QUICK GUIDE TO ACCESIBLE DESIGN

Dr. Sarah Morrison-Smith (she/her)

AGENDA

- Goal
- Why study accessible technology?
- What we can do?
- How to conduct user testing
- Alternatives to user testing
- Activity (if we have time)

Image source: DreamHost

MY GOAL

- I want to:
  - Motivate you to **be cognizant** of the variance of abilities in your users when you develop technology
  - Teach you **strategies** for improving accessibility

Image source: Aspiration Marketing

WHAT IS ACCESSIBILITY

- Engineering perspective: Giving users with disabilities or impairments alternative ways to access our content
- Why?
  - Clients may ask for it
  - Legal obligations
  - Accessibility is good UX

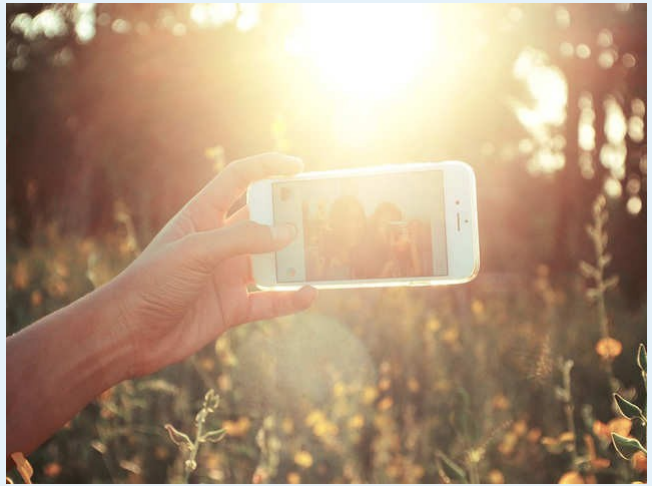
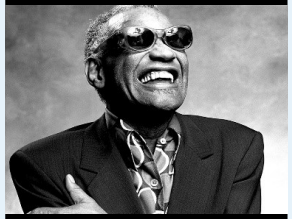


Image source: Gadgets Now

WHY STUDY ACCESSIBILITY

- Worldwide, more than **1 billion people** experience some form of disability [World Health Organization, 2011]
- **26% of the U.S. population** is disabled [Centers for Disease Control and Prevention, 2018]

Slide courtesy of Merrie Morris (Microsoft Research)

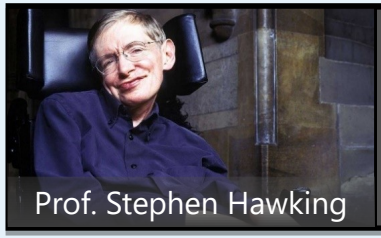
Visual	Hearing	ASD	Speech	Physical	Neural
					
Ray Charles	**Marlee Matlin**	**Temple Grandin**	**James Earl Jones**	**Josh Sundquist**	**Catherine Zeta-Jones**
Low vision → Blind	Hearing loss Deaf	Autism Spectrum Disorder	Speech impediment Unable to speak	Amputee (leg)	Bipolar disorder Anxiety

Diseases can span disability segments:


Michael J. Fox

Parkinson's Disease

Parkinson's affects cognition, speech and mobility


Prof. Stephen Hawking

ALS

ALS affected mobility and speech

Slide courtesy of Microsoft Chief Accessibility Officer Jenny Lay-Flurrie

THERE ARE LAWS…

American Rehabilitation Act of 1973:

"... Disability is a **natural part of the human experience** and in no way diminishes the right of individuals to— (A) live independently; (B) enjoy self-determination; (C) make choices; (D) contribute to society; (E) pursue meaningful careers; and (F) enjoy full inclusion and integration in the economic, political, social, cultural, and educational mainstream of American society"

Americans with Disabilities Act of 1990 (and 2008 amendment):

"Individuals with disabilities **continually encounter various forms of discrimination**, including outright intentional exclusion, the discriminatory effects of architectural, transportation, and communication barriers, overprotective rules and policies, failure to make modifications to existing facilities and practices, exclusionary qualification standards and criteria, segregation, and relegation to lesser services, programs, activities, benefits, jobs, or other opportunities"

