions.”**
- **“we welcome contributions across a range of topics aimed at benefiting relevant stakeholder groups and not solely limited to concerns of making technology accessible.”**

ASSETS

- research on the **design, evaluation, use, and education related to computing for people with disabilities and older adults.** Submissions should present significant contributions to **design, systems, tools, scientific understanding, methodology, or social issues**.
- “We will **prioritize papers that report work involving people who have accessibility needs.** For papers that focus on older users, we will **prioritize papers that focus on specific accessibility concerns of older users**.”

CHI vs. ASSETS?

CHI'23 BEST PAPER AWARD

- Take My Hand: Automated Hand-Based Spatial Guidance for the Visually Impaired
- presented automated hand-based spatial guidance to allow visually impaired users to move their hands between two points automatically, without any manual effort, and testing process included blindfolded users without visual impairments.
- **Would it have been accepted at ASSETS?**
- https://twitter.com/frankelavsky/status/1643627602882486276?s=46&t=mLh0JSQunTfU9VF9DrE77Q

Q

Outside of HCI, what disciplines do contributions on this topic seem to draw from?

OTHER DISCIPLINES

Health & Medicine

Journal of:

- Vocational Rehabilitation
- Autism and Developmental Disorders
- Contemporary Psychotherapy

Psychology

- Social Psychological and Personality Science
- Rehabilitation Psychology
- Cybersecurity, Behavior, and Social Networking

Public Health & Social Work, Nursing, Sociology, etc.

- Disability and Society
- The Sociological Review
- Social Studies of Science

Engineering

- UIST
- International Conference on Software Engineering (ICSE)
- IEEE
- Journal of Educational Computing Research

How does the focus of Accessibility Research differ across fields?

Framing Papers

1. What Do We Mean by “Accessibility Research”?: A Literature Survey of Accessibility Papers in CHI and ASSETS from 1994 to 2019

2. Disability studies as a source of critical inquiry for the field of assistive technology

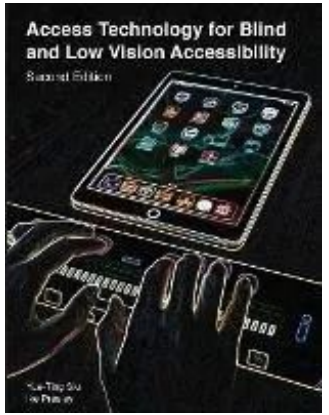
3. Ability-Based Design: Concept, Principles and Examples

What Do We Mean by "Accessibility Research"?: A Literature Survey of Accessibility Papers in CHI and ASSETS from 1994 to 2019

Mack et al., CHI'21

What types of research is Accessibility consisted of?

- Community of focus skewed towards BLV
- Objectives: increasing digital access through tech innovation, understanding the users
- Contribution types
  - empirical > artifact >>> theoretical > methodological > dataset > survey
- Research Method: 94.3% were user studies
- Who is included in the study?
  - 90.1% of user study papers included people with disabilities / older adults
- **Growth of accessibility is outpacing the growth of CHI itself**
  - 22 in 1994 → 95 in 2019
  - 2019: accessibility papers made up 7.8% of all CHI papers



How do we define Accessibility Research?

- WHO
  - BLV are the most commonly focused community **compared to autism, IDD, cognitive impairments, which appeared relatively recent**
  - Need to pursue more on disability studies in other spaces (e.g., mental health issues or chronic illness)

- WHAT
  - Digital / physical accessibility problems and related user needs are popular
  - Accessibility researchers tend to focus on certain research problems for a particular user community. → Need to reflect again on the problems we would like to solve and whether they fit with the communities' needs.

What does the paper say about blind and low vision population being the most studied?

- Funding mechanism + popularity of BLV people in public disability discourse + apparent concreteness of visual accessibility problems to HCI researchers.

vs

- Autism, IDD, cognitive impairment, and other areas are less common and are now getting attention.

What do you think are the other reasons for blind and low vision population being the most popular in Accessibility research?

How should we engage with users in Accessibility research?

- To what extent should the participants be allowed to access in the research procedures? How deep should they be engaged with research?
  - One example, Participatory Design

- Recruiting the participants
  - The median sample size = 13
  - Some communities may have very small sample sizes.
  - Alternative: Online content analyses (e.g., social media posts)

- Relying on nondisabled participants might be risky.

What may be the tradeoffs of participatory design?

