MobileASL: Making Cell Phones Accessible to the Deaf Community

Richard Ladner University of Washington

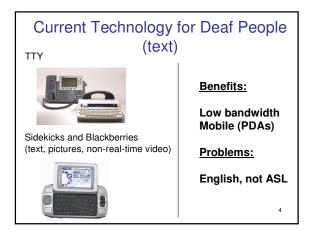
Two Themes

- MobileASL
- AccessComputing Alliance
 - Advancing Deaf and Hard of Hearing in Computing

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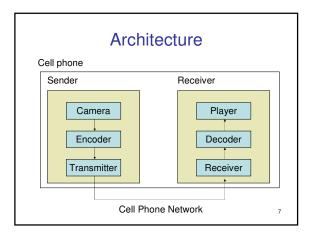
ASL

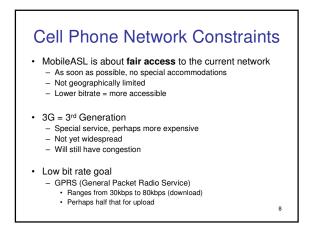
- ASL is the preferred language for over 1,000,000 Deaf people in the U.S.
- ASL is not a code for English
- Signs usually occur within the "sign-box"
- Composed of location, orientation, shape of hands and arms + facial expressions
- Usually uses 2 hands, but one-handed signing not uncommon











Codec Used: x264 • Open source implementation of H.264 standard

- Doubles compression ratio over MPEG2

- · x264 offers faster encoding
- Off-the-shelf H.264 decoder can be used

Outline

- · Motivation
- Introduction
- MobileASL Focus Group
- Eyetracking Motivation
- Video Phone Study
- Compression Challenges
- Current Work
- Conclusions

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MobileASL Focus Group

- 4 Deaf people, mid-20s to mid-40s,
- 1 hour
- · Open ended questions:
 - Physical Setup
 Camera, distance, ...
 - Camera, c
 Features
 - Compatibility, text, ...
 - Privacy Concerns
 - ASL is a visual language
 - Scenarios
 - · Lighting, driving, relay services, ...

Implications of Focus Group

- "I don't foresee any limitations. I would use the phone anywhere: the grocery store, the bus, the car, a restaurant, ... anywhere!"
- There is a need within the Deaf Community for mobile ASL conversations
- Existing video phone technology (with minor modifications) would be usable

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Outline

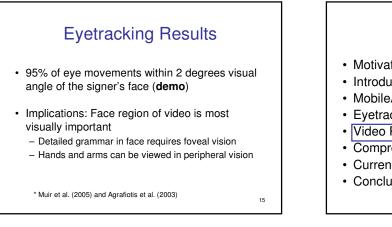
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Eyetracking Studies Participants watched ASL videos while eye movements were tracked Important regions of the video could be encoded differently

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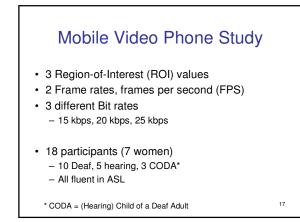
* Muir et al. (2005) and Agrafiotis et al. (2003)

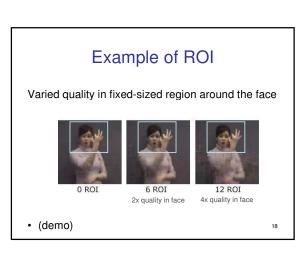


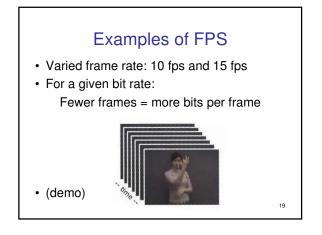
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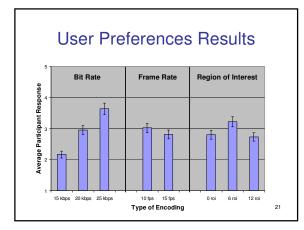
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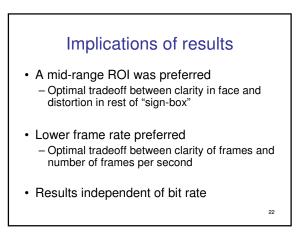


