January 31, 2019
Improving Indoor Environments for Older Adults

ENGR110/210
Perspectives in Assistive Technology

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13 Years
Questions?
Classic Rock Favorites

3 - Fleetwood Mac
2 - AC/DC
2 - Nirvana
2 - Pink Floyd
1 - Beatles
1 - Bon Jovi
1 - Eric Clapton
1 - Journey
1 - Queen
1 - Tom Petty
Attendance Sheet, Evaluation Form, and Meet with Dave Signup

For all students:
- Attendance Sheet
- Meet with Dave signup

For everyone:
- Class Session Evaluation Form
Passengers’ Signup for Field Trip to VA

Please sign up with a car pool driver. Unless otherwise arranged, the departure point from Stanford is the Littlefield Center.

Let me know if you are biking, a solo driver, or driving with specific classmates so I can send you a map and directions.

Please make your best effort to arrive at the pick-up point on time.
Pickup at Littlefield Center
Prosthetics Question

- **Question:** "How are low-income amputees who don't have healthcare insurance able to obtain prosthetic devices?"

- **Gary’s Answer:** “In California, low-income families qualify for Medi-Cal and 2 years after their disability they also qualify for Medicare. However, if they have undocumented immigration status or have not contributed to Medicare, they may not qualify for any system support. In that case, we have to work with them to figure out a cash price that guarantees they get something. Most folks however will be able to get Medi-Cal assistance. The California Department of Vocational Rehabilitation will sometimes assist as well.”
Suggested Outline for Mid-term Presentation

- Introduction of team and its members
- Brief abstract
- Statement of problem
- Magnitude of problem addressed by this project
- Discussion of interviews with those who suggested the project and potential users
- Statement of specific challenge
- Identification of existing solutions and discussion of their limitations
- Description of brainstormed design concepts
- Analysis of considered design alternatives
- Description of top selected design concepts, including their technical feasibility, engineering difficulty, estimated cost, user acceptance, safety considerations, etc
- Design visualizations: photographs, videos, sketches, drawings, models, and prototypes
- Future work and challenges for continuing the project toward fabrication and testing with users

**SEVEN MINUTE Presentations**
Presentation Considerations & Suggestions

• Project status - what has been done, what remains
• Problems encountered, resolved, and pending
• Plans for the remainder of the quarter

• Due to the limited class time for presentations, there will be no opportunity for teams to field questions.
Judging Your Presentation

Your team will be judged on the overall quality of the presentation, the effectiveness of your design process, and your progress toward a design solution using the following metrics:

• **Delivery**: (How the team presented) - professionalism, enthusiasm, conviction, confidence, energy, volume

• **Process**: (How the team addressed the problem) - problem information, background research, design concepts brainstormed & prototyped, testing & evaluation

• **Presentation**: (What the team presented) - clarity, organization, and completeness of the information presented

• **Design**: (What the team produced) - creativity, originality, functionality of the design concept and the likelihood it will meet the user’s needs

• **Overall**: (Overall score) - combined impression of presentation and project effort
Important Considerations

Most important - **practice your presentation** to maximize the quality of its content, clarity, conciseness, completeness, understanding of your design decisions, creativity, pacing, and timing.

PowerPoint Presentations:
- Send me your PowerPoint file or link to Google Docs
- Upload any videos to YouTube & include link on the slide
- Do not embed videos in your slides

• The length of your presentation is **SEVEN MINUTES**
Work with Diligence

- Time is your team’s most precious resource
- 5 weeks of class left to work on your projects
- Mid-term team presentations in 2 weeks
- Outline presentation & report
VA Palo Alto Health Care System

The **VA Palo Alto Health Care System** (VAPAHCS) is a United States Department of Veterans Affairs healthcare group which consists of three inpatient facilities (VA Palo Alto Hospital, Menlo Park VA Hospital, and Livermore VA Hospital), plus seven outpatient clinics in San Jose, Capitola, Monterey, Stockton, Modesto, Sonora, and Fremont.

VAPAHCS is a teaching hospital associated with the Stanford University School of Medicine. It provides patient care services as well as education and research. Health care is provided in areas of medicine, surgery, psychiatry, rehabilitation, neurology, oncology, dentistry, geriatrics, and extended care. 1,300 University residents, interns, and students are trained annually.

VAPAHCS operates nearly 900 beds, including three nursing homes and a 100-bed homeless domiciliary serving more than 85,000 enrolled veterans.

VAPAHCS is home to a variety of regional treatment centers, including a Polytrauma Rehabilitation Center, Spinal Cord Injury Center, a Comprehensive Rehabilitation Center, a Traumatic Brain Injury Center, the Western Blind Rehabilitation Center, a Geriatric Research Educational and Clinical Center, a Homeless Veterans Rehabilitation program, and the National Center for Post-Traumatic Stress Disorder (PTSD).

