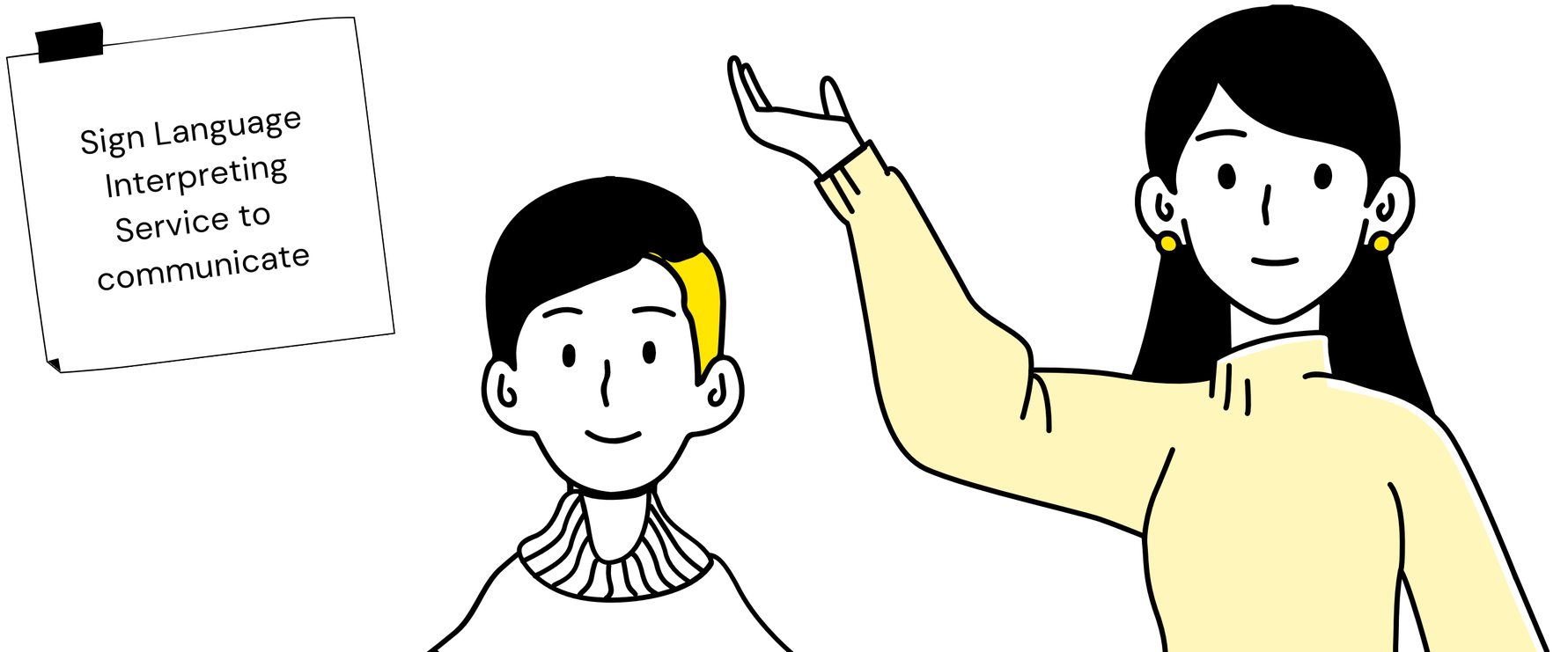
Sign Language Interpreting Service



Today's Agenda

1 Introduction

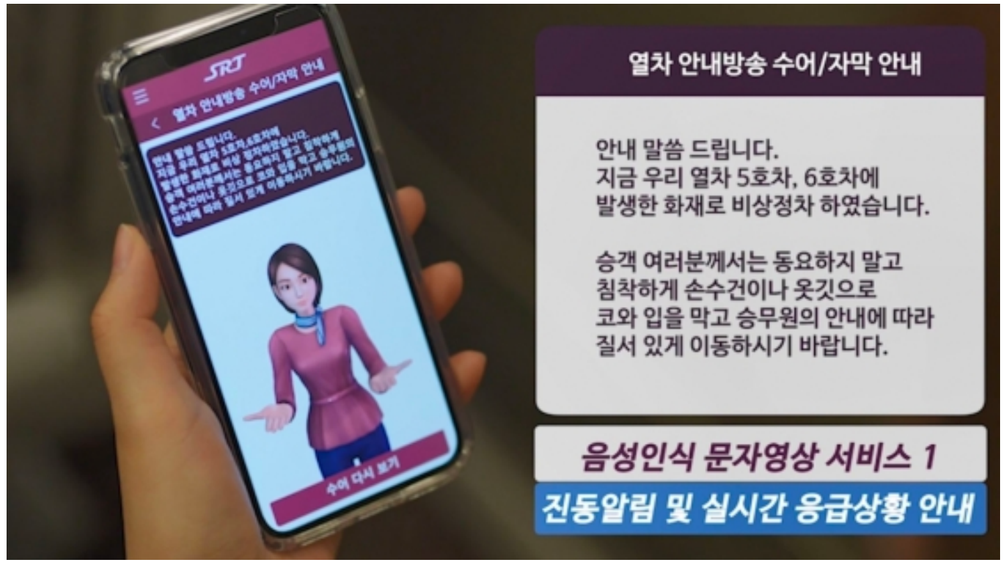
2 Background

3 Approach

4 Conclusion

Introduction

“In case there is no medical staff who has learned sign language in an emergency situation, a sign language interpreter that can be installed on a mobile device that can be operated in an emergency room or ambulance is needed.”



Background

Sign Language?

Sign language is **a language system used by deaf people to communicate and communicate information**.

Sign Language Interpreting Service?

It is **a service provided to facilitate communication between the deaf and non-disabled.**

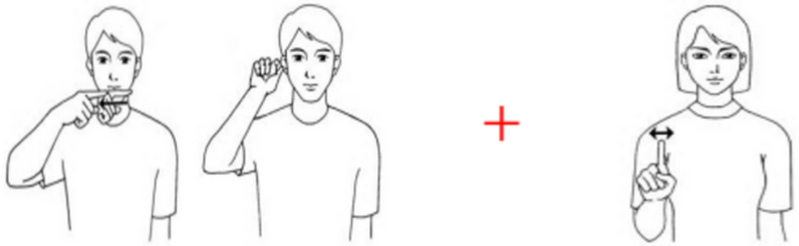
Background

Conversations exchanged in Emergency situations

1

Where does it hurt?
(어디가 아프신가요?)

2



What is your blood type?
(혈액형이 무엇인가요?)

Background

prior art

The Baidu
AI Sign Language Platform

-designed with the capability **to recognize voice, natural language, and sign language**.
It utilizes a **real-time avatar** to interpret these languages into sign language.

-This technology was put into practical use during the 2022 Beijing Winter **Paralympic Games.**

-intended for various **public purposes** such as in hospitals, banks, train stations, and similar settings.

-The primary version of this platform operates **offline**, aiming to enhance accessibility to public facilities where consistent internet connectivity may not always be available..

