



FUKIEN SECONDARY SCHOOL AFFILIATED SCHOOL

福建中學附屬學校

資訊科技教育科技

人工智能探智館  
AI InnoLab

如何建構具自主學習的小學人工智能課程



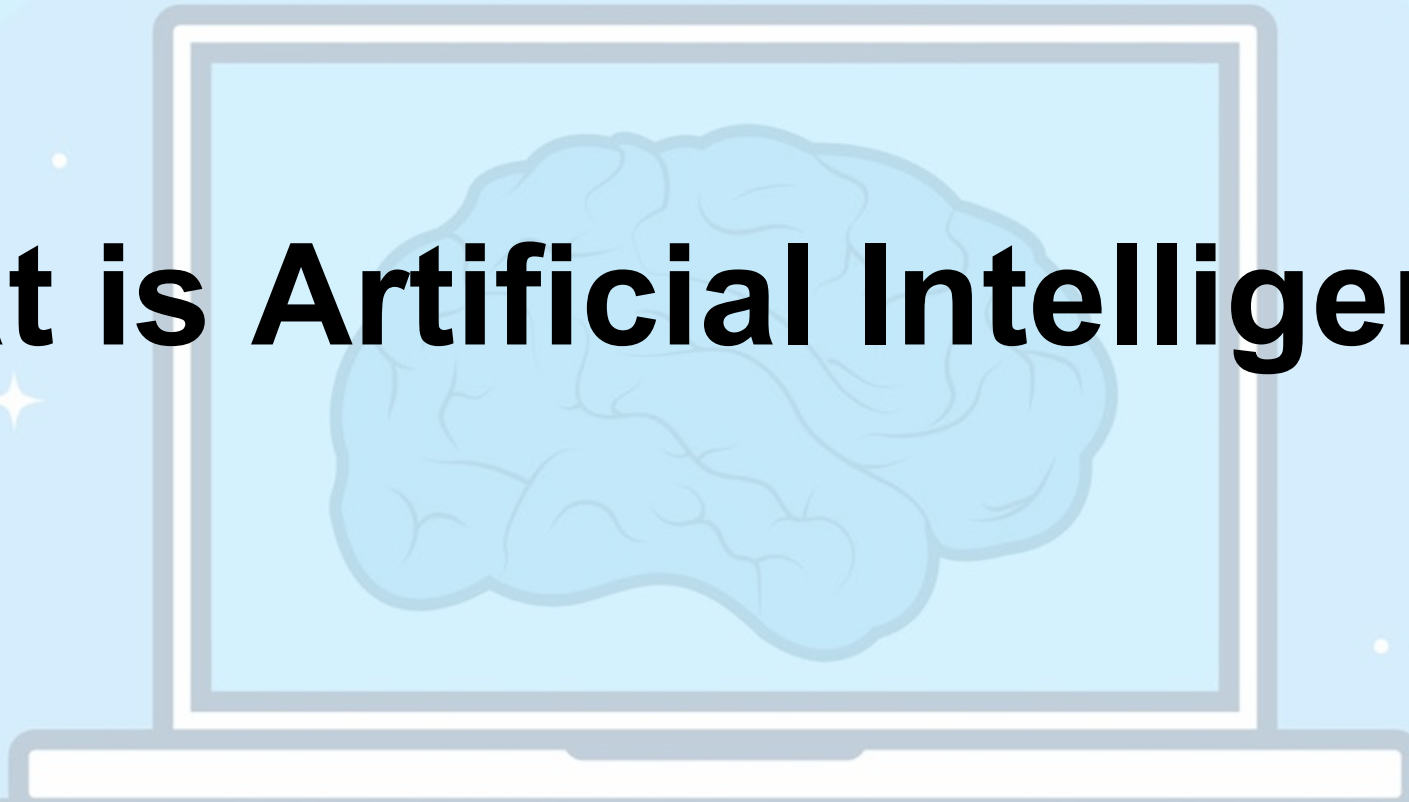
FUKIEN SECONDARY SCHOOL AFFILIATED SCHOOL

福建中學附屬學校

STEAM活動及  
課程副主任

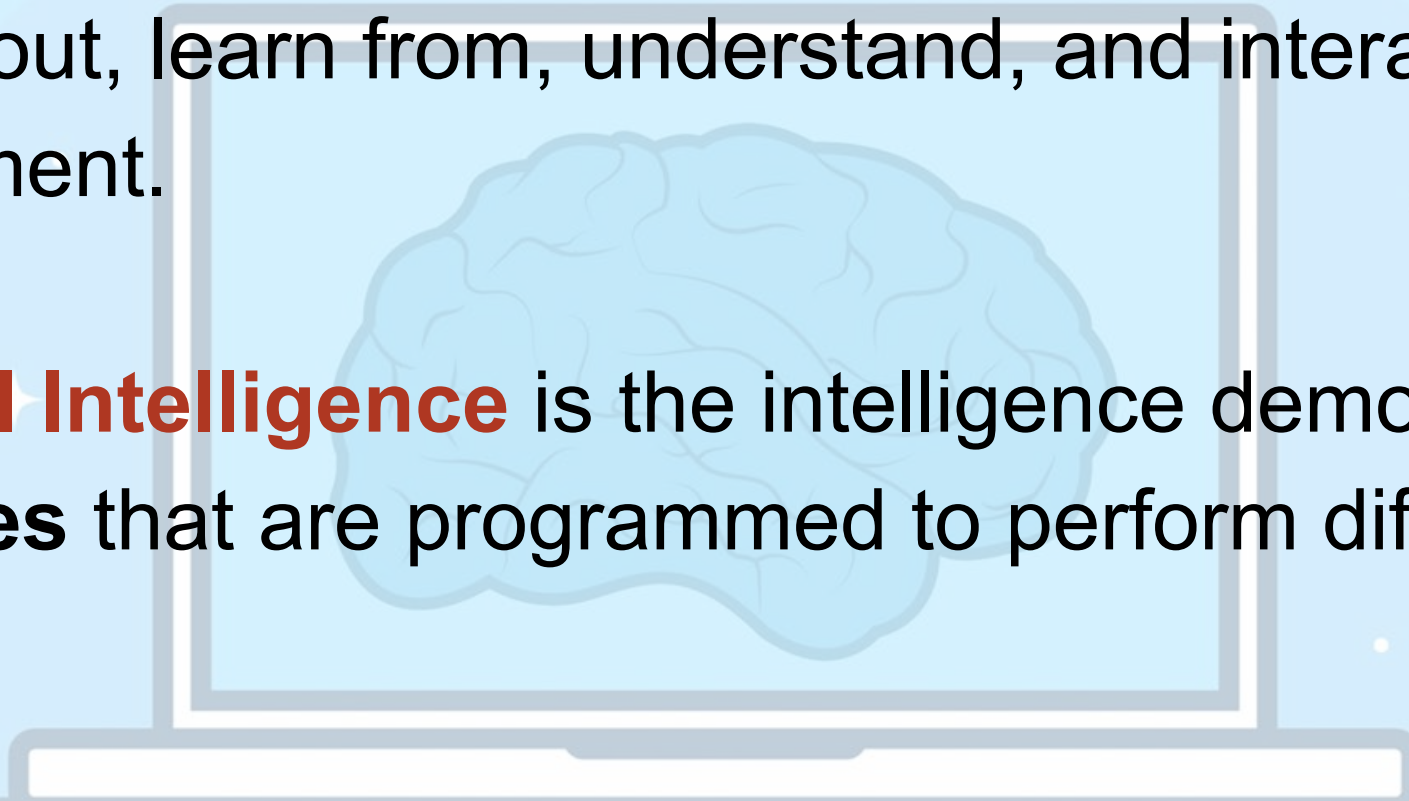
陳麒宇

# What is Artificial Intelligence?



- **Intelligence** is a **mental activity** that we, as human beings, are uniquely qualified to exercise. It is the ability to learn about, learn from, understand, and interact with the environment.

- **Artificial Intelligence** is the intelligence demonstrated by **machines** that are programmed to perform different tasks.



# The features of AI



- Simulating human sensory function  
e.g. facial recognition, voice recognition, image recognition
- Reasoning and decision making
- Understanding and learning
- Simulating movement
- Motion control

# The features of AI



# The features of AI

1. Voice Recognition

2. Image Recognition

3. Simulating Movement

# Alpha Go!? (HK01新聞)



世界第一棋手  
柯潔

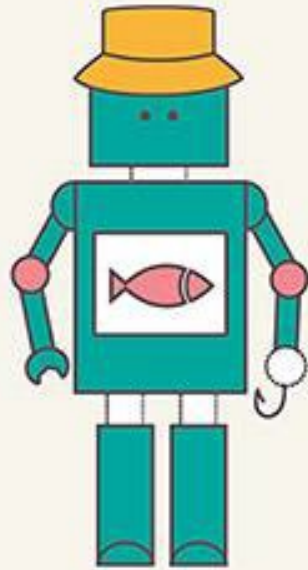
解構原理

點解 AlphaGo  
咁勁嘅?

Risk of being replaced:



