Sign Language Translation

Presenter: Zilan

Facts & Problems

- More than 360 million people in the World are deaf or have hearing loss problems

  Delivering information through Sign Language or texts

- About 300 different sign languages around the world
- Time-costing learning and rare usage for normal people

  The Machine learns much fasters than humans, and normal people don’t need to learn any sign language

Goals & Expectation

- The Deaf user side:

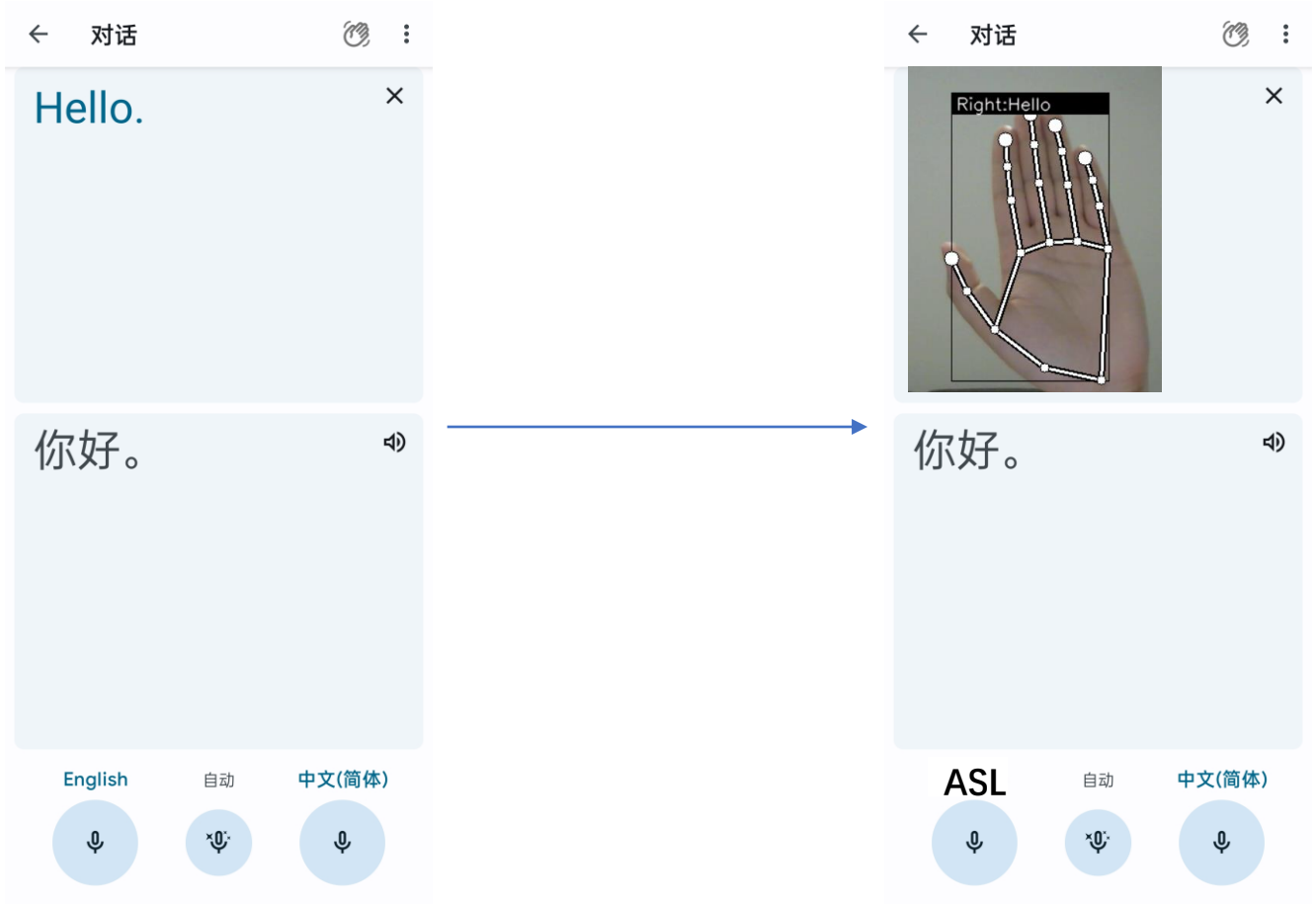
  sign language(ASL) to speaking language(English/Chinese)

- Another user side:

  Speech/voices to texts

- Build a framework to learn any customized sign language (gestures)

Appearance



Implementation – Sign Gestures

- The Sign Language for the demo is ASL(American Sign Language)

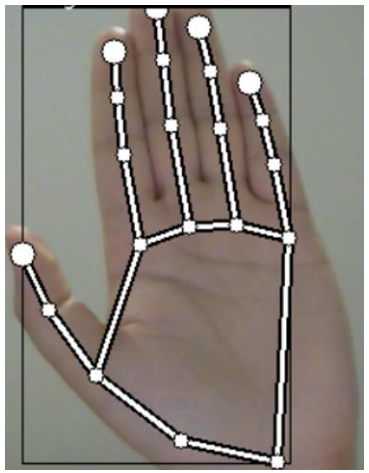
Challenge: Ambiguity/Similarity of gestures

Creativity: Double ended queue to get the probability distribution in each time gap

Implementation – Data and Features

- Mediapipe

gestures



keypoints

data set

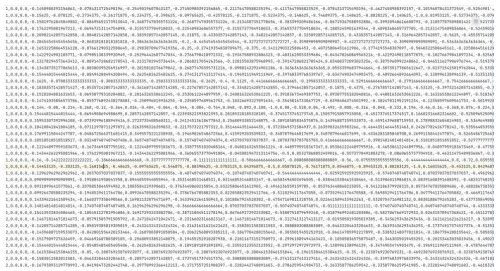
Problem: How to represent the hands gestures with massive data

Solution: Only record the joints as keypoints to simplify the feature

Implementation – Model

- Convolutional Neural Network(CNN)

data set

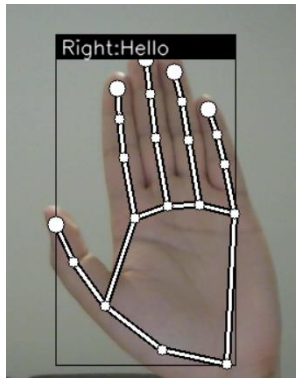


train

CNN model

predict

result



Let’s have a try!!!

To do list

- Integrate the module with a cool UI
- Bring mouth/arms/etc. as new features into the model
- Move the app to the cloud

Thanks!