Slide courtesy of Rua Williams (University of Florida)

BUT THE LAWS AREN'T EFFECTIVE

POLITICS

A blind man couldn't order pizza from Domino's. The company wants the Supreme Court to say websites don't have to be accessible

PUBLISHED THU, JUL 25 2019 • 8:01 AM EDT | UPDATED THU, JUL 25 2019 • 6:37 PM EDT

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KEY POINTS

- Guillermo Robles, who is blind, has tried to order a custom pizza from Domino's at least two times in recent years, using the company's website and mobile app.
- Robles is one of an increasing number of Americans with disabilities who are bringing lawsuits under the ADA against businesses they say are discriminating against them by not providing accessible websites.

OTHER NOTABLE FAILURES

- Beyoncé
  - No alt-text on images, accessible drop-down menus, or keyboard access
- Winn Dixie
  - Was found to have violated the ADA by failing to render its website accessible to the sight impaired
  - Helped establish websites as public spaces
- Fox News, Burger King, Nike, CVS pharmacy
- Harvard and MIT

WHAT CAN WE DO?

YOU ARE THE FASTEST ROUTE TO CHANGE

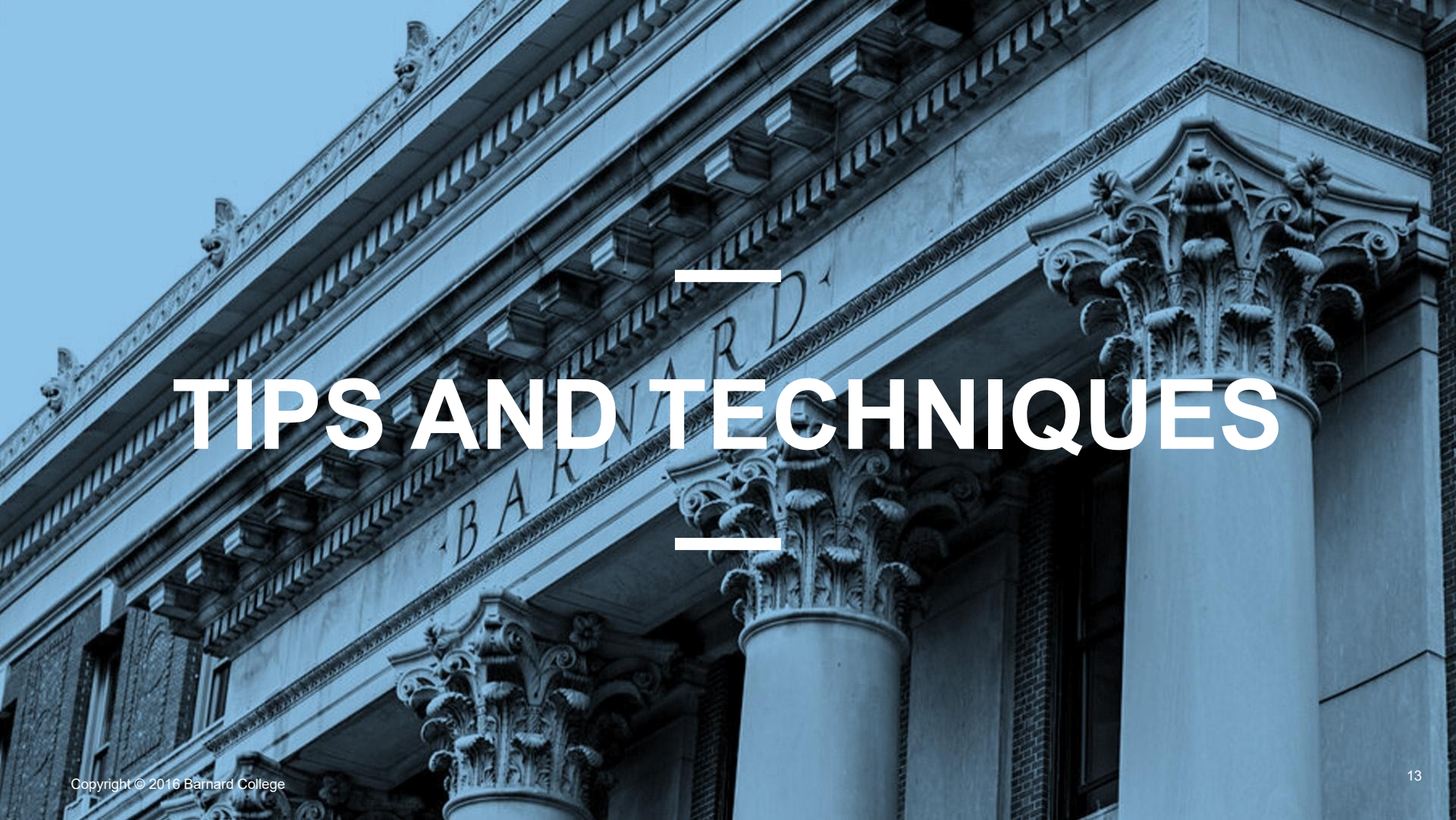
- Resistance through Design
  - Software built from Universal Design* practices avoid the “excess labor” myth
  - Things that are **maximally usable** are **maximally profitable**
- Allyship and Solidarity
  - Disabled people are the best source for what accessibility is and is not
  - #DisabledTwitter is a thing
  - You will have disabled coworkers. I promise.
- Advocacy through Practice