Background

prior art

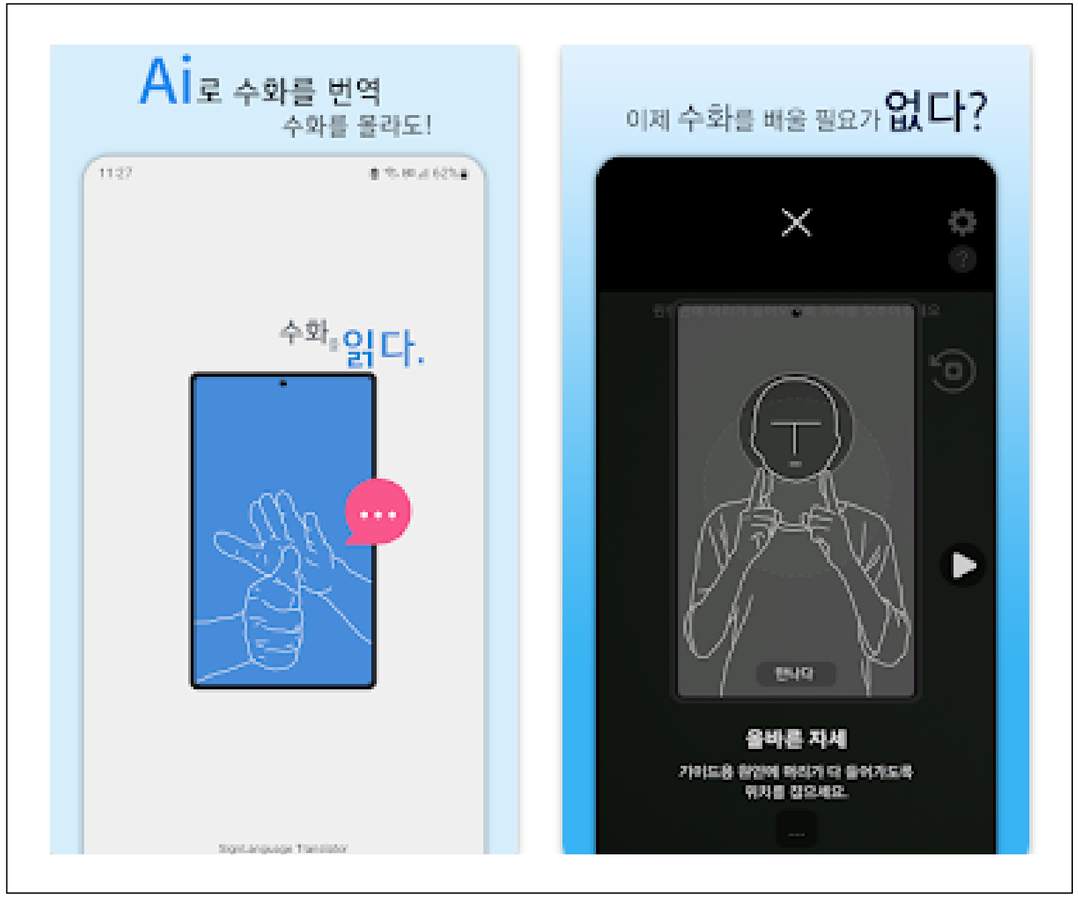
A sign language translator

-**utilizes the smartphone camera** to recognize sign language movements.

-The recognized gestures are then **displayed as text** notifications.

-It has the capability to recognize only **250 commonly used words**.

-However, it currently has low utilization and is **not functioning correctly."**



Background

prior art

수어통(sueotong)

- **Posts, announcements, text QR codes**, etc. from affiliated locations
converts it into avatar sign language.

-It is actually used in **trains and museums in Korea**

Approach

Workout Requirement

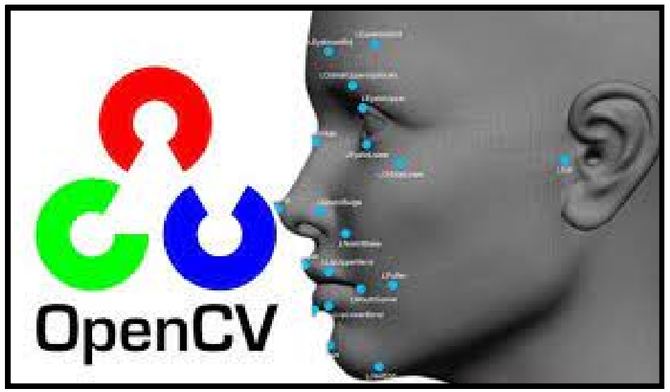
- While existing technology translates sign language actions from natural language, our model translates sign language actions into natural language
- Must operate **stand-alone** even when network connection is lost
- Able to be mounted on a **mobile device** in preparation for emergency
- At the same time, **real-time** performance and **accuracy** performance must be achieved