Taxi Drivers



Fishermen



Bakers

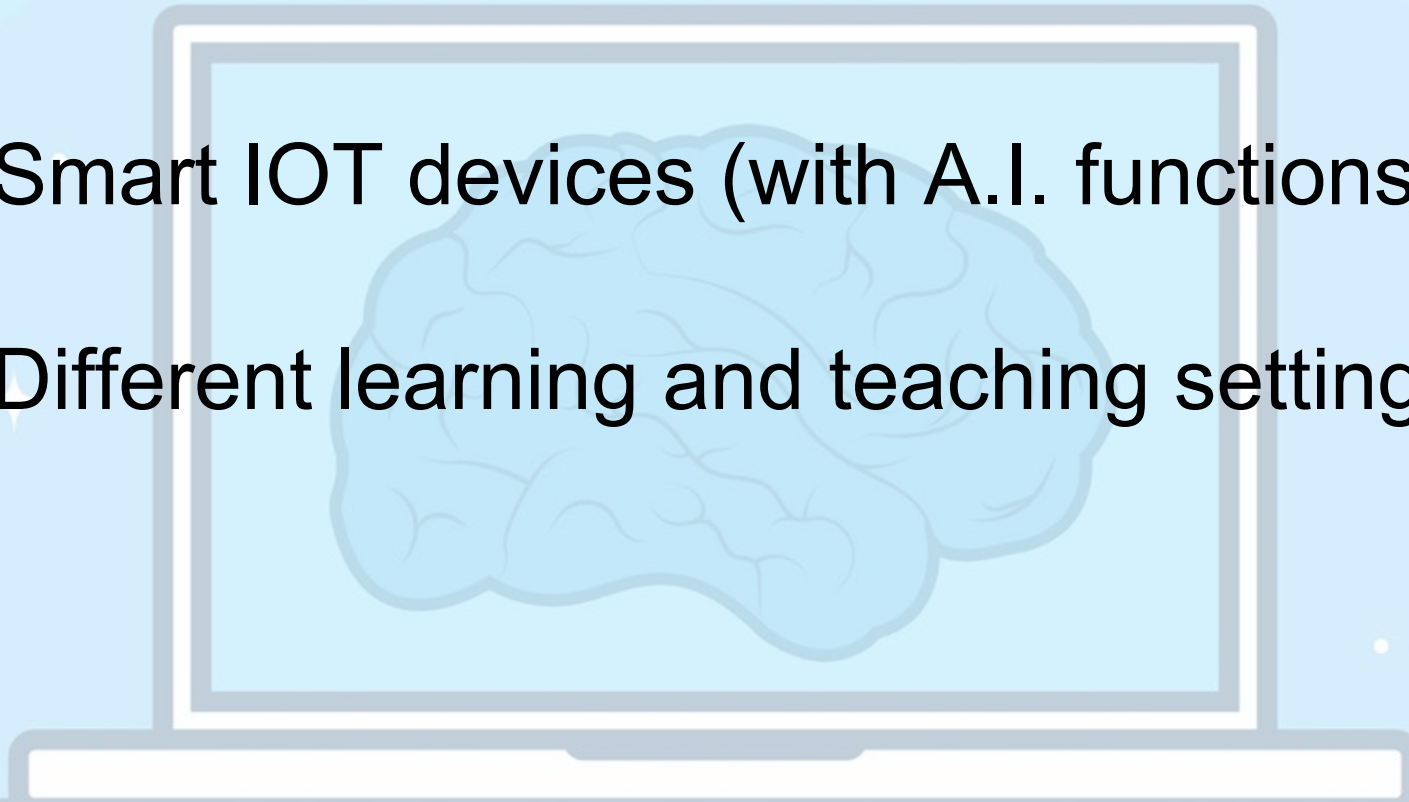


Fast Food Cooks

- <https://willrobotstakemyjob.com/>

# What can you experience in A.I. Lab?

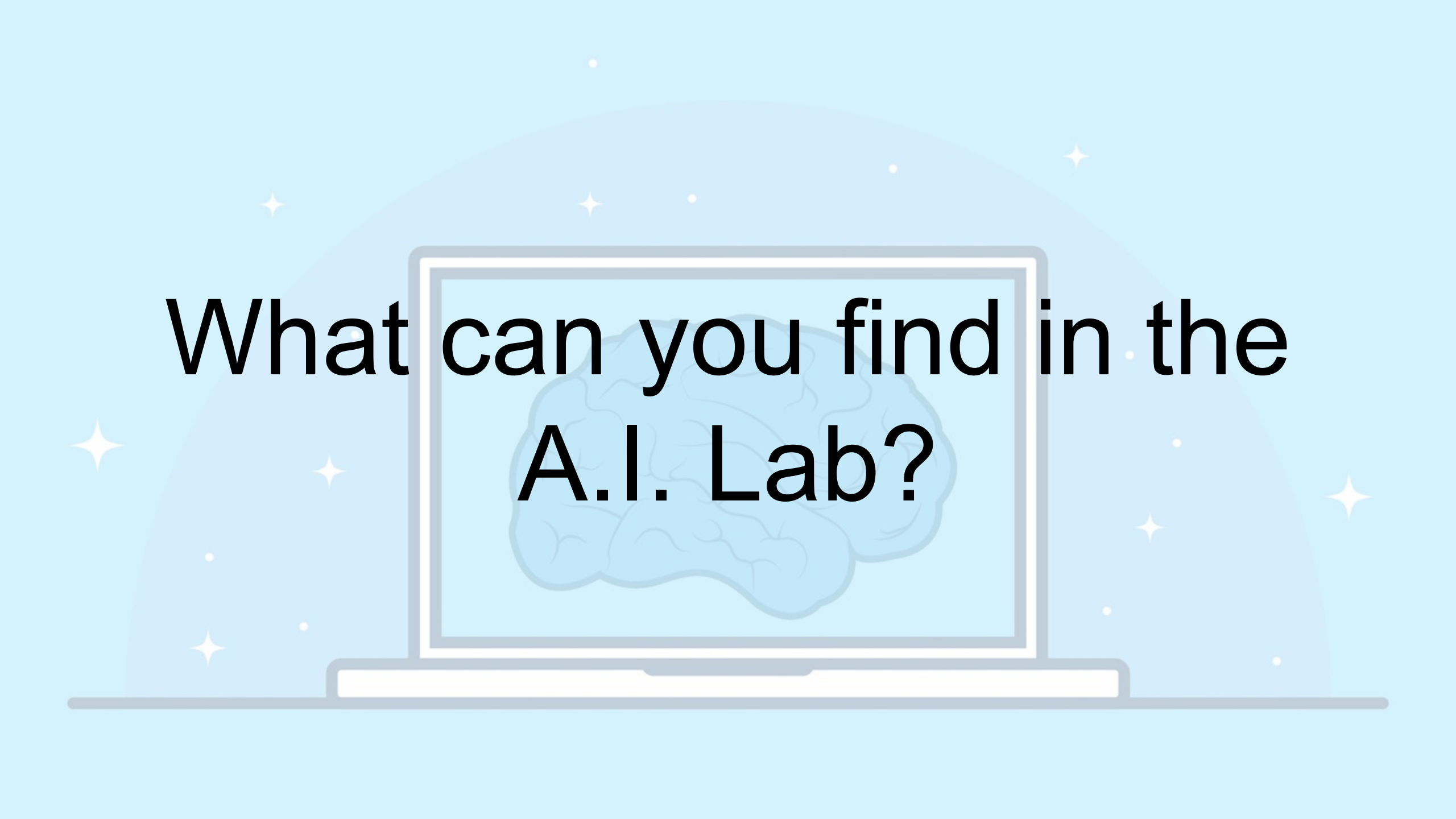
- Smart IOT devices (with A.I. functions)
- Different learning and teaching settings





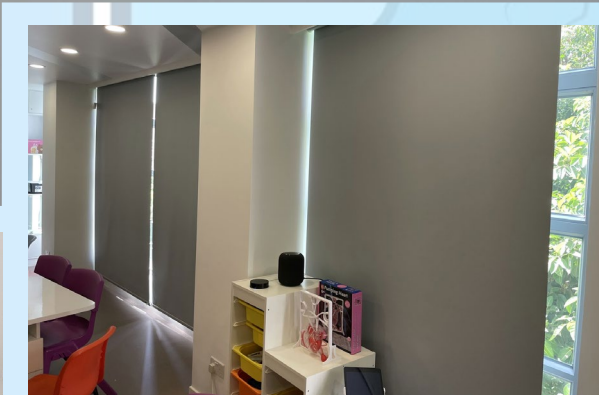
What you can do  
here?