Slide courtesy of Rua Williams (University of Florida)

“UNIVERSAL DESIGN”

- One design works for everybody
  - Typical example: curb cuts
- “Situational Impairments”
  - Trying to type on phone while walking
  - Trying to enter numbers without looking at a screen (*e.g.*, while driving)
- Older Adults
  - Less accuracy, lower vision, cognitive difficulties

Slide courtesy of Brad Meyers



TIPS AND TECHNIQUES

INCLUDE DISABLED PEOPLE IN THE DESIGN PROCESS

- Testing with users with disabilities will also help you improve your usability far better than testing with your “regular” test subjects. Why? Some examples:
  - A person with autism will react to the same things that another user will.
    - **But** they are much better at spotting inconsistencies in design, problems with navigation, and unnecessarily difficult content
    - Things that other users will find annoying but work their way around without mentioning
  - A person with low vision will react to small text or low contrast, which will make reading difficult for anyone out in the sun with a smartphone

IT'S NOT ENOUGH TO TALK TO PEOPLE…

… You need to do it the right way

- Be ethical
- Spend time preparing
  - Talk to the right people (get help if you need it!)
  - Carefully construct materials and protocols (including reminders!)
- Be aware of special issues with disabled users

FACEBOOK STUDY

- January 11-18, 2012, Facebook manipulated the feeds of 689,003 users
- Research question: does feed content influence emotions (like happiness or depression)?
- Paper published June 17, 2014

