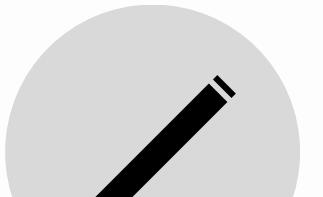


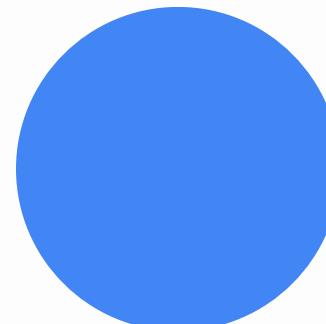
SIGN INPUT

Google: Supportive Phone for all People

黑客松下問童子

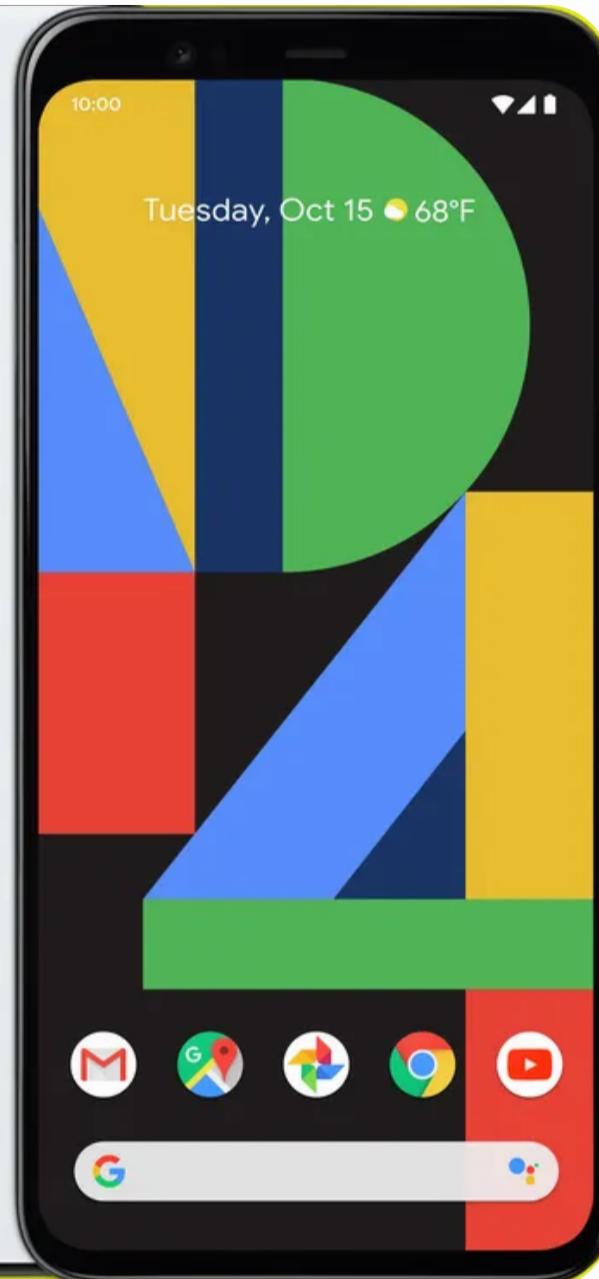
Deaf individuals face
difficulties in **typing**.



- 
- 
1. Difficulty learning **注音**.
 2. Grammar rules difference.



How can we provide them with
an **equal** input experience?



SIGN INPUT

- Input solution.
- Sign language to text.

Sign language component

word

emotion

grammar

Technology Stack



Text reconstruction
Reconstruct sentence to fix
grammatical difference.



Emotion Recognition
Recognize emotion from face.
It's the equivalent of **tone**.



Gesture Recognition
Recognize individual sign word.

Technology Stack



Gesture Recognition

Recognize individual sign word.



Technology Stack



Gesture Recognition

Recognize individual sign word.



他 老師



Technology Stack



Gesture Recognition

Recognize individual sign word.



他 老師 是



Technology Stack



Emotion Recognition

Recognize emotion from face.
It's the equivalent of **tone**.



他 老師 是 ?



Technology Stack



Text reconstruction

Reconstruct sentence to fix grammatical difference.



他 是 老師 嗎 ?



01

Gesture Recognition

Continuously recognize sign word from streaming video.