**What can you find in the  
A.I. Lab?**

# Smart IOT devices





# Smart IOT devices





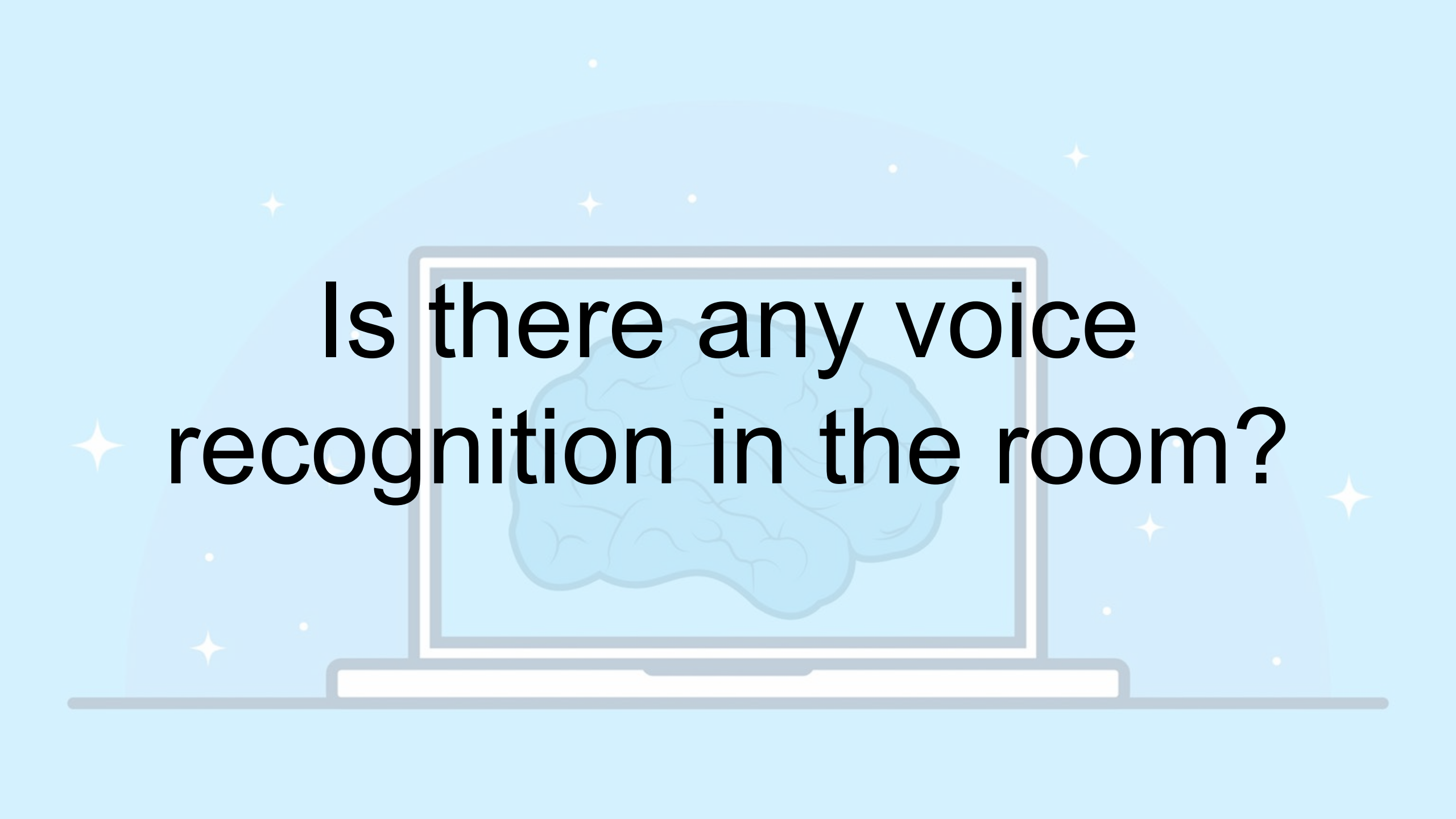
# Smart IOT devices



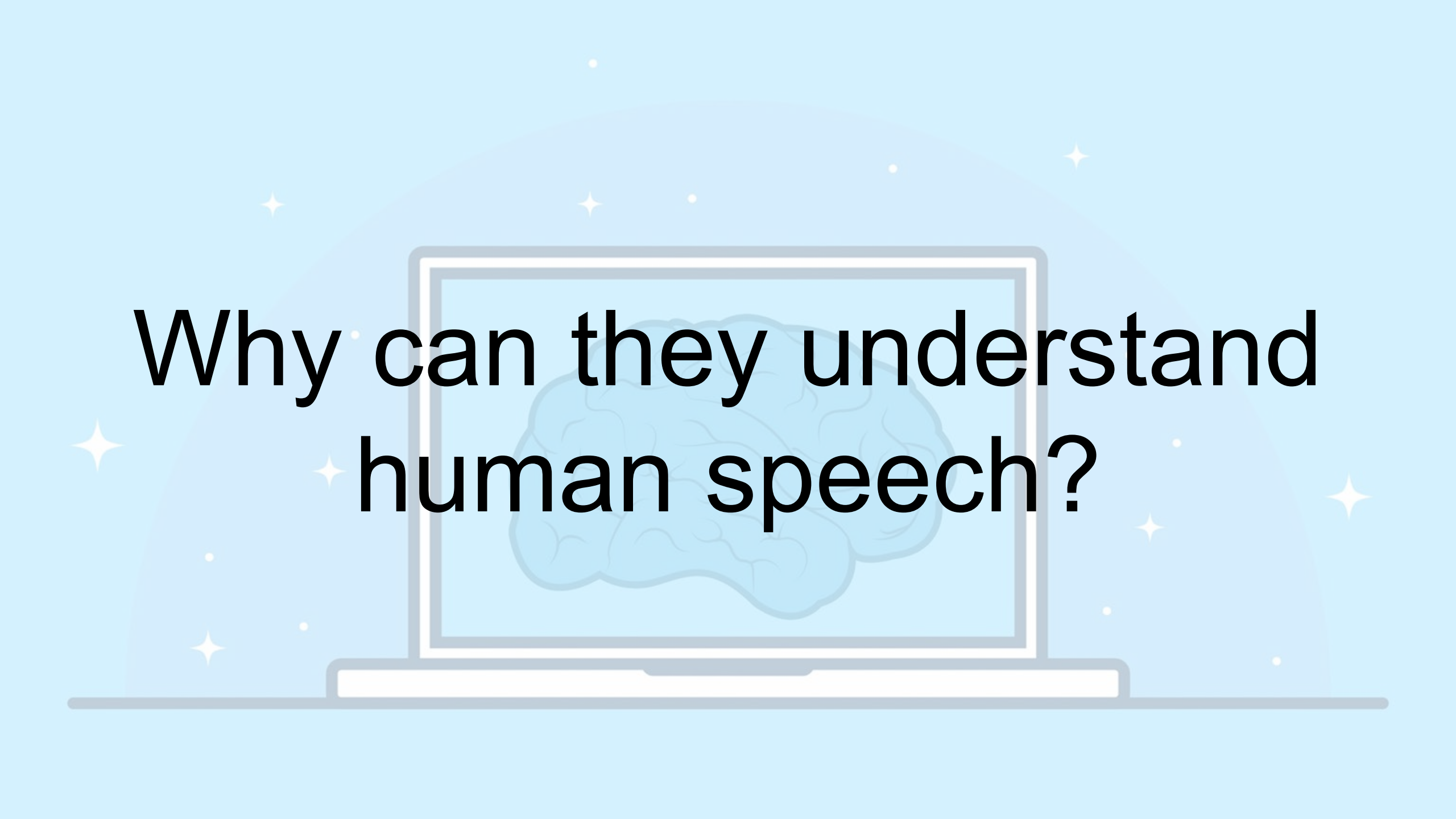
Teaching aids

# Rules in A.I. Lab:

1. Do not touch anything in the A.I. Lab
2. Keep quiet
3. Follow teacher's instructions

A stylized illustration of a laptop with a brain on the screen, set against a light blue background with stars and a semi-circle. The text "Is there any voice recognition in the room?" is displayed in a large, bold, black font across the center of the image.

Is there any voice  
recognition in the room?

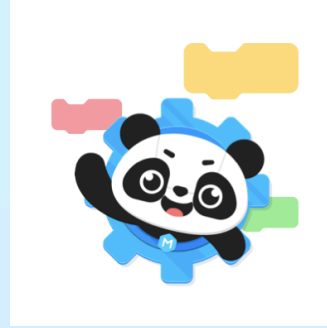


Why can they understand  
human speech?

# Conclusion

- (1) **Artificial Intelligence** is the intelligence demonstrated by **machines** that are programmed to perform different tasks.
- (2) the common features of AI includes simulating human sensory function, making sense of things and decision, and simulating movement
- (3) how to create a voice recognition program by using 'cognitive service' function in mBlock.

# mBlock 5



Window or Mac: (Web-based, no download is required)


<https://ide.mblock.cc/>

Make sure you have **a microphone and a camera installed with your computer**, they are usually available in a Laptop.

Back Extension center Create Extension

Search Sprite Extensions Device Extensions


All AI Data Science IOT ART



**Cognitive Services**  
By mBlock official

The cognitive services API allows users to add other features, for instance, Video, Speech, Language and Knowledge. [More](#)


X Remove



**Teachable Machine**  
By mBlock official