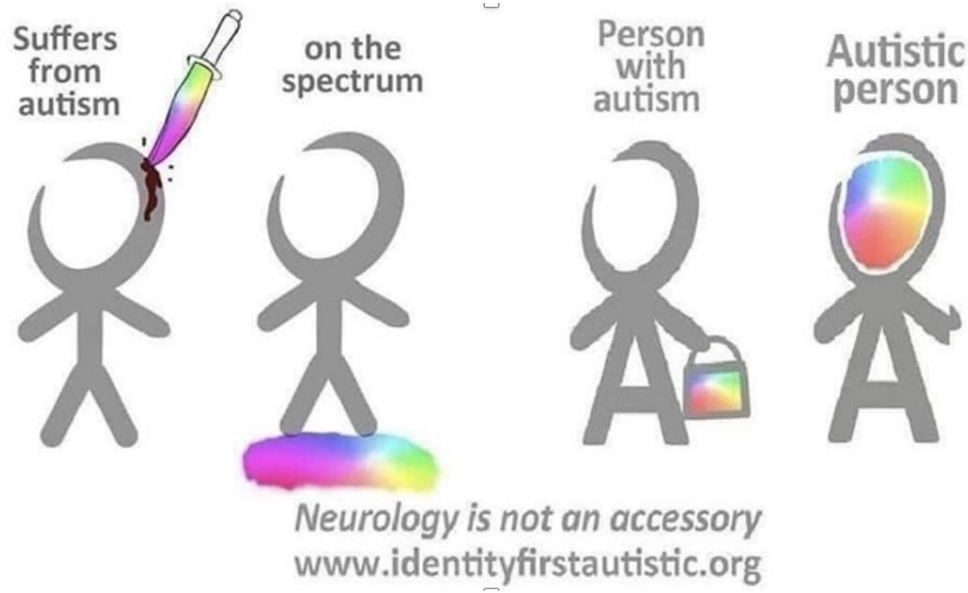
Disability studies as a source of critical inquiry for the field of assistive technology

Mankoff et al., ASSETS'10

Describing Language

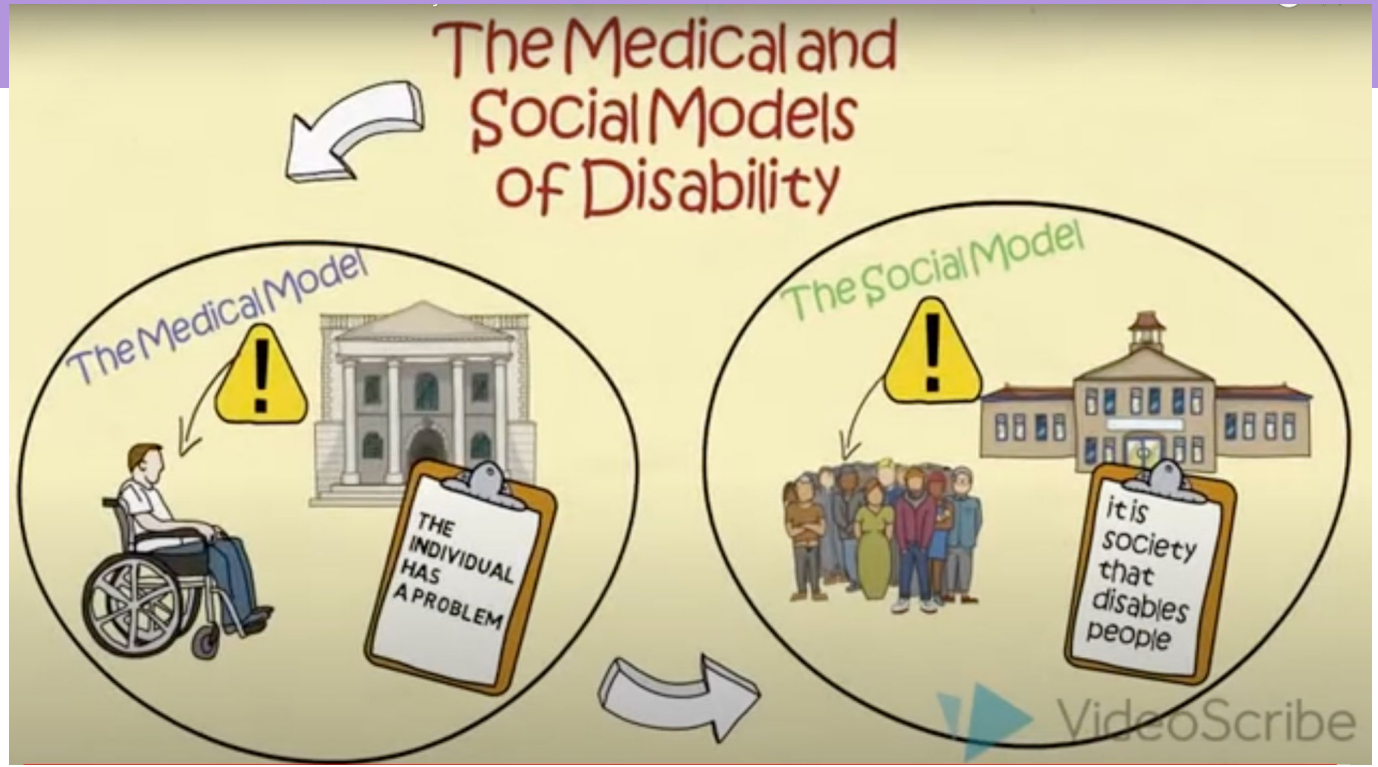
- Person 1st language
  - “People with Disabilities”
  - “Person who is Blind”
  - “Person who experience disability”

