GALLAUDET UNIVERSITY

TECHNOLOGY ACCESS PROGRAM

AI and Accessibility - Promises and Threats

Christian Vogler, Ph.D.
Director, Technology Access Program
Gallaudet University

GALLAUDET UNIVERSITY

TECHNOLOGY ACCESS PROGRAM

AI for Accessibility

Artificial Intelligence for eServices holds promise for several hard accessibility problems

Scale – overwhelming volume of content and interactions

Customization – individual needs vary

Modalities – different modes of communication, interaction, and learning

GALLAUDET UNIVERSITY
TECHNOLOGY ACCESS PROGRAM

AI Success Story: ASR & Google Live Transcribe

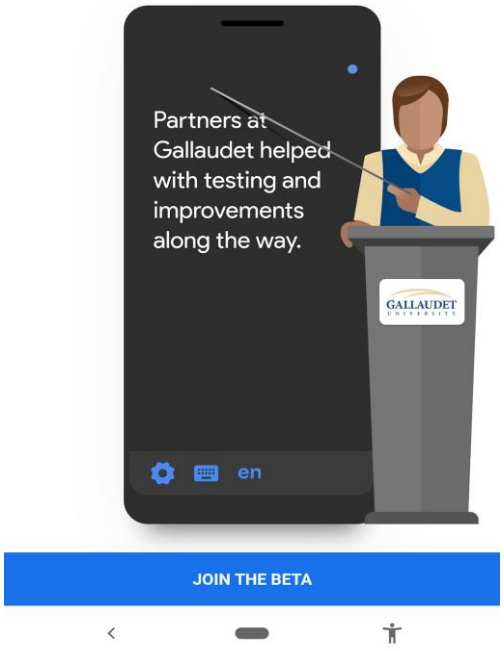


Photo courtesy of Google

[ASR app to caption face to face conversations] in informal settings

Fills huge communication gap

Inclusive design done right: community-driven features and testing

GALLAUDET UNIVERSITY

TECHNOLOGY ACCESS PROGRAM

AI Threat: ASR gone horribly wrong

No, these TV hosts aren't racist. The AI generating the captions was.

Photo & real captions courtesy of Closed Caption Quality Club on Facebook

What was really said: >> HEY REBECCA SWEET, WILL YOU TAKE MY JACKET FOR ME PLEASE? WELL, THANK YOU, THANK YOU. OKAY, HEY! SMITA'S JOINING US NOW. HEY SMITA, HOW ARE YOU?