With Machine Learning, you don't have to program but still can train computers to learn things and establish artificial neural networks


+ Add



**Data Chart**  
By mBlock official

Use this extension to visualize your data. A chart speaks louder than lengthy words.

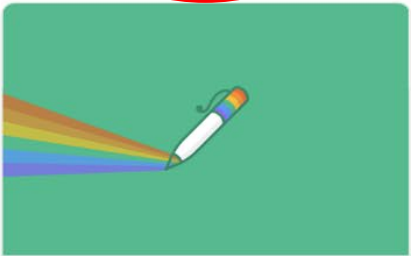
+ Add



**User cloud message**  
By mBlock official


With the user cloud message extension, you can easily sync data of your account across different devices and projects.

+ Add




**Pen**  
Developers: MIT Media Lab

Draw with your sprites.




**Music**  
Developers: MIT Media Lab

Play instruments and drums.



**Climate Data**  
By mBlock official

The extension gives you the quick



**Upload Mode Broadcast**  
By mBlock official

By adding this extension, you enable

## mBlock v5 人工智能 (認知服務)

The image displays three separate code blocks on a white grid background, each starting with a yellow '當 被點一下' (When clicked) trigger block.

- Top Block:** A pink '開始 香港話(繁體) 語音識別, 持續 2 秒' (Start Cantonese (Traditional) voice recognition, duration 2 seconds) block is connected to a purple '說 語音識別結果' (Say voice recognition result) block.
- Middle Left Block:** A pink '在 1 秒後辨識人臉年齡' (Recognize face age 1 second later) block is connected to a purple '說 年齡識別結果' (Say age recognition result) block.
- Middle Right Block:** A pink '在 1 秒後辨識人臉情緒' (Recognize face emotion 1 second later) block is connected to a purple '說 高興 的指數' (Say happiness index) block.
- Bottom Block:** A pink '在 2 秒後辨識英文手寫文字' (Recognize English handwritten text 2 seconds later) block is connected to a purple '說 文字辨識結果' (Say text recognition result) block.