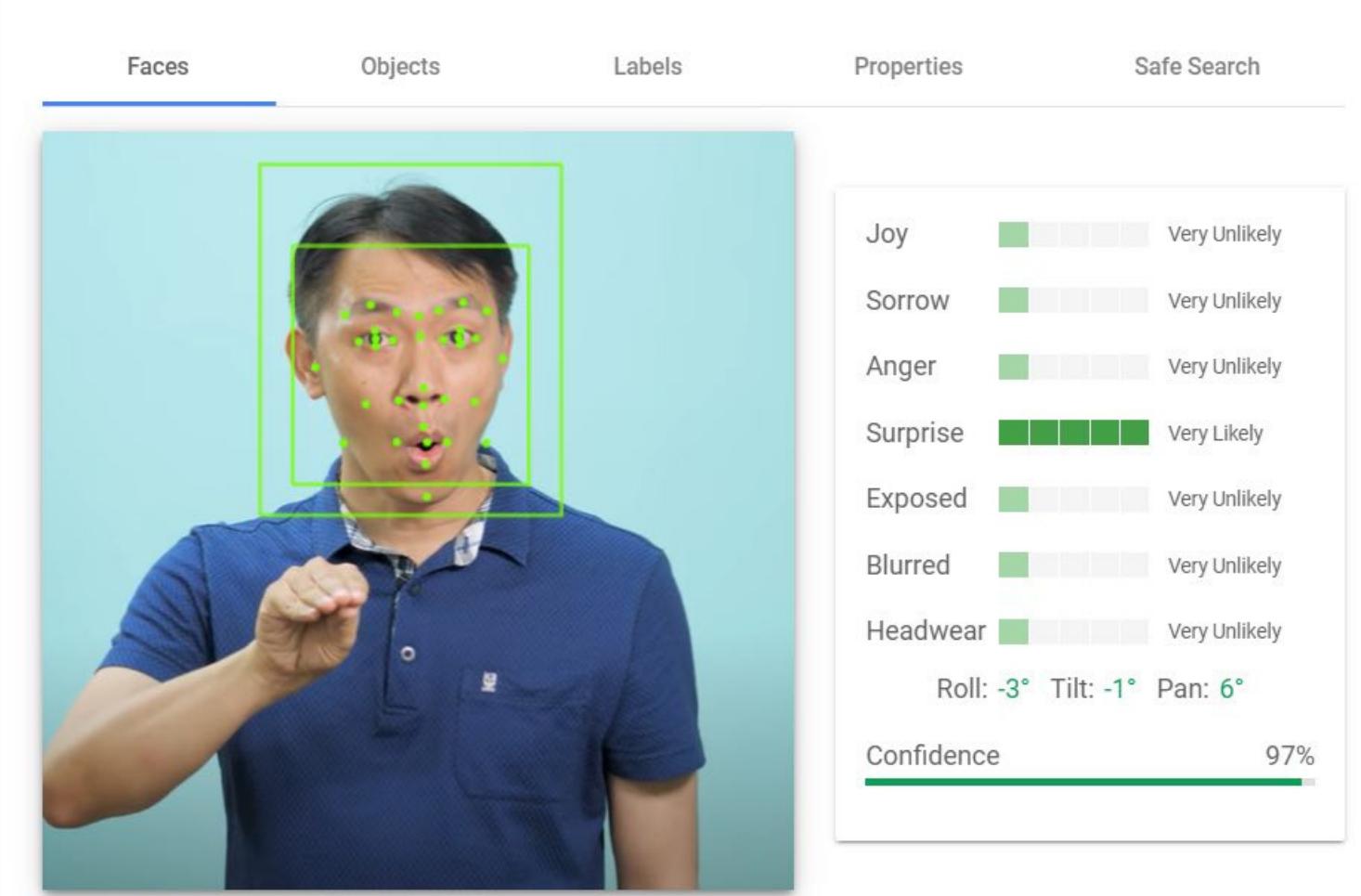
Gesture Recognition

Mediapipe - Hand landmarks detection

DWT (dynamic time warping) - Compare to
Sign Language

Data Augmentation - Change Speed &
Rotate dataset videos





Google Cloud - Vision API

Emotion Recognition

Recognize emotion from
a frame.

02

03

Text Reconstruction

Reconstruct sign words, emotions,
into spoken language grammar.