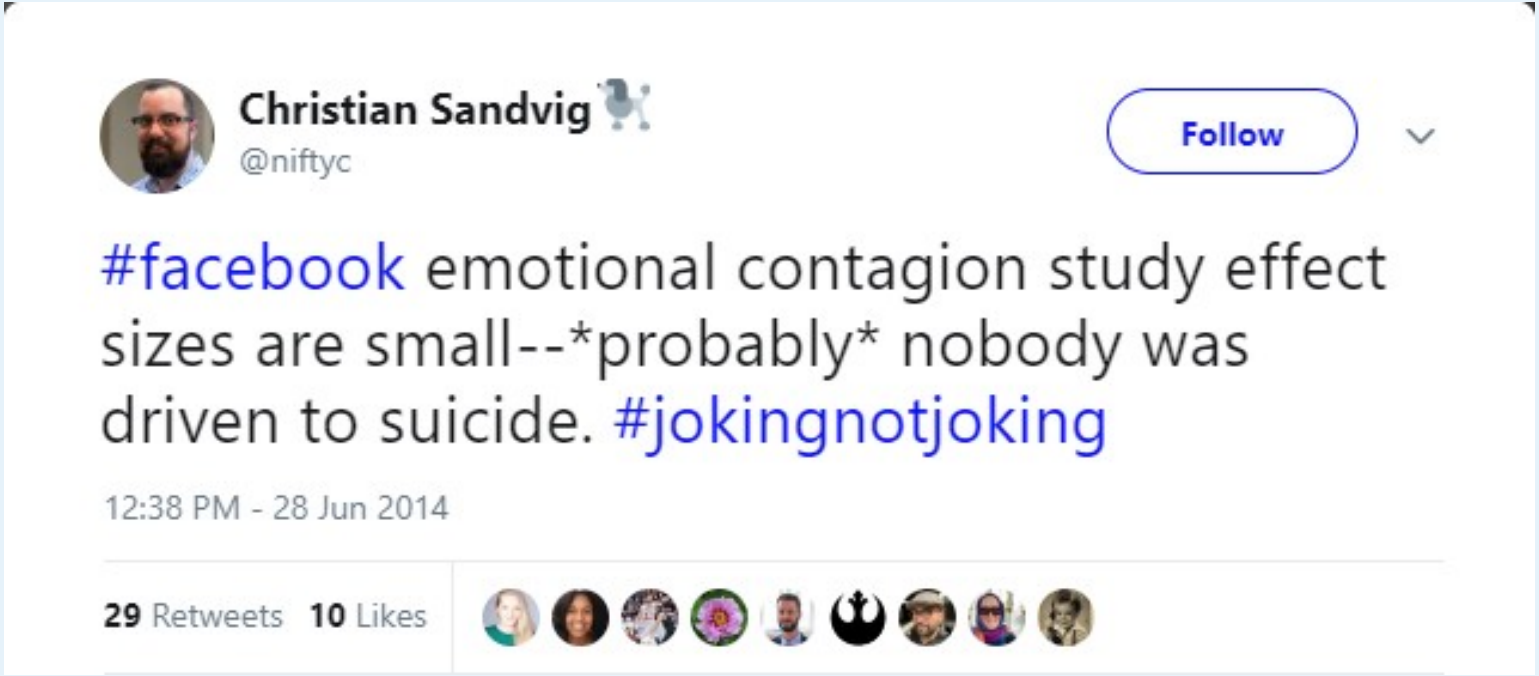
Image source: Facebook

FACEBOOK STUDY - ETHICS

- Claimed that people agreed to T&S
  - Facebook conducted their research four months before adding "research" to their data use policy

- Disregarded the safety of participants
  - No screening for mental illness
  - No debriefing or follow-up to ensure that participants were healthy afterwards

CHRISTIAN SANDVIG ON THE FACEBOOK STUDY



GET HELP RECRUITING TESTERS

- People are often very supportive when you say you want to improve the accessibility of your product
- Go search for groups to collaborate with
  - Maybe find someone in charge at an elderly center nearby or post in a Facebook group for people with autism
- Or contact the Axess lab and they'll help you out
  - https://axesslab.com/contact/

DON’T CALL IT “USER TEST”

- The word “test” is something most people associate with anxiety, failure and other rotten feelings.
- And it can be extra negatively loaded for many people with disabilities, who may have been forced to go through tests to show they have a lowered intelligence or lowered functional ability.
- So call the user tests something else when you communicate to participants
  - For example: “Feedback session”
  - This makes it clear to the users that you’re looking to improve your product, so they know they can’t do anything wrong.