- Identity 1st language
  - “Disabled people”
  - “Blind person”
  - “Autistic person”



“Regardless of what label is used, the context and purpose of labeling can lead to negative consequences”

Define: Models of Disability



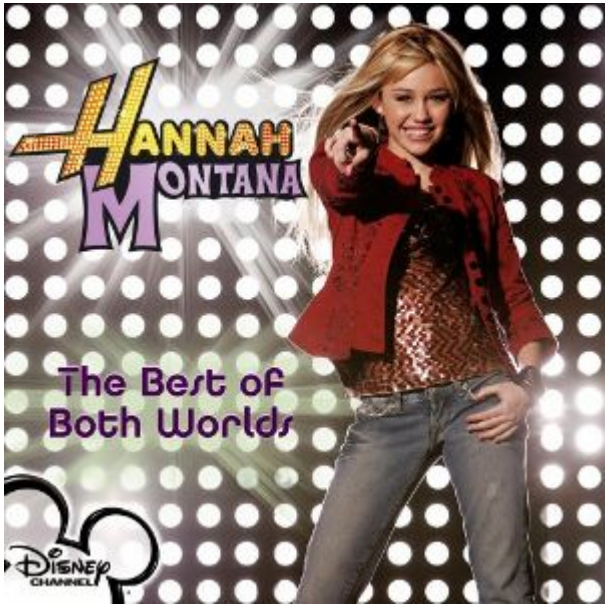
Disability studies as a source of critical inquiry for the field of assistive technology [Video Link]

Medical Model v Social Model

Disability studies as a source of critical inquiry for the field of assistive technology

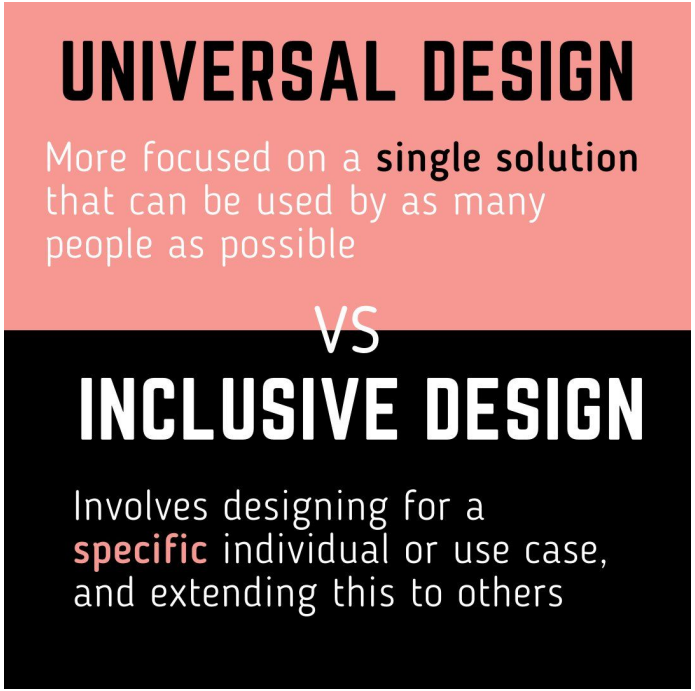
Define: Post-Modern Model

- Post Modern Model
  - *“Best of both worlds”*
  - This model **combines the good** from **medical model o**f disability and the **social model** of disability to create a better framework
  - Concerned with each individual’s unique lived experience, complete with the complexity and nuance of everyday life.