以下是手語的順序，我會給你範例，請你以範例邏輯
幫我重組成正常的語句，並輸出一行：

手語：

1. 你 家人 多少?
2. 哥哥 弟弟 兩個 學生 是?
3. 是， 哥哥 大學生， 弟弟 高中生。

中文：

1. 你家裡有幾個人?
2. 哥哥和弟弟兩個都是學生嗎?
3. 是， 哥哥是大學生， 弟弟是高中生。

手語：

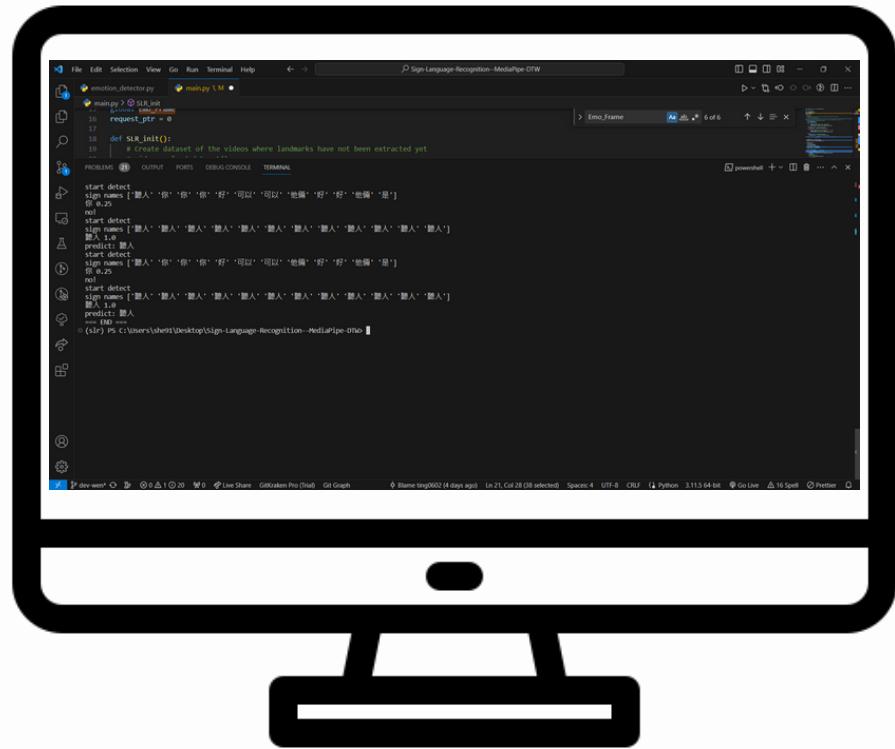
我 小明 高雄 去 一起



中文：

小明和我一起去高雄。

Technical Summary

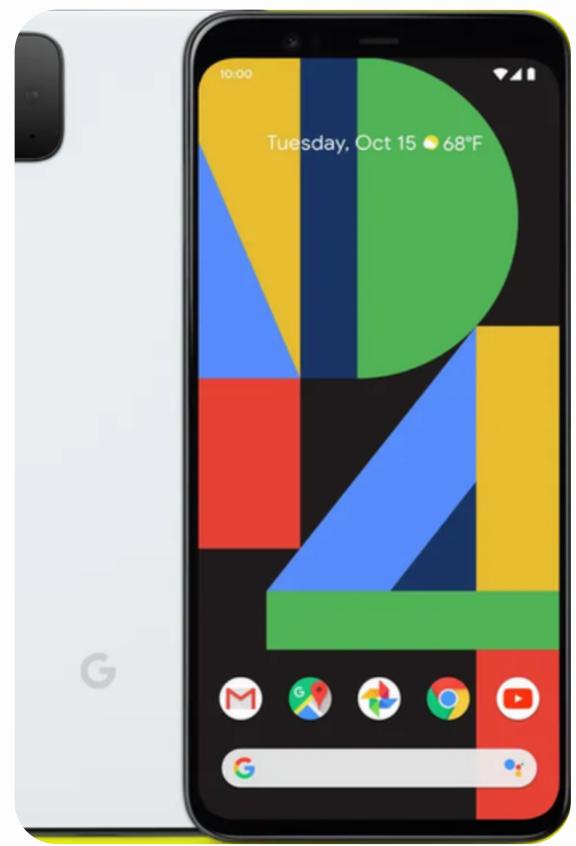


Mediapipe

DTW