# Self-management

Lesson 1 - Introduction of AI and starting with mBlock coding

CHEUNG Chun Wai 100/100 Draft

Not returned Return

Search the menus (Alt+/)

Background Layout Theme Transition

1 Module 1 Introduction to AI

2 How Artificial Intelligence is impacting Our Everyday Lives?

3 Spam email detection

4 Handwriting recognition

5 Facial recognition

6 Image recognition

7 Self-driving car

Click to add speaker notes

Module 1 Introduction to AI

ARTIFICIAL INTELLIGENCE

Files

Handed in on 6 Apr, 18:55  
See history

CHEUNG Chun Wai - ...

Mark

100/100

Private comments

Add private comment...

Cancel Post

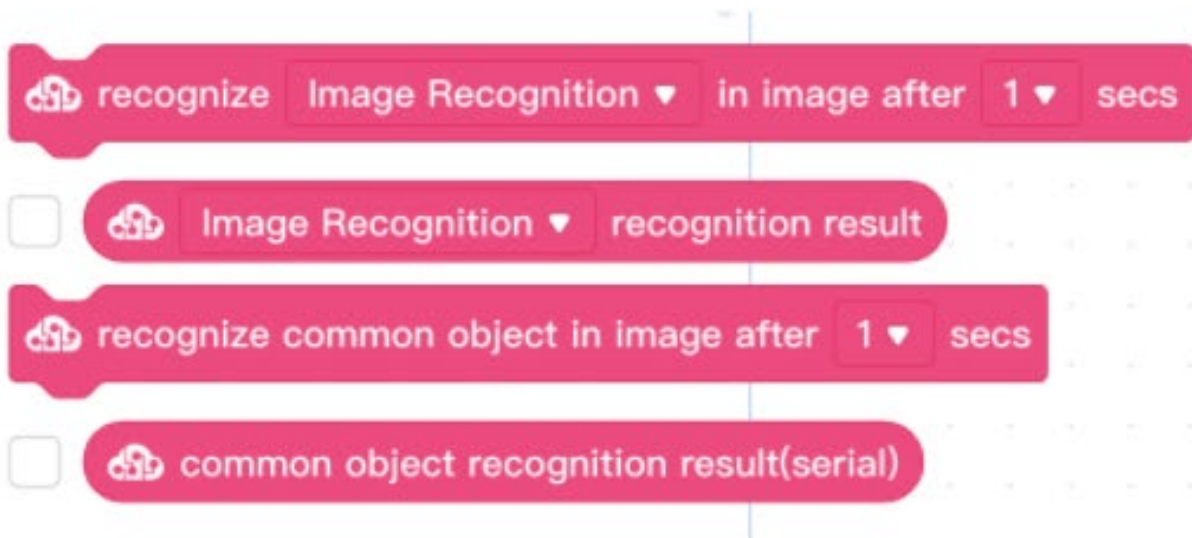
## MISSION

### Mission 3: Show image recognized

Now we are trying to use image recognition.

You may use either “recognize Image Recognition” or “recognize common object” in mBlock 5.

Recognize an image with your device camera and display the result.

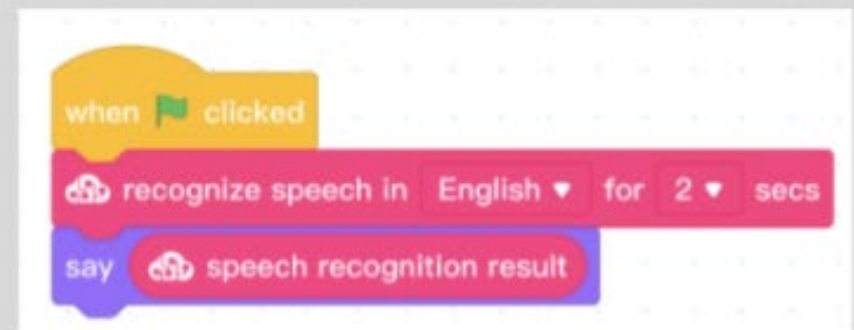


The screenshot shows a code editor with four blocks:



- recognize Image Recognition ▼ in image after 1 ▼ secs
- Image Recognition ▼ recognition result
- recognize common object in image after 1 ▼ secs
- common object recognition result(serial)

Put your program image here.

Hint :



The screenshot shows a code editor with three blocks:

- when  clicked
- recognize speech in English ▼ for 2 ▼ secs
- say  speech recognition result

# 4P Artificial intelligence (AI) with mBlock

Mission achievement chat

## Lesson 1 - Mission 1 Say " Hello AI"

- Arron 30
- Vienna 17
- Gianne 1
- Trevor13
- rex pang 18
- davin 23
- Helen 10
- Tweetie 6
- Rieann 4P 16 🍕

## Lesson 1 - Mission 2 Say other thing in English

- davin 23
- Helen 10
- Rieann 4P 16 🍕
- Tweetie 6
- Zita 7
- Novia 🍕
- Ryan 8
- Haymas 14
- Enoch 25

## Lesson 1 - Mission 3 Say in other language

- Arron 30
- Vienna 17
- Gianne 1
- Carson 02
- davin 23
- Helen 10
- rex pang 18
- Rieann 4P 16 🍕
- BRENDEN

## Lesson 2 - Mission 1 (Make a new custom "open door")

- Helen 10 (~ ▾ ▾) ~
- davin 23
- rex pang 18
- Gianne 1
- Make a new custom "open door"
- Arron 30
- Carson 02
- BRENDEN

## Lesson 2 - Mission 2. (Close the door by Voice control)

- rex pang
- Helen 4p 10 (~ ▾ ▾) ~
- Ryan 8 4P
- REx Ng
- Zita 7
- BRENDEN

# My AI room

Post your project link and write a description about your project.

## Instructions

STEP 1: Post your link and write a description about your project.

STEP 2: Choose 3 classmates work to try

STEP 3: Give comment on their work

1. Does it work?
2. What problem you find?
3. How can they improve?
4. Any feature you want to add?
5. What impress you the most.

## Examples

2021年大灣區STEM卓越獎\_楊樂彥 - mBlock Community

Instruction:

Look at the introduction beside, and click the green flag.