GALLAUDET UNIVERSITY
TECHNOLOGY ACCESS PROGRAM

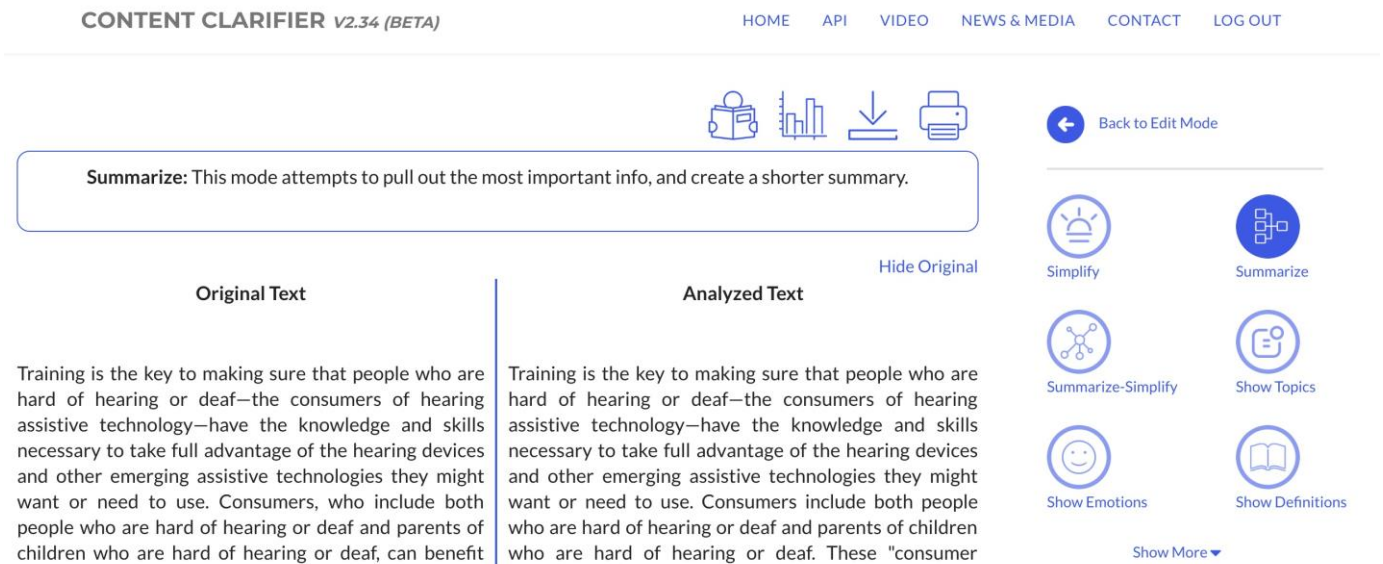
ASR Issues and Standardization

- Key Performance Indicators: accuracy, latency, punctuation, pacing, what others are needed?
- Usability, user experience – e.g. simplicity and visual indicators were key to Live Transcribe's success
- Inclusive design requirements
- Guidelines for appropriate applications
- Best practices for user experience, deployment

GALLAUDET UNIVERSITY

TECHNOLOGY ACCESS PROGRAM

AI and Customized Content



GALLAUDET UNIVERSITY

TECHNOLOGY ACCESS PROGRAM

Customization applications

Summarize text to slow down transmission to the average ~30 wpm that Braille users read at.

Summarize captions if a user cannot keep up with verbatim speeds. Simplify captions if a user cannot follow complex language.

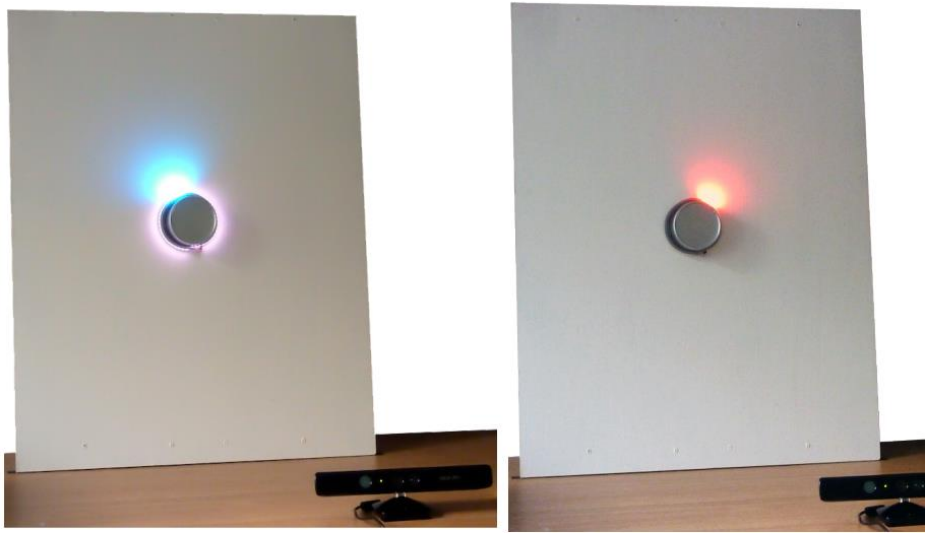
GALLAUDET UNIVERSITY
TECHNOLOGY ACCESS PROGRAM

Customization Issues & Standardization

- The tech is not ready – how do we ensure that the content summaries match intent of the original?
- Not a substitute for writing clear, coherent, plain text
  - Everyone benefits from clear, plain language
- Matching user preferences to levels of simplification?

GALLAUDET UNIVERSITY
TECHNOLOGY ACCESS PROGRAM

AI and Voice Interfaces



Over one third of the households in the USA have a voice assistant.
They are fantastic for people who are blind, mobility impaired, and even augmentative/alternative communication users.

GALLAUDET UNIVERSITY
TECHNOLOGY ACCESS PROGRAM

Voice Interface Threat

A voice-only world is a real possibility.

It will destroy access for anyone whose speech is not clear, or who cannot speak, or who prefers a different mode of communication.

Text input is inefficient.
Gesture input was not popular in a recent study at Gallaudet.
Sign language input is not ready.

GALLAUDET UNIVERSITY
TECHNOLOGY ACCESS PROGRAM

Voice Interface: Standardization and Study

- We need contained use cases to experiment with alternate input methods
- We need resources and data sets to make sign language recognition a reality
- We need guidelines for visual, auditory, and tactile interfaces
- We need a much better understanding of cultural factors in all modes of communication with computers

GALLAUDET UNIVERSITY

TECHNOLOGY ACCESS PROGRAM

Thank you

- christian.vogler@gallaudet.edu
- https://fb.me/cvogler
- @Krischi
- https://tap.gallaudet.edu/
- http://www.deafhhtech.org/