Vision API

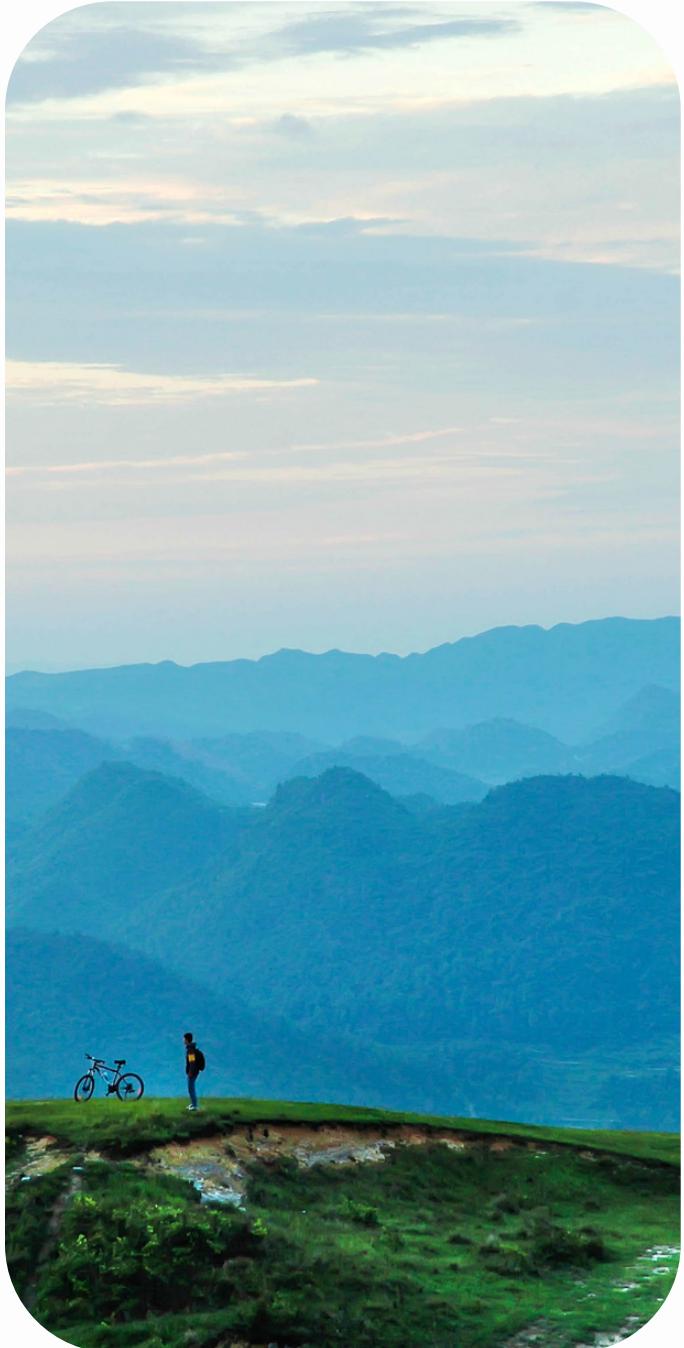
OPEN-AI GPT3.5



Camera2

Socket

懸浮拖曳螢幕

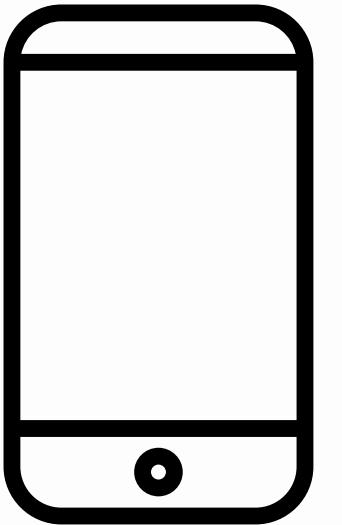


Expand the market!

Most sign language has **grammatical difference** to the spoken language.

Other logogram language sign users also face similar typing system learning difficulties.