## Class no. 1-5

Jayden Choi

<https://planet.mblock.cc/project/787357>

Jayden Choi

it is an AI room

Adrian

<https://planet.mblock.cc/project/808792>

## Class no. 6-10

+

## Class no. 11-15

Isaac

<https://planet.mblock.cc/project/787423>

SAM

<https://planet.mblock.cc/project/787366>

+

## Class no. 16-20

kamy 17

<https://planet.mblock.cc/project/808778>

+

## Class no. 21-25

Timothy (25)

<https://planet.mblock.cc/project/80880>

Canice(21)

<https://planet.mblock.cc/projectshare/769826>

Owen

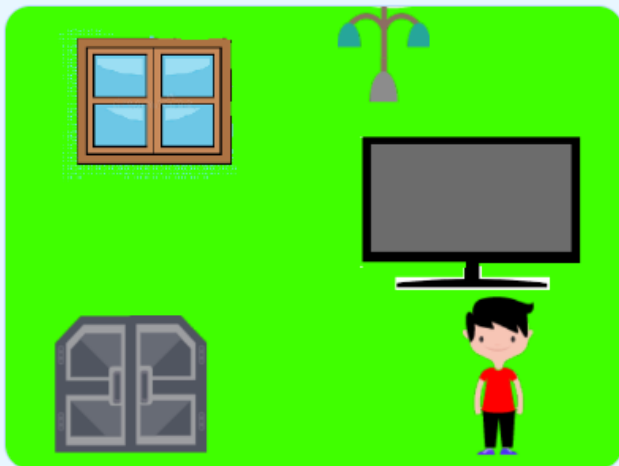
<https://planet.mblock.cc/projectshare/808807>

Jayden Wang (22)

<https://planet.mblock.cc/project/808829>

+

+



設備

角色

背景



角色

download (2)

X

123

Y

22

大小

80

方向

90

顯示



動作

外觀

聲音

事件

控制

偵測

運算

變數

自定積木

說出 你好! 2 秒

說 你好!

想著 嗯... 2 秒

想著 嗯...

造型切換為 close ▾

下一個造型

背景切換為 backdrop1 ▾

下一個背景

將大小改變 10

將大小設為 100 %

圖像效果 顏色 ▾ 改變 25

當 右移鍵 ▾ 鍵被按下

在 1 ▾ 秒後, 在影像中識別 影像辨識 ▾

說 影像辨識 ▾ 識別結果

如果 字串 影像辨識 ▾ 識別結果 包含 People ? 那麼

造型切換為 open ▾

如果 字串 影像辨識 ▾ 識別結果 包含 others\_ ? 那麼

造型切換為 close ▾

# 機器學習 ( ML )

- 用於模式辨識和學習。機器學習的核心是演算法的集合，可根據記錄的資料學習和進行預測、優化不確定情況下的特定公用程式函數、從資料擷取隱藏的結構，以及將資料分類成精確的描述。如果明確的程式設計太過於死板或不實際，通常會使用機器學習。

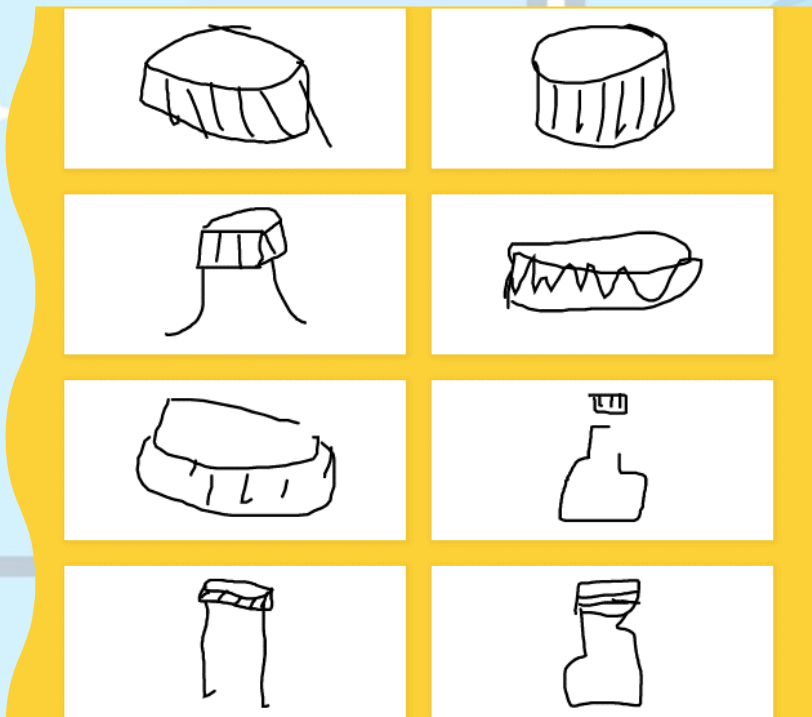
<https://quickdraw.withgoogle.com/>



類神經網路能學會辨識塗鴉嗎？

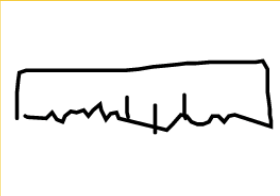
只要將你的繪圖加到[全世界最大的塗鴉資料集](#)，就能協助訓練這個類神經網路。這個資料集的內容會公開分享，為機器學習研究提供參考資料。