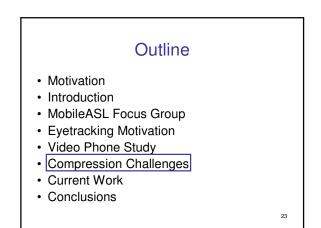


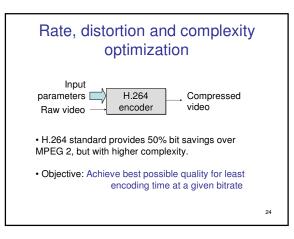


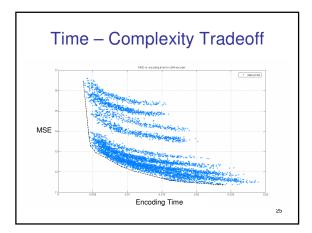


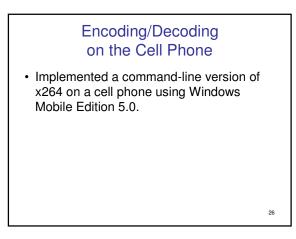


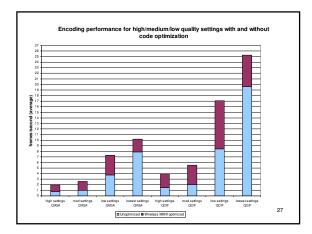


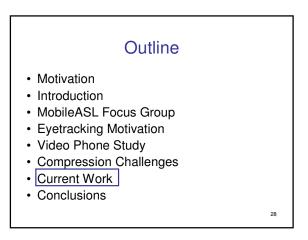


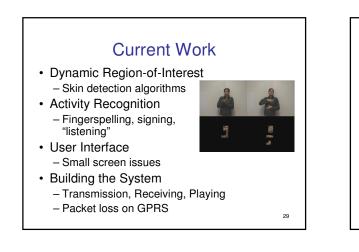


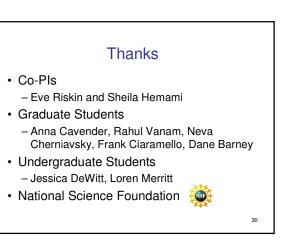


















Activities

- College transition & bridge programs
- Communities of Practice (CoPs)
- · Capacity building Institutes
- AccessComputing Knowledge Base of FAQs,case studies, promising practices
- Tutoring
- Internships
- · e-mentoring



Advancing Deaf & Hard of Hearing in Computing Goals

- Raise the bar for deaf and hard of hearing in computing fields
- Establish UW Bridge Academy
- Establish e-Mentoring Community
- Develop Community of Practice (dhhCoP)
- Encourage collaborations
- <u>http://www.washington.edu/accesscomputing/dhh</u>

Access Computing

Raising the Bar

- For deaf and hard of hearing students with skills in math and/or science considering computing as a major
- Careers in:
 - Computer Science
 - Computer Engineering
 - Information Systems
 - Information Science

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Computing Fields

- Computer Science
 - Programming - Software Systems
 - Networks

 - Artificial Intelligence Theoretical
- Computer Engineering
 - Software & hardware systems Embedded systems
 - Applications
- · Information Systems - Business solutions
 - Databases
 - System management
- Information Science
 - Library Science Organization of
 - inforamation
 - Human factors
 - Involves psychology, sociology and anthropology

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University of Washington Summer Academy

- 9-week program for 10 students who are deaf or hard of hearing, beginning with the 2007 summer term.
- Students will take UW courses for college credit (e.g. Introduction to Programming, Precalculus, Calculus)
- Group project hopefully in animation
- · Field trips to local industry



Access Computing

e-Mentoring Community

- · High school and college students
- · Computing professors
- · Postsecondary students
- · Professionals in computer fields
- · With and without disabilities
- · Discuss opportunities in computing fields
- · Mentoring, peer and social support

Access Computing

Community of Practice (CoP)

- DHH CoP includes professionals and students who want to actively promote computing careers for deaf and hard of hearing persons
- · Join by contacting me - ladner@cs.washington.edu

Collaborate with Advancing Deaf & Hard of Hearing in Computing

- · Let us know about interested students.
- · Let us know about interested professionals
- Participate in e-mentoring community
- Participate in dhh Community of Practice
- · Participate in Capacity Building

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Advancing Deaf & Hard of Hearing in Computing

• Thank you!

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