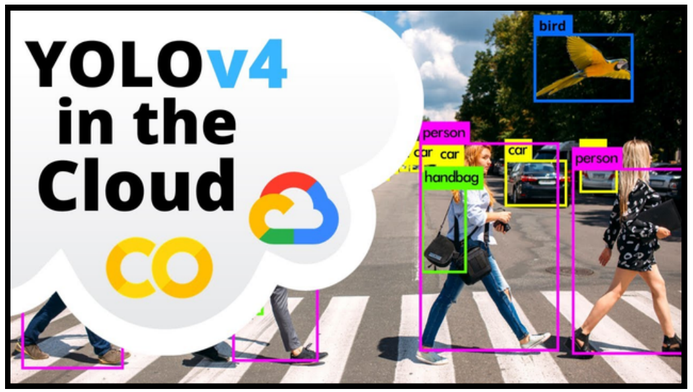
Approach

Workout Explanation

Library Requirements:

numpy
pillow
opencv-python
YoloV4
PyQt5



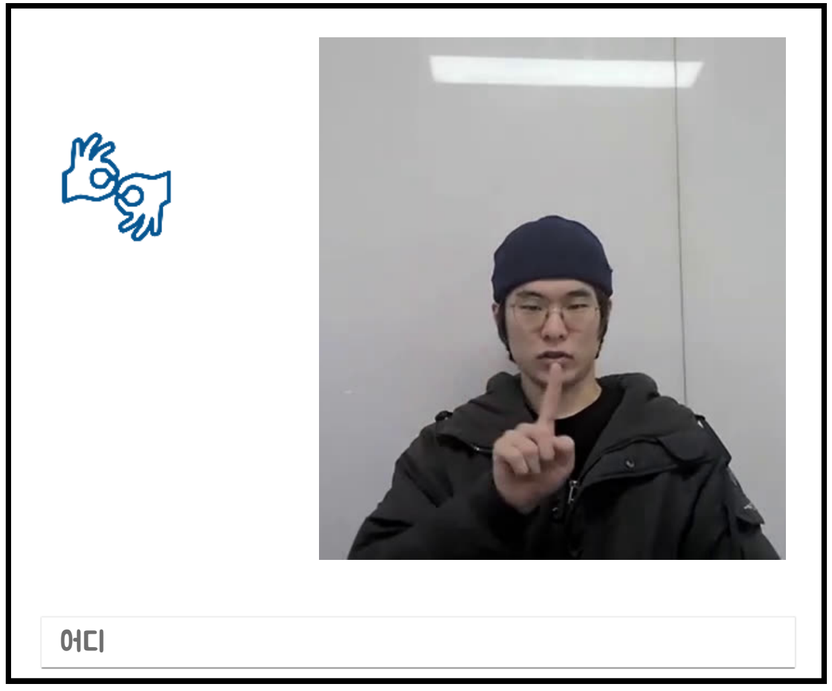


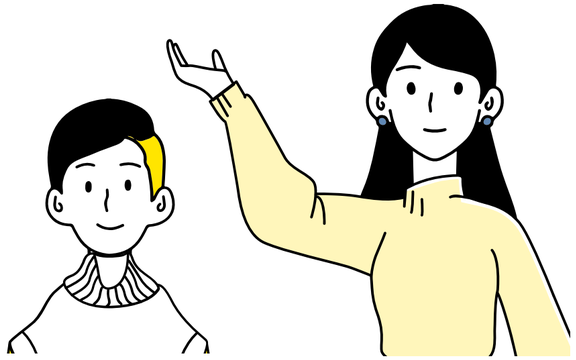
Workout Design

After pre-training the utterances commonly used in emergency situations,
the body signals that appear on the webcam are mapped to natural language.