DON’T ASK QUESTIONS, GIVE TASKS

- Avoid asking “What would you do to find the contact information?”
- Instead go straight to the point: “Find the contact information”

Image source: ZachWCarpenter

BE PATIENT

- It can often take a person with disabilities more time to complete a test scenario, get set up with their assistive technology, process information, navigate the site etcetera
- **Be patient** as a test facilitator
- Skip a test scenario if there is not enough time at the end of the test instead of speeding through all of them

Image source: iStock

DON’T FORCE USERS TO SPEAK OUT LOUD

- Many user evaluations apply the think-aloud-method, where you want the user to say what they think
- You can still use this for most users with disabilities, but make sure to give alternatives
  - Some people find this type of communication really hard
- So instead of saying: “Tell me what you’re thinking when using the site” say “If you want to, you can say what you’re thinking when using the site. Otherwise you can tell me after we’re done.”

WHEN YOU CAN'T DO A USER TEST

SCREEN READERS

- SRs use text to speech tech. to convert digital text into synthesized speech
- They empower users to **hear content** and navigate with the keyboard
- The technology helps people use information technology with **the same level of independence and privacy as anyone else**
- SRs also work with documents, spreadsheets, and the user's OS

Image source: Bridgeway Education

WHY ARE THEY SO IMPORTANT (DEVELOPER STANDPOINT)?

- Screen reader tests are the **litmus tests** in the development of accessible user interfaces
- Screen reader compliant interfaces comply with a lot of requirements that are not only important to blind people, but also to many other groups of people with special needs
- Screen readers expose weaknesses like **invalid syntax** or **missing/wrong semantics**
- BUT some areas cannot be validated with screen readers

WCAG

- WCAG 2.1
  - Designed for web accessibility
  - Has good guidelines that can apply to other mediums
    - General UI design
  - Partly automatically testable
    - Still sometimes requires human evaluation

Image source: Joomla-Monster

PERCEIVABLE

1. Provide text alternatives for non-text content
2. Provide captions and other alternatives for multimedia
3. Create content that can be presented in different ways, including by assistive technologies, without losing meaning
4. Make it easier for users to see and hear content

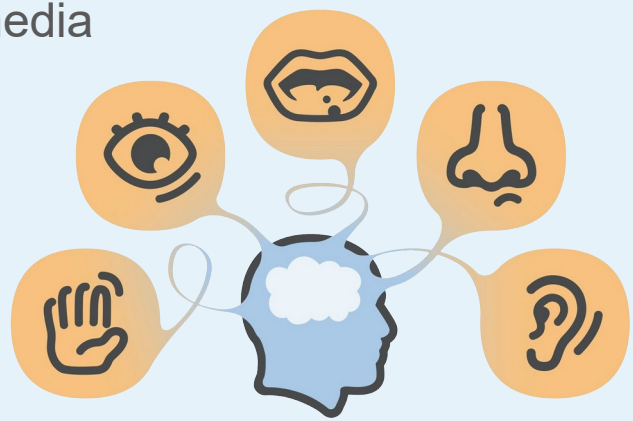


Image source: Life Coach Code

- Scripting is an issue under the “perceivable” principle

OPERABLE

1. Make all functionality available from a keyboard
2. Give users enough time to read and use content
3. Do not use content that causes seizures or physical reactions
4. Help users navigate and find content
5. Make it easier to use inputs other than keyboard

