

Accessibility Capstone

Richard Ladner
University of Washington

What We'll Do Today

- Introductions
- Goals of Accessibility Capstone
- Disabilities
- MobileAccessibility Project
- Other Mobile Projects
- Ideas for Projects (Discussion)

Instructors and Mentors

- Richard Ladner
- Shiri Azenkot (TA)
- Possible Mentors
 - Shani Jayant
 - Josh Scotland
 - Shaun Kane
 - Bruce Visser
 - Maria Kelley

Introductions

- Jung, Eui Min
- Kang, Siwei
- Kim, Joy Oakyung
- Kuo, Gary Chiajui
- Lam, Michael Quang Thai
- Lindsey, Levi Scott
- Liu, Jinghao
- Luo, Jonathan Pin
- Medlock, Bradley William
- Prasain, Sanjana
- Raastad, Christopher David
- Ricaurte, Jonathon Preston
- Sun, Shurui
- Sweeney-Easter, Patrick David
- Tung, Katherine Chuen
- Wilbur, Alison Hain
- Zhu, Angela Wanxu-Huang

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Goals of Capstone

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

Design Process

- Work will be done in teams.
- Each team has a mentor.
- Weekly review sessions
- Project Proposal – preliminary design
- Prototype implementation
- Test with users
- Project Revision – final design based on input from users
- Final Project Presentation
 - Paper
 - Presentation Demo
 - Poster session open to the public

Criteria for Projects

- Doable in one quarter
- Accessibility
 - Target group can use it
- Usability
 - Easy to learn
 - Easy to use
- Impact
 - Makes a difference
- Novelty
 - Not totally obvious

Pre-Capstone Seminar

- Today, 11/12 – Introduction to Capstone
- Next Friday, 11/19– Introduction to Android
- Following Monday, 11/22 – Android programming
- Following Friday, 12/3 – Projects for Winter Break

- All sessions at 4:00 in room to be determined.

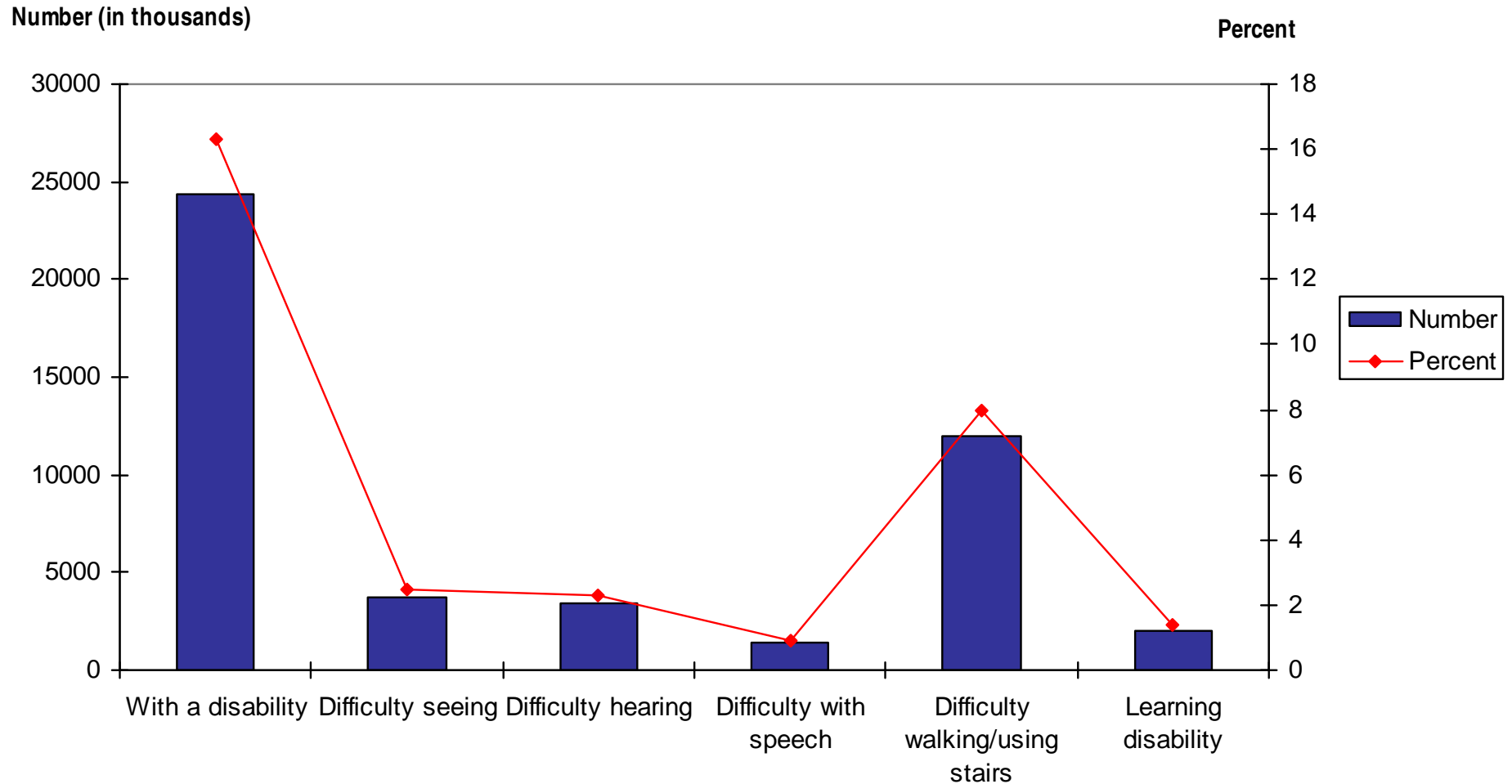
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Basic Data