Universal Design & Inclusive Design

- Universal Design
  - Design of information, products and services that are usable for everyone
  - Focuses on enabling not just access to technology, but success (access + usability) by ALL
  - Universal design enforces a single design solution without need for adaptations or specialized design
- Inclusive Design
  - Extends user centered design to include minority groups
  - ***fulfilling*** as many user needs as possible, not just as many users as possible.
  - Inclusive design accepts and embraces multiple design variations as long as they achieve the desired outcome.



Disability Studies & Assistive Technology

- Disability Studies
  - Gives people with disabilities **(PWD) a voice in academic work,** including them in the process
  - From a disability studies perspective, technology design is inherent to who has “access” and who experiences barriers.
- Assistive Technology
  - A subject of interest in the disability studies literature
  - neurodiversity and **disability rights movements actually foregrounded opportunities for assistive technology research**

Image: Greyhound Bus Depot in Los Angeles, Diane Coleman, Steve Remington and Rick Wilson

Main Takeaways

- Encourage deep theoretical and scholarly **connections between assistive technologies and disability studies communities**
- Disability studies literature has **explored critical perspectives** of assistive technology, vice versa has not been prominent
- The drive to solve problems and use computation for societal good must **consider the perspectives of individuals with disabilities**
- Those teaching assistive technology classes should **adopt a participatory approach** and include guest speakers who identify with disabilities and discussions by students with experience with disability or chronic illness

Compare and contrast universal design and inclusive design?

Q

What are some considerations to keep in mind when designing products from the perspective of universal usability?

What are some challenges you might face during the design process?

(when working with a disabled population)

Ability-Based Design: Concept, Principles and Examples

Definitions: Ability Based Design

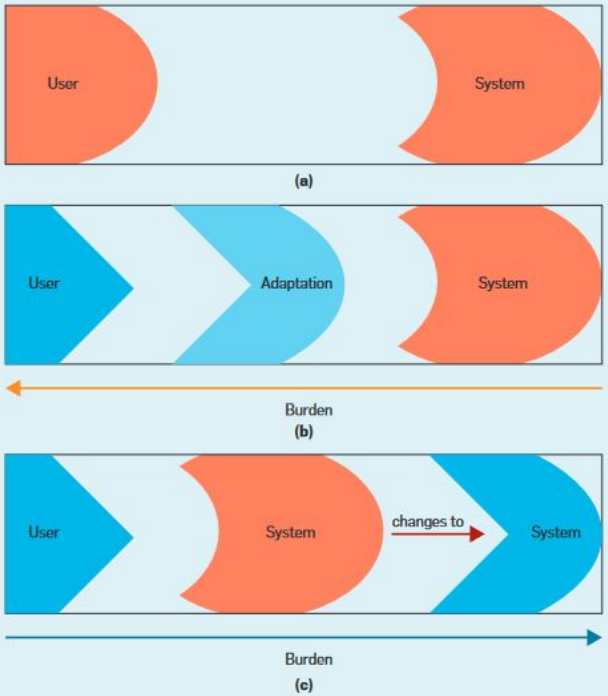
- Ability Based Design
  - A design approach that focuses on the ability of users throughout the design process, rather than disability
- Assistive Technology (AT)
  - Technology that support individuals with disabilities in performing tasks that they may have difficulty completing without assistance
- Situational Impairment
  - Temporary impairments caused by changing situations, contexts, and environments (ex. Broken limb, environments that inhibit sense like concert etc.)

Ability-Based Design: Concept, Principles, and Examples

Key Arguments of this paper

- Ability based design is a new design approach to interactive systems that focuses on people's abilities. (what people **<u>can</u>** do)
- Operates on the philosophy: everyone will be temporarily impaired in their life
- Figure: User abilities and a system's ability assumptions:
  - (a) user abilities match a system's ability assumptions
  - (b) in assistive technology, the user acquires an adaptation to remedy a mismatch
  - (c) in ability-based design, user abilities drive changes in the system.

Figure 4. User abilities and a system's ability assumptions: (a) user abilities match a system's ability assumptions; (b) in assistive technology, the user acquires an adaptation to remedy a mismatch; and (c) in ability-based design, user abilities drive changes in the system.



What are potential strengths and/or challenges of an ability-based design approach?

https://PollEv.com/discourses/wHAXorpN8Dg7aVO2iNwqv/respond

Main Takeaway & Call to Action

- **Takeaway**
    - Designers should develop adaptable systems that complement a user's abilities, thus orienting a universal design for one approach in the foreground
- **Calls to Action**
    - Investigate more usable and accurate measures of ability "in the wild" for different users
    - System adaptations via sensing
    - Commodity devices should be repurposable

Discussion Day

TO BE CONTINUED