Sign Language to English

Slate8

Progress Report 1

Team Members: Nathan Kebe El

Wednesday, February 07, 2018

Milestone Summary

Implementation and Evaluation Plan

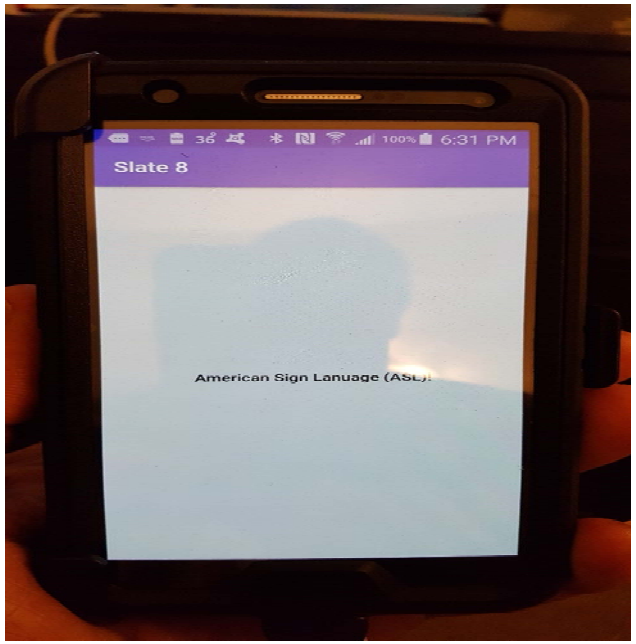
- Sign Language Recognition with HMM's
- Feature Engineering
- Model Design
- Implementation
- Results

Achievements

- Obtained 500 Word Database (RWTH-BOSTON-104)
- Feature Engineering
- (Polar, DIC) – Proven (WER)
- American Sign Language Video Sequences using HMM (Hidden Markov Model)
- An Impressive System Which Converts ASL Video Sequences into Text Sentences

Activity Summary

HIGHLIGHTS: Created Simple Android App Using Android Studio



LOWLIGHTS

- No other Teammates For Sign Language Development.
- Was Not Able To Retrieve Previous Database created by 2016 Senior Class.
- Must Reproduce Sign Language Video Sequences.
- No Professional Instruction on Android App Development.

Risk Management

- Not to explicitly separate words in sentences for either training or recognition.
- Use a facet of “Feature Engineering, Polar Coordinates, and Discriminative Information Criterion (DIC)” which is an evaluation metrics to train words In order to fit a HMM to a single word using the hmmlearn library in Python.
- The objective of feature engineering is to design features which contain highly relevant information, while also keeping the number of features as small as possible. Keeping the model as simple as possible also reduces training time.

Planned Activity for Next Period

- Build a system to recognize American sign language video sequences using a Hidden Markov Model (HMM).
- Use an existing training data from the RWTH-BOSTON-104 database.
- Use tracking algorithm determine the Cartesian coordinates of the signer's hands and nose.
- In order to fit a HMM to a single word we will use the hmmlearn library in Python.
- implement (Polar, DIC) as final Feature Engineering model because of it's lowest word error ratio (WER) on words not already seen by the model

- **Sign Language Recognition with HMM's.**