# COMP6345 - Intelligent Systems

## ASL Assistant


**TEAM MEMBERS:**

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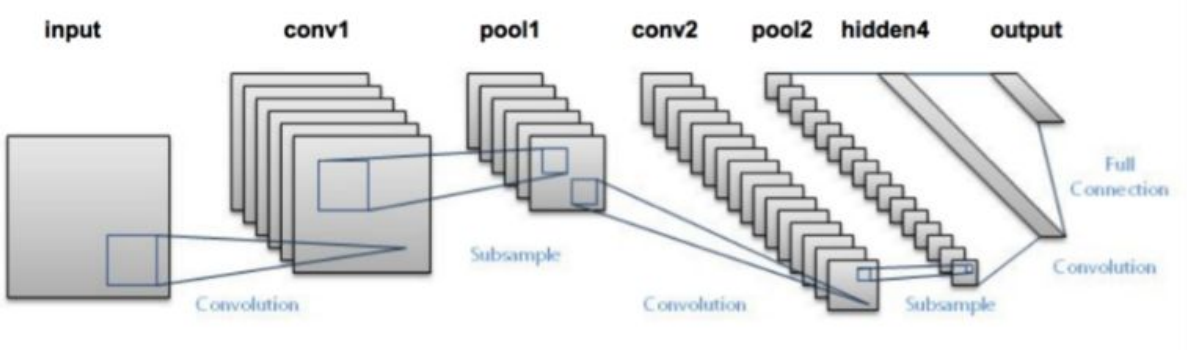
# Problem Description

Communication is one of important aspects in our daily lives. Unfortunately, not everyone is capable to hear or speak. They are harder to communicate via sound to other people to express their needs or opinions. Therefore, sign language is made to bridge the problem of the disabled to the “normal” people in communicating.

# Solution Features

- Bridge the “gap” in the way of communication
- Image of one character of the sign language and converted into output of the letter.
- The people who are trying to understand sign language can comprehend those who are trying to express themselves via sign language.

# Solution Design Architecture

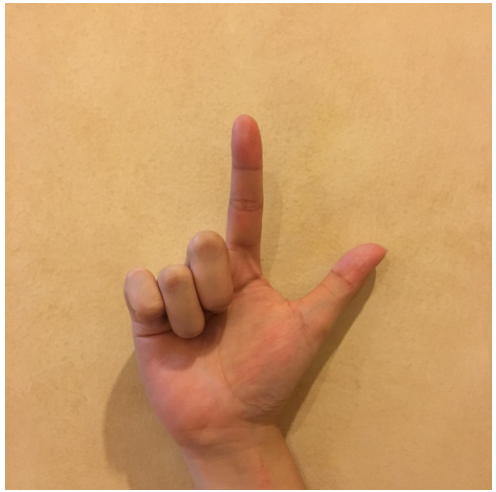



Design Architecture: LeNet

# Library Python

- Keras
- Opencv-python (cv2)
- Numpy
- pandas
- Matplotlib
- Sklearn (LabelBinarizer, train_test_split)

# Testing



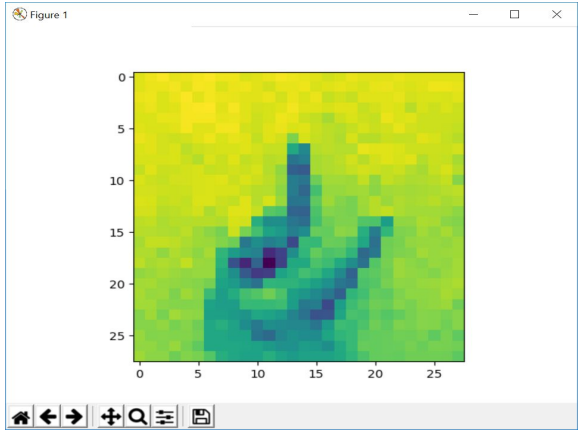
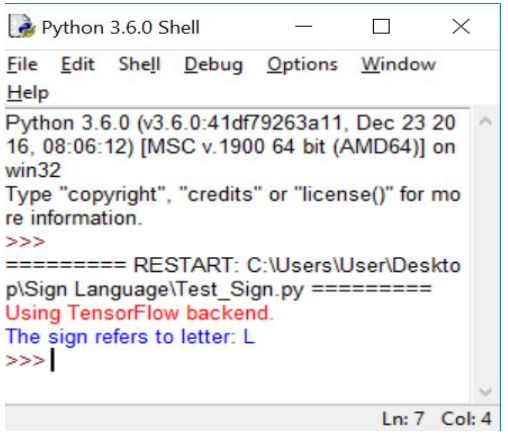
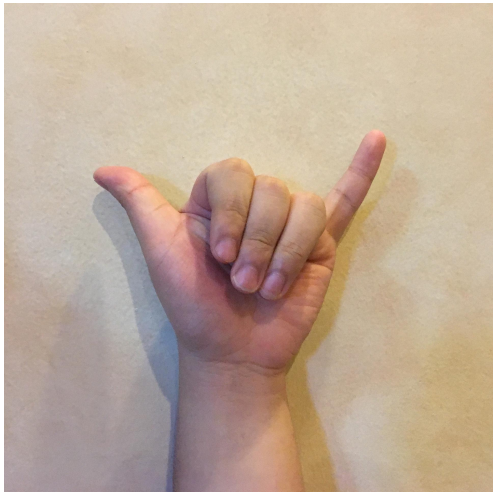


