## Accessibility Capstone
## CSE 481H
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## What We'll Do Today

- Introductions
- Goals of Accessibility Capstone
- Discussion of project ideas
- Demo Android apps you developed
- Optional – reprise of Richard Ladner's short course lecture
  – Models of disability
  – MobileAccessibility Project
  – Other Mobile Projects

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## Goals of Capstone

- Design, build, and test accessibility applications on the Android (or other) platform.
- Present results.
  – Code in the open source MobileAccessibility repository or other repository
  – Short paper
  – Poster
  – Short Video

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## Design Process

- Work will be done in teams of 2-3 students
- Each team has a mentor
- Weekly review sessions
- *Work with users with disabilities to identify needs for applications*
- Project Proposal – preliminary design and mockup
- Review with users
- *User testing of paper prototype or equivalent*
- Prototype implementation based on input from users
- *Test with users*
- Final implementation based on input from users *and additional testing*
- Final Project Presentation
  – Paper
  – Video
  – Poster session open to the public

*Blue – new items. I realize there isn't time to do all of these!*

## Criteria for Projects

- *Design process*
  – *Understanding the needs of the intended users, identifying real needs, regular testing with users [New]*
- Functionality
  – Does it actually work as intended
- Quality of the code
  – Can the code be adopted by others as part of an open source effort
- Innovation
  – Is the application novel
- Impact
  – Does the application have impact on the lives of people with disabilities
- Quality of products
  – written report, poster, video
- Effort
  – Was the student's effort proportional to the overall team effort (A team is expected to have equal effort from all members)

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## Reprise of Richard Ladner's short course lecture

- Models of disability
- MobileAccessibility Project
- Other Mobile Projects

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## Past Seminars

- 2010 Website
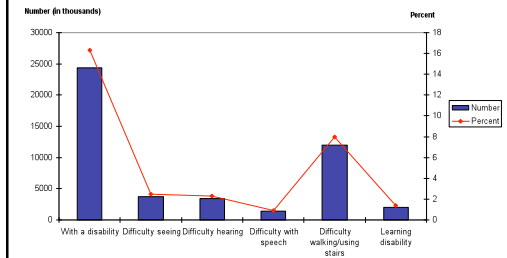- KOMO TV Story
- 2011 Website
- TapBeats Video

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## Basic Data

- 650 million people world-wide are disabled
- 16% of US population to ages 15 to 64 is disabled.
- 10% of the workforce is disabled
- 5% of the STEM workforce is disabled
- 1% of PhDs in STEM are disabled

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## Demographics US Population



Source: U.S. Census Bureau, Survey of Income and Program Participation, 2002

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## Disabilities

- Vision
  - Blind
  - Low-Vision
  - Color Blind
- Hearing
  - Deaf
  - Hard of Hearing
- Speech
  - Ability to speak
  - Stuttering
- Mobility
  - Ability to walk
  - Ability to use hands/arms
- Cognition
  - Dyslexia
  - Short-term memory loss
  - Dementia
- Multiple
  - Deaf-blindness

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## Models of Disability

- **Medical Model**
  - Disabled people are patients who need treatment and/or cure.
- **Education Model**
  - Disabled youth need special education.
- **Rehabilitation Model**
  - Disabled people need assistive technology and training for employment and everyday life.
- **Legal Model**
  - Disabled people are citizens who have rights and responsibilities like other citizens. Access to public buildings, voting, television, telephone, and education are some of those rights.
- **Social Model**
  - Disabled people are part of the diversity of life, not necessarily in need of treatment and cure. They do need access when possible.
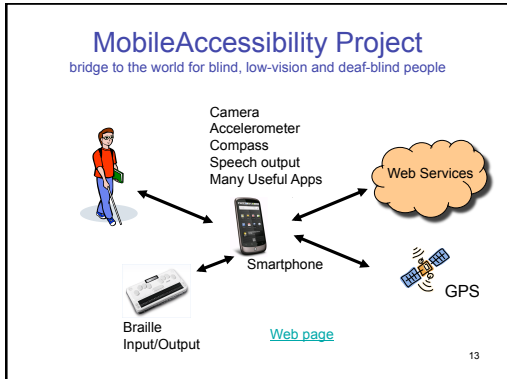
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## Platform

- Sensors
  - Video camera
  - Microphone
  - GPS
  - Compass
  - Accelerometer
- Human input
  - Keyboard
  - Touch screen
  - Speech
- Output
  - Speech
  - Audio
  - Visual
  - Vibration



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## MobileAccessibility Project
bridge to the world for blind, low-vision and deaf-blind people

Camera
Accelerometer
Compass
Speech output
Many Useful Apps

Web Services

Smartphone

GPS

Braille
Input/Output

Web page

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## Ideal Group

http://ideal-group.org/sj131264/

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## Project Possibility

Project:Possibility
A Software Collaboration for Persons with Disabilities

http://projectpossibility.org/index.php

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## Screen Readers

- VoiceOver for iPhone
- Eyes-Free Shell and Talkback for Android

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## K-NFB Reader Mobile

- Optical Character Recognition
- Focalization
- GPS
- Cell Phone

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## Braille Notetakers
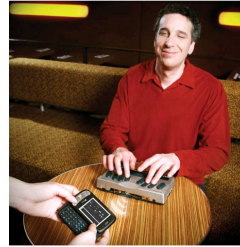
BrailleNote

Braille Sense

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## Braillenote with GPS



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## DeafBlind Communicator



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## Variety of Access Goals

- Everyday living in the home
- Transportation / mobility
- Sensing the environment
- Education
- Communication
- Games

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