VAPAHCS maintains the third largest research program in the VA with extensive research centers in geriatrics, mental health, Alzheimer's disease, spinal cord regeneration, schizophrenia, **Rehabilitation Research and Development Center**, HIV research, and a Health Economics Resource Center.
Photos from last year
Pre-Lecture Discussion Topics

22 - Ethical / Moral Dilemmas Related to Disability
22 - In the News - New Assistive Technology products and research
20 - Assistive Robotics - Robotic technology benefitting people with disabilities and older adults
15 - Overview of Accessibility - How this design feature relates to products, with many examples
15 - Ten Commandments of Making - Adam Savage’s Maker Faire video
15 - Video Theatre - Watch and discuss videos of new products and prototypes
12 - Vintage Assistive Technology - Products and devices from the past
12 - The Upside of Failure - Learning from prototypes that didn't work
12 - Who is Disabled? - Making a determination with limited information
12 - Innovative Marketing Metrics - How we use words to measure and advertise
  9 - Famous people with disabilities - Focus on TV characters
Overview of Accessibility

A11y
What is Accessibility?

Accessibility is a:
- Design concept
- Design specification
- Design consideration
- Design goal
- Product feature
What is Accessibility?

That enables people:

- Individuals with disabilities:
  - Sensory
  - Physical
  - Cognitive
  - Neurological
- Older adults
- Kids
- Everyone
What is Accessibility?

To better interact through:

- Sight
- Sound
- Touch
- Smell
- Mobility
- Understanding
- Communication
- Manipulation
- Teaching / learning
What is Accessibility?

With the real world:

- Other people
- Infrastructure:
  - Buildings
  - Institutions
  - Transportation systems
- Products:
  - Computers
  - Internet
  - Websites
  - Household items
  - Office items
What is Accessibility?

Through an enhanced hardware and / or software user interface:

- Alternate ways
- Augmented ways
- Customized ways
- Preferred ways
What is Accessibility?

For these purposes:

- Education
- Vocation
- Recreation
- Daily living
The ultimate goal of the accessibility movement is to ensure that everyone - regardless of ability or disability - has an equal chance to participate in society. In the face of constant technological change, this becomes more difficult but also extremely necessary. The only way to allow people with disabilities to engage fully in the activities that interest them is to give them access to all the possibilities open to everyone else, including those offered by twenty first century technology.

Accessible Technology in the 21st Century
• The Future
Examples of Devices that Provide Accessibility

Building Access
- Door Opener
- Ramps
- Workspaces
- Signage
- ATMs
Computer Accessibility

As the computer age continues, more and more technology is being created to make computers and the internet accessible for people of all ability levels.

For **visually impaired users**, programs offer audio description or screen reading, while monitor settings can be modified to make visual reading easier or braille embossers can be added as alternative output devices.

Accessible Technology in the 21st Century
• Introduction
For individuals with hearing difficulties, captioning and visual notifications instead of sound can offer more freedom in using a computer.

Accessible Technology in the 21st Century
• Introduction
Computer Accessibility

Adaptive keyboards and mice allow **people with motor disabilities** to get their input into a computer, while **speech recognition** is an emerging type of software that allows control of a computer by voice.
Computer Accessibility

For **those with cognitive disabilities**, programs can be set up to **read text aloud while it is displayed**.
Examples of Devices that Provide Accessibility

Computer Access

- Alternative Mouse
- Alternative Keyboard
- Screen Readers
- Voice Recognition
- Screen Magnifiers
- Braille Displays
- Captioned videos
Accessible Webpages

WCAG Guidelines (1 of 2)

- Provide equivalent alternatives to auditory and visual content
- Don’t rely on color alone
- Use markup and style sheets and do so properly
- Clarify natural language usage
- Create tables that transform gracefully
- Ensure that pages featuring new technologies transform gracefully
- Ensure user control of time-sensitive content changes
**Accessible Webpages**

**WCAG Guidelines (2 of 2)**

- Ensure direct accessibility of embedded user interfaces
- Design for device-independence
- Use interim solutions
- Use W3C technologies and guidelines
- Provide context and orientation information
- Provide clear navigation mechanisms
- Ensure that documents are clear and simple
In Summary

Accessibility is the design goal, feature, or criteria that allows people of differing abilities to **share common resources**.
Examples of shared common resources are:

- buildings
- transportation systems
- consumer products including computers and software
- institutions such as schools, banks, government facilities, voting places
- facilities such as parks, playgrounds
- information systems such as books and the internet
In Summary

In many instances, the use of an assistive technology device can provide needed access to an otherwise inaccessible resource.
Tuesday, February 5th

Bionic Ears: Cochlear Implants and the Future of Assistive Technology

Lindsey Dolch Felt, PhD
Stanford University, Program in Writing and Rhetoric
Today

Improving Indoor Environments for Older Adults

Matteo Zallio, M.Arch, PhD
Fulbright Scholar
Short Break
Break Activities

- Sign attendance sheet
- Grab a cookie
- Stand up and stretch
- Take a bio-break
- Text message, web-surf, email
- Talk with classmates
- Reflect on what was presented in class
Questions?
Laptops Galore
Time for Questions?
End the class