EC-Chat: The ExClusive Deaf-Inclusive Video Chatting Interface

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Motivation

- According to the National Institute on Deafness and other communication disorders, 15% of American adults suffer from some sort of hearing deficiency
- There exists a barrier between hearing impaired and hearing people in telecommunication
- Effective telecommunication modes between hearing impaired and hearing individuals is crucial
- Hearing impaired individuals must constantly have to take the extra step to be understood

Goal

Create a video chatting interface that will allow deaf or hearing impaired to communicate seamlessly with hearing people

Impact

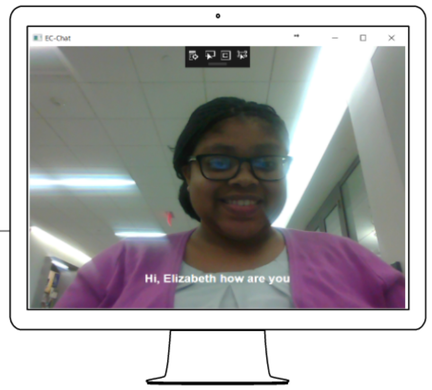
- Currently supports American Sign Language (ASL) and English
- May be extended to support other dialects of sign language
- Speaking translation may be extended to support other spoken languages
- Bridge the gap between hearing impaired and hearing globally

EC-Chat – User Interface

Hearing User's Interface

tokbox

Hearing Impaired User's Interface



ASL-To-Text Translator

Speech-To-Text Translator

How EC-Chat Works

Speech-To-Text:

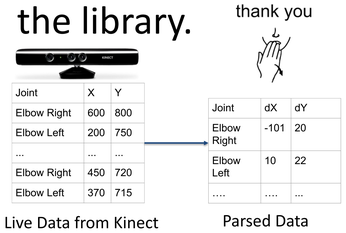
Hearing user speaks normally into computer and EC Chat sends the user's audio stream to the Google Cloud Platform.

Google's Speech API translates the audio stream to text and send it back to EC Chat

ASL-To-Text:

Hearing impaired user signs into Microsoft Kinect and EC Chat's algorithm classifies the incoming sign using Scikit-learn and EC Chat' and sends it back to EC Chat

ASL Library: Data from the Kinect was parsed and the change in joint movement was calculated. The series of changes recorded for each sign was compiled together to create the library.

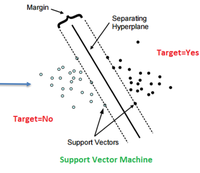


Live Data from Kinect — Parsed Data

EC Chat's Algorithm: Utilizes Machine Learning to classify incoming signs. EC Chat uses support vector machines, a type of supervised learning.

User Signing

EC Chat's Algorithm



Translation