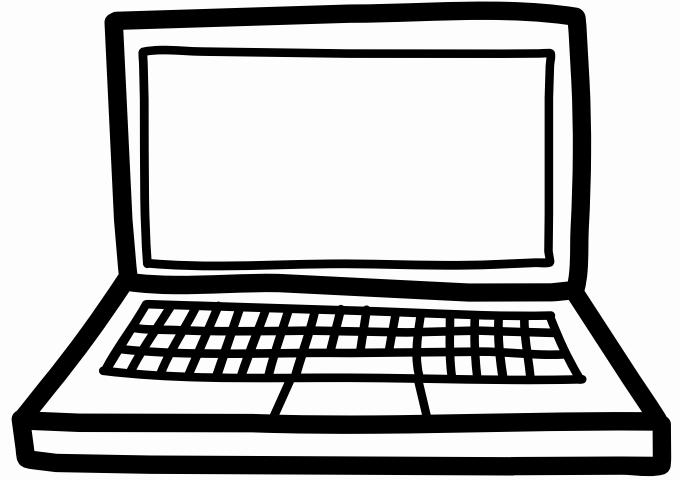
Future developments



daily life

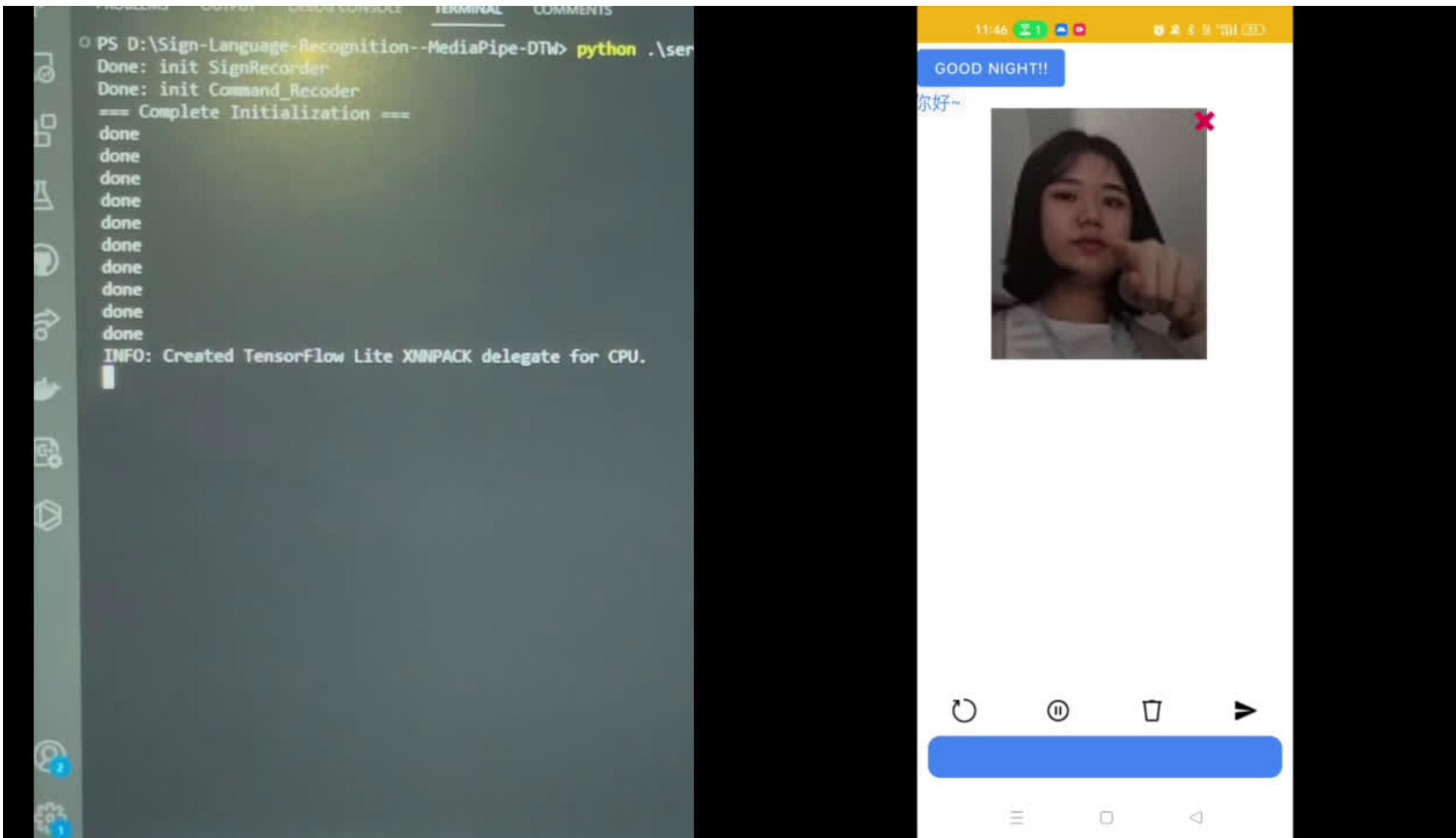


social



workplace

Demo session





Q & A

Session



THANK YOU

For Your Attention