Approach

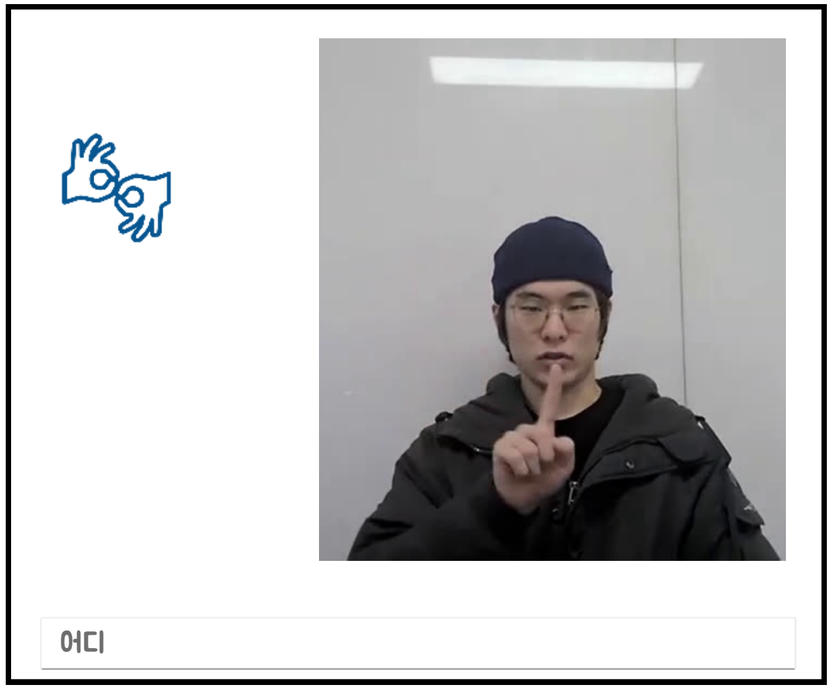
Workout Result

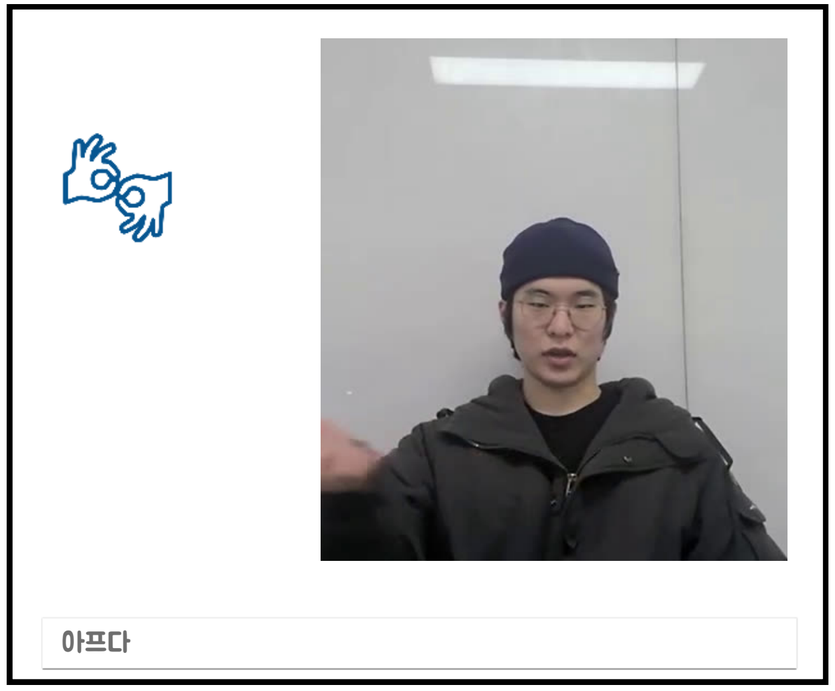


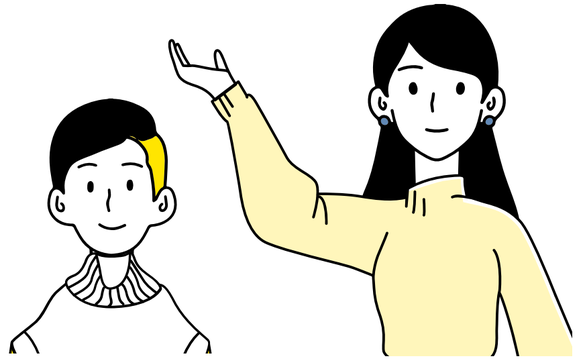


Approach

Workout Result

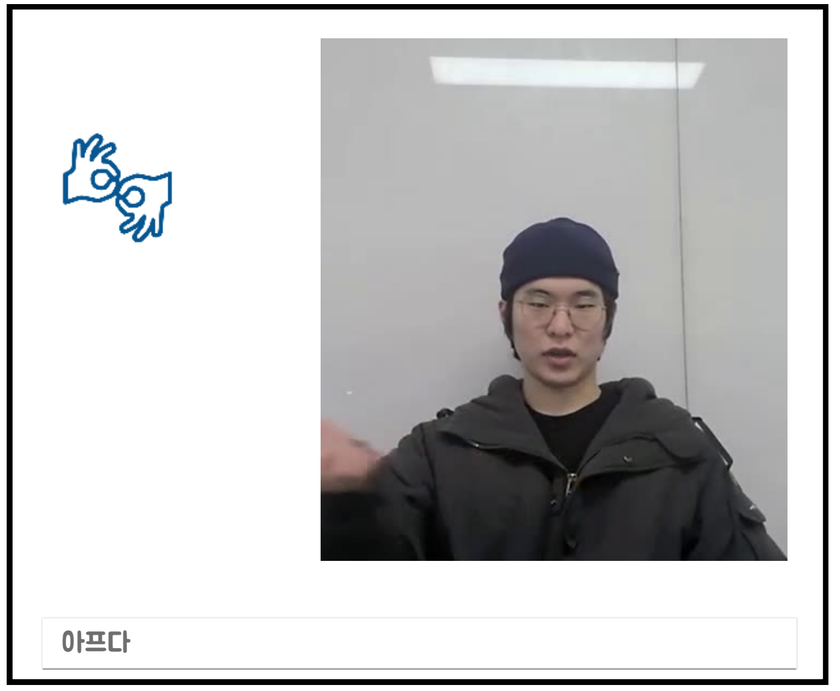


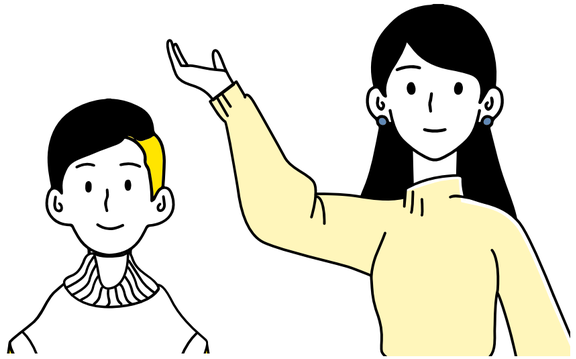




Approach

Workout Result

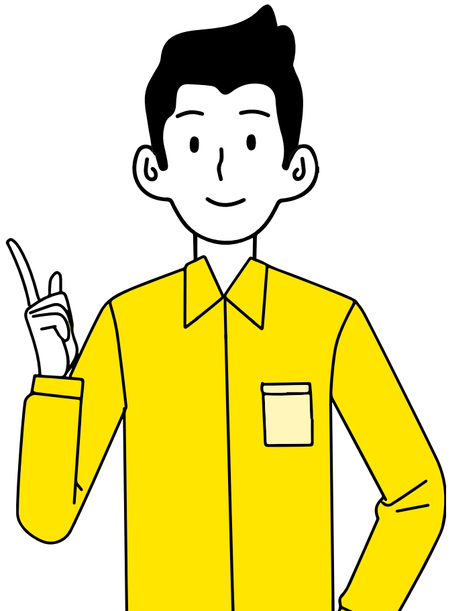




conclusion

Significance:

We want to improve our ability to communicate with deaf people in emergency situations using Computer Vision Technology.



Future Work:

- Need to enhance accuracy and real-time performance
- Need to learn more conversations