

# Final Thoughts

05-499/899 Fall 2024

Celebrating Accessibility

<https://cmu-05-499.github.io>

Andrew Begel and Patrick Carrington

# Administrivia

- P6B – Final Project Reports due Friday, Dec 6 11:59pm
- P6C – Final Project Reflection due Monday, Dec 9 11:59pm
- P6D – Final Project Delivery due by Friday Dec 13

# Team Tism Presentation

Enjoy some snacks!

# Accessibility

- Why do you work on accessibility?
- How has your understanding of accessibility and disability changed throughout the course?
  - What triggered the changes?

# Celebrating Accessibility

- We're not "fixing" disabled people.
- We're not *overcoming* disability.
- We want to live in a future where people with disabilities are treated equally, have the same opportunities to live full, complex, messy lives just like everyone else.
- This future is a goal that we strive for.

# Celebrating Accessibility

- Social stigma, prejudice, and discrimination are long-standing barriers to inclusion.
- Can we fix this?
  - These problems will not go away with purely technological solutions.
- What can we do to make progress towards this goal?
  - How many paths to inclusion must be worked on at the same time?
  - Many people need to play a role. How so?

# Course Review

- We covered a lot of topics in this course. Let's review.



# Talking about Disabilities

- Person-First vs. Identity-First
- Visible vs. Invisible
- Permanent, Temporary, Situational, Progressive, Dynamic
- Religion vs. Medical Model vs. Social Model vs. Out and Proud

# Disabilities

1. See
2. Hear
3. Speak
4. Move
5. Think
6. Chronic Illness

# History of Disability in Society

- Social Darwinism – Eugenics
- Institutionalization
- Independent Living Movement
- UN Convention on the Rights of Persons with Disabilities
- Inalienable Rights
  - To live, to exist, to speak on your own behalf, to equality.
- Disability Justice – Intersectionality – Critical Disability Theory
- Disability Pride – Nothing about us, without us.

# Disability Policy

- Landmark US Laws
  - Fair Housing Act (Title VIII of Civil Rights Act) of 1968
  - Rehabilitation Act of 1973 (Section 508)
  - Individuals with Disabilities Education Act of 1975
  - Architectural Barriers Act of 1982
  - Americans with Disabilities Act of 1990
- Landmark Court Cases
  - EEOC vs. United Airlines (2009)
    - No overtime for light duty work violates the ADA since people with disabilities are more likely assigned to light duty work.
  - Robles vs. Dominos Pizza LLC (2019)
    - ADA applies to web sites

# Inclusive Education

- Individualized Education Programs (IEPs)
  - Annual Goals, Special Ed Services, Accommodations, Participants
- Universal Design for Learning
  - Engagement, Representation, Action and Expression

# Disability Employment

- Unemployment rates for people with disabilities are sky-high.
  - We need to fix that
- Disability employment research pipeline:
  - Prepare – Recruit – Onboard – Retain – Advance
- Neurodiversity Hiring Programs
  - Strengths and weaknesses in the workplace
- Spillover benefits

# Software Accessibility Guidelines

## WCAG, WAI-ARIA, ATAG

1. Keyboard Compatibility
2. Video Captions
3. Colors with Good Contrast
4. Customizable Text
5. Clear Layout and Design
6. Voice Recognition
7. Text to Speech
8. Understandable Content
9. Large Links, Buttons, and Controls
10. Notifications and Feedback

# Design and Study Methods

- Iterative Design
  - Progressive Refinement
  - Assumptions of Ability, Adaptation, and Rehab Engineering
  - Universal Design
  - Inclusive Design
- 
- Institutional Review Boards and Why they Exist



# Responsible AI

- AI doesn't always work well for people with disabilities
- Let's build human-centered AI
- Responsible AI Principles: Fairness, Reliability and Safety, Privacy and Security, Inclusiveness, Transparency, Accountability
- Impact Assessments

# Assistive Technology

- Assistive Technology vs. Access Technology
  - Ramps, Elevators, Glasses
- **Vision:** Braille, White cane, Guide dogs, Tactile signs, Screen readers, Alt-text, Screen magnification
- **Hearing:** Hearing aids, speech recognition, captioning, ASL recognition (not there yet)
- **Mobility:** Crutches, Braces, Grips, Wheelchairs, Adaptive input devices, Gaze recognition, Telepresence Robots, Brain-Computer Interfaces (not there yet)
- **Cognition:** Simplified English, Conversational agents, Maps, Reminders, Plumbing sensors, Social robots, ChatGPT

# Accessible Software Development

- Supporting software development by people with disabilities
- We talked about voice-based programming, and mixed ability collaboration in programming.

# Games, Sports, and VR

- Accessible Video Games
  - Adaptive controls: Xbox adaptive controller
  - Adaptive UIs
  - Adaptive Gameplay
- Sports
  - Paralympics
  - Blind sports: Running, hockey, skiing, kayaking
  - Races: Running prosthetics, racing wheelchairs, handcycles
  - Wheelchair rugby, basketball

# Transportation, Housing, Museums, Libraries

- Some public spaces are exempt from the ADA
- Case Study: Dog Beach in Evanston, IL
  - How do you make beaches more accessible to all?

# Non-Work Activities

- Accessibility in Physical Spaces
  - Physical Barriers, Perceptual Barriers
- Non-visual Cooking
- Cosmetics



Bathing



Dressing



Grooming



Oral Care



Toileting



Transferring



Moving Around



Eating



Shopping



Cooking



Managing Medication



Using the Phone



Housework



Laundry



Driving



Managing Finance



Leisure and Other Activities

# Fabrication and DIY

- Prototyping
- Maker Spaces
- DIY Assistive Technology
  - Head pointers, mini wheelchairs, prosthetics
- Makey makey “Chairables”

# Course Projects

- **SocialWise VR** – Onboarding Course: Accessibility for Neurodivergence
- **ITI Assistive Technologies** – Calmness in your Hands: Smart Wearables for Emotional Ease
- **University School** – Communication and Resource Platform for Neurodivergent Teens
- **WPSfB LAVI** – JamSesh: Make music, see music
- **Aspiritech** – Streamline the accessibility auditing process with SmartSheet
- **Olitsky Career Readiness Center** – Reimagining the SMART Goal Tracker



# Thank you!

- Thank you to Qiaoqiao and Kristen for grading and mentoring project teams.
- Thank you to Buck and Alexa from the S3D Video Team for recording our lectures.
- Thank you to our partner organizations for what they do for their clients and for working with us to sponsor meaningful projects.
- Thank you to all the students for caring enough about people with disabilities to engage in our class with an open mind.

# FCEs

- Please fill out your class evaluation!

