Accessibility Capstone

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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.