Kohlberg Lab

Hardware choice:

* Vusix
* Microsoft hololens
* Smart phone

Language

* Python
  + Pros: easy integration with any other software
* Flutter: Dart

Language model

* CTC – connectionist temporal classification
* Is there a probabilistic language model that uses visemes?
  + May have to create this
  + Or use phonemes as an approximation
  + Create network or function that goes from visemes to phonemes
* Dimension reduction
  + LPC – Linear predictor coefficients
  + MFCC features
  + Gabor filters (originally developed for image recognition)
  + Idea:
    - Try to “learn” visual coefficients from labelled AV video
    - Then train off the shelf auditory auditory speech recognition program but instead of just including LPC auditory input include also the learned coefficients from above
  + Idea:
    - Use lip movement velocity threshold to “force” auditory speech recognition software to attempt to translate speech to text in adverse background noise listening environment when it would normally not know that the person is speaking or not
  + Experiment:
    - Looking at words distinguished by place of articulation “pa vs ga”
  + What would we want in our ideal auditory speech recognition program to use
    - Open source
    - Modern technology
    - Accurate
    - Integrated with python
    - Ability to integrate a language model (limit the language space)
    - Have a mobile device form
    - Ability to modulate the response latency
    - Input needs to be a feature set that we can plug in visual data

Coherence modulation filtering

Establish a lab meeting?

People:

Arun MD student

Andrew – MD/PHD student

* AV recordings with varying levels of noise distortion
* Varying presentation modes of presumed MSRP output to subjects (visual, auditory)
* Varying latency, accuracy, etc

Aaron – MD student

* Evaluate VSRP in patients who have had a laryngectomy
* Idea:
  + Compare difference in lip movement characteristics between normal speaking subjects and laryngectomy subjects
  + Record laryngectomy patients trying to speak
  + Offline run VSRP on the videos
  + Present videos of laryngectomy patients to normal hearing listeners with and without VSRP results added

Yunwei – UW undergrad

* Lip tracking class
* GUI
* Goals
  + Learn flutter
  + Understand UML better

Rhea – UW undergrad