- 類神經網路是如何掌握瓶蓋的外觀模樣？
- 它會參考其他人畫的所有範例，並從中學習。






請畫出 瓶蓋

這是你的塗鴉，而類神經網路能辨識出你畫了什麼。



類神經網路認為你的塗鴉也像這些東西：

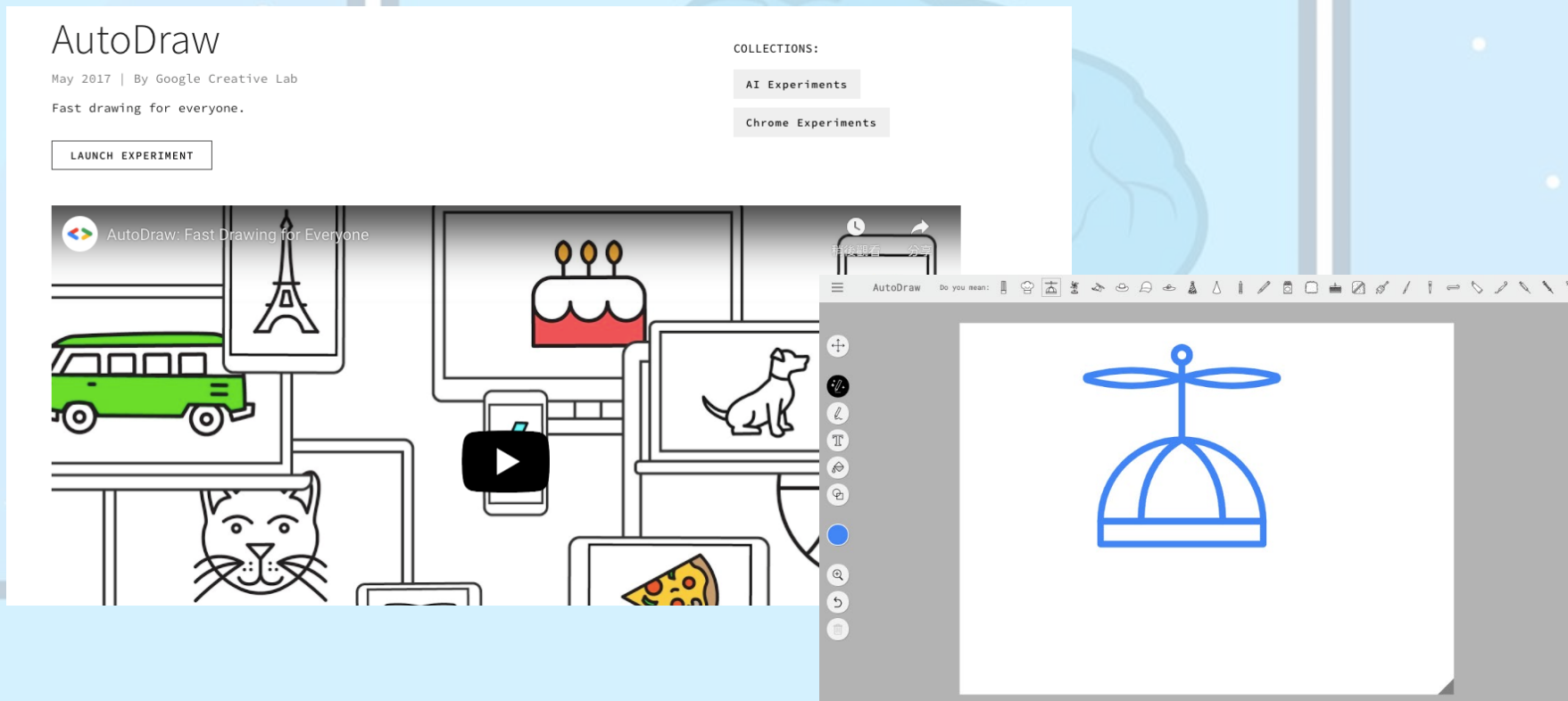
正確的比對結果 瓶蓋	第 2 接近的答案 鋸子	第 3 接近的答案 鋼琴
		

# A

# 機器學習體驗：AutoDraw

## 手繪圖自動變靚靚

<https://www.autodraw.com/>





# 訓練模型 : Teachable Machine

☰


[About](#) [FAQ](#) [Get Started](#)

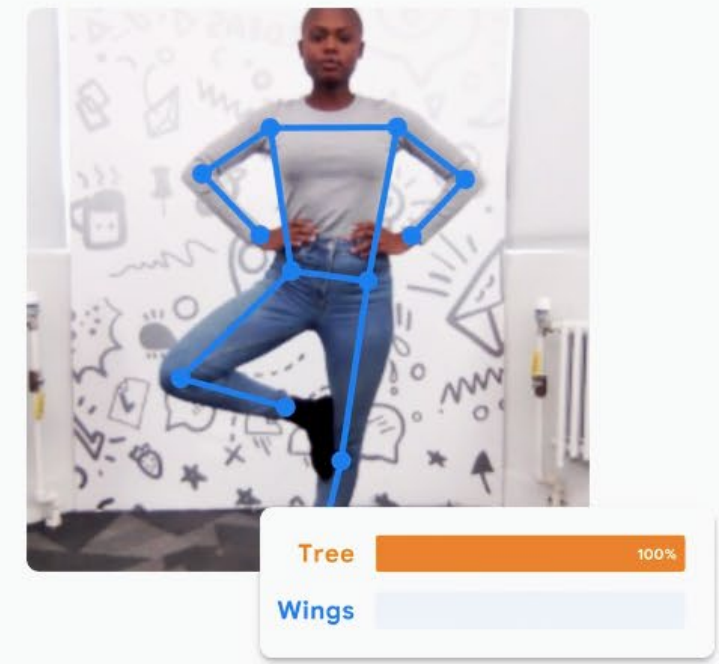
## Teachable Machine

**Train a computer to recognize your own images, sounds, & poses.**

A fast, easy way to create machine learning models for your sites, apps, and more – no expertise or coding required.

[Get Started](#)

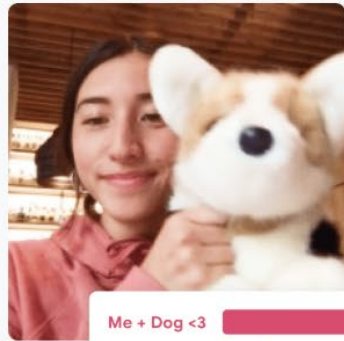