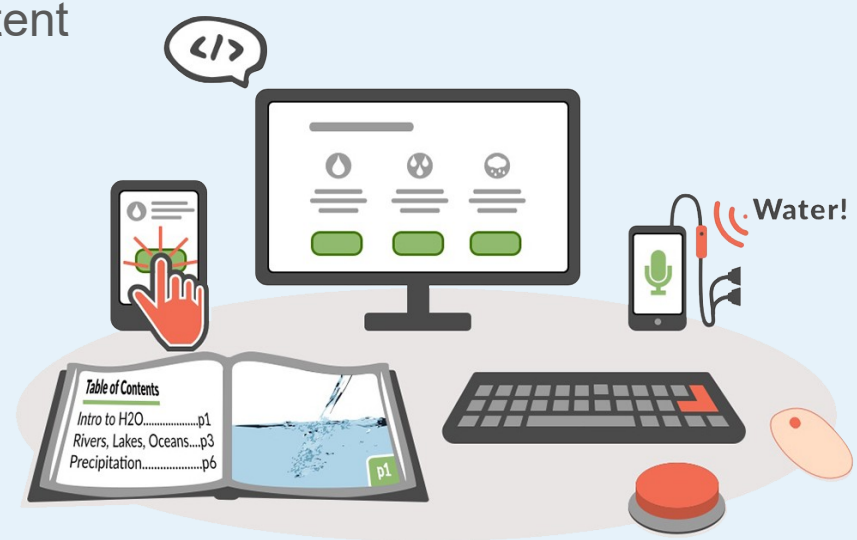


Image source: National Center on Accessible Educational Materials

UNDERSTANDABLE & ROBUST

- Understandable
  - Make text readable and understandable
  - Make content appear and operate in predictable ways
  - Help users avoid and correct mistakes
- Robust
  - Maximize compatibility with current and future user tools

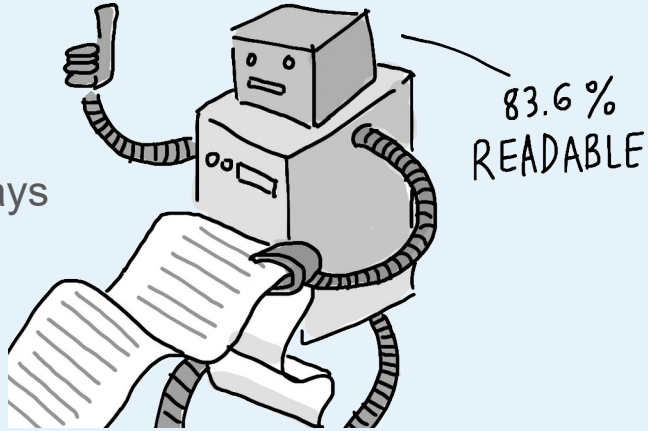


Image source: Avenue Code Snippets

- Full guidelines: https://www.w3.org/TR/WCAG21/

ACTIVITY TIME

HANDS-ON ACTIVITY

- Get into breakout rooms
- Visit https://wave.webaim.org/
- Evaluate one of the following:
  - https://www.barnard.edu
  - https://blinkee.com
  - http://arngren.net
  - http://www2.pnwx.com

- Review and discuss accessibility **errors** and **alerts**
  - What needs to be fixed first and why?
  - How do we fix the problems?

RESOURCES

RESOURCES

- Accessibility Guidelines and Checklists (CAUTION)
  - https://www.justice.gov/crt/software-accessibility-checklist
  - https://www.w3.org/WAI/standards-guidelines/wcag/
  - https://medium.com/@krisrivenburgh/the-ada-checklist-website-compliance-guidelines-for-2019-in-plain-english-123c1d58fad9
  - WCAG 2.1 (web accessibility) https://www.w3.org/TR/WCAG21/
  - The bare minimum is **not enough**

Slide courtesy of Rua Williams (University of Florida)

RESOURCES (2)

- Listen to Disabled People (like Cynthia Bennett): https://sociodesign.hypotheses.org/2019/07/advice-for-teaching-disability-in-design/
- Disability and Technology (Ashley Shew): https://techanddisability.com/spring-2019-materials/?fbclid=IwAR2m31K3cyDApv4XrlCAffHvPFt7GRe2ue-DFwqWHBPzrhjF2VBhUVkwpno
- Critical Race and Technology (Lori Kido Lopez & Jackie Land): https://criticalracedigitalstudies.com/syllabus/
- #DisabledTwitter is a thing

RESOURCES (3)

- WAVE https://wave.webaim.org/
- Mauve++ https://mauve.isti.cnr.it/
- WCAG checklist https://webaim.org/standards/wcag/checklist
- https://www.w3.org/WAI/people-use-web/
- http://www.uiaccess.com/accessucd/ut_plan.html#recruiting
- http://www.uiaccess.com/accessucd/ut.html
- A11yCasts https://www.youtube.com/playlist?list=PLNYkxOF6rcICWx0C9LVWWVqvHlYJyqw7g

QUESTIONS?

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