- 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

Demographics US Population



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

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

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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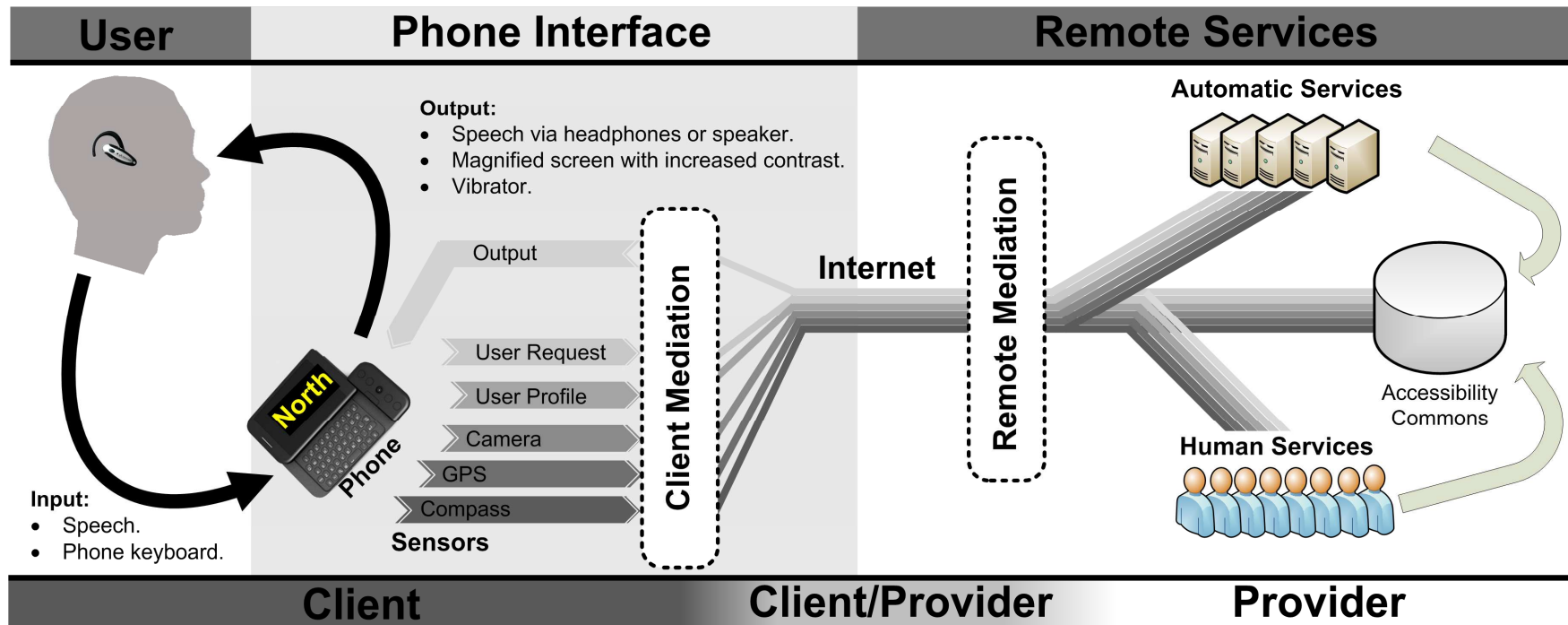
Platform

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



MobileAccessibility

Bridge to the world for blind, low-vision and deaf-blind people



<http://mobileaccessibility.cs.washington.edu>

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Capstone Projects From 2010

<http://www.cs.washington.edu/education/courses/cse481h/10wi/>

Ideal Group



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

Project Possibility



<http://projectpossibility.org/index.php>

K-NFB Reader Mobile

- Optical Character Recognition
- Focalization
- GPS
- Cell Phone



Bar Code Reader



SCAN GOSPEECH (MODEL SC100)

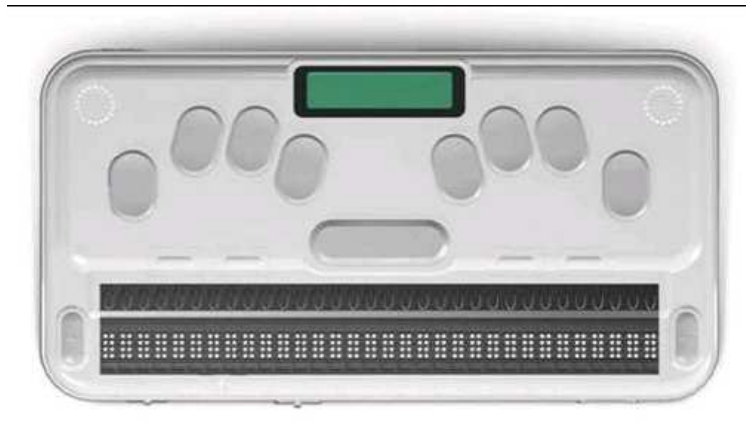


i.d. Mate II

Braille Notetakers



BrailleNote



Braille Sense

BrailleNote with GPS



DeafBlind Communicator



MorseSMS for Deaf-Blind

- The program "reads" out incoming SMS in morse code for blind/deaf-blind people by vibrating
- Sending of SMS by typing in the letters in morse code (Dit/Dah)



Variety of Access Goals

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

More Ideas

Blind Ideas

- LocalEyes*
 - Finding shops near your location
- Linkup*
 - Finding people near your location
- MobileOCR*
 - Reading documents
- V-Braille Games*
 - Vibrating games to learn Braille
- Appliance Reader
 - Reading digital displays
- Business Card Reader
 - Reading business card
- Walk sign identifier
 - Cross the street safely at an intersection

Blind Ideas

- WalkingWand
 - Using vibration to navigate and walk

Low-Vision Ideas

- Low-vision Camera Interface
 - Taking good pictures - many options

Deaf-Blind Ideas

- GoBraille
 - Making public transit information accessible
- Deaf-blind compass
- Deaf-blind level
- Tethering Android to Refreshable Braille Display

Deaf Ideas

- Signal identification
 - Baby cry, door bell, oven bell, door knocker

Speech Ideas

- AAC – Augmentative and Alternative Communication system

Cognitive Ideas

- EZTasker
 - Doing tasks you may not remember

Emotional Idea

- Mood tracker
 - Record moods in real time.