Figure 1
0
5
10
15
20
25


Python 3.6.0 Shell
File Edit Shell Debug Options Window
Help
Python 3.6.0 (v3.6.0:41df79263a11, Dec 23 2016, 08:06:12) [MSC v.1900 64 bit (AMD64)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
========== RESTART: C:\Users\User\Desktop\Sign Language\Test_Sign.py ==========
Using TensorFlow backend.
The sign refers to letter: L
>>>
Ln: 7 Col: 4



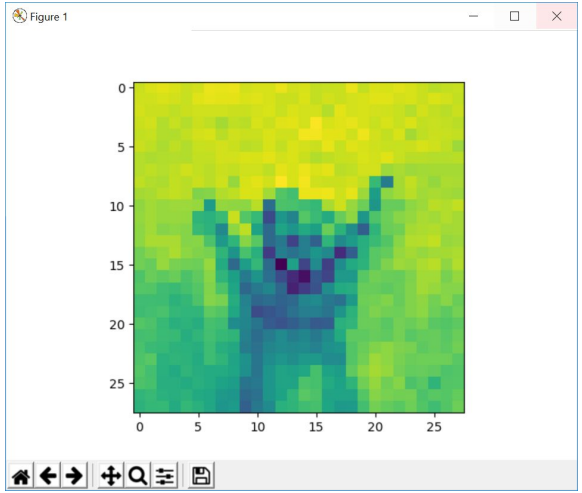


Figure 1
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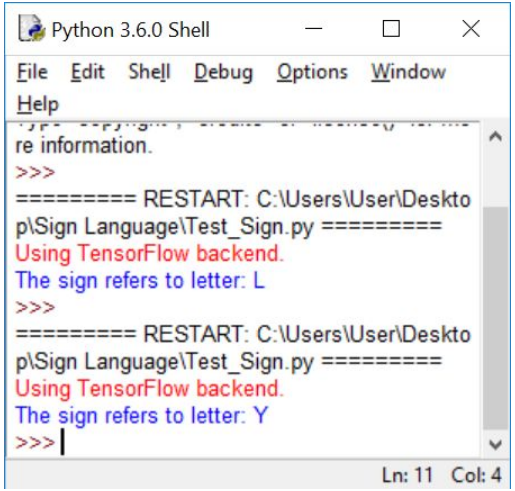
Python 3.6.0 Shell
File Edit Shell Debug Options Window
Help
re information.
>>>
========== RESTART: C:\Users\User\Desktop\Sign Language\Test_Sign.py ==========
Using TensorFlow backend.
The sign refers to letter: L
>>>
========== RESTART: C:\Users\User\Desktop\Sign Language\Test_Sign.py ==========
Using TensorFlow backend.
The sign refers to letter: Y
>>>
Ln: 11 Col: 4

# Program Manual

1. Take a sample picture of a hand gesture in ASL (American Sign Language).
2. Save the picture in .jpg format.
3. Open the python test file.
4. Modify the file name in the python test file.
5. Run the module.
6. The resized picture in grayscale will appear and you can continue to see the tested result of the hand gesture.
7. The tested result will appear in the python shell as shown above.

# Documentation

- Github
  - https://github.com/stevejo12/IntelligentSystems

- Youtube
  - https://youtu.be/n5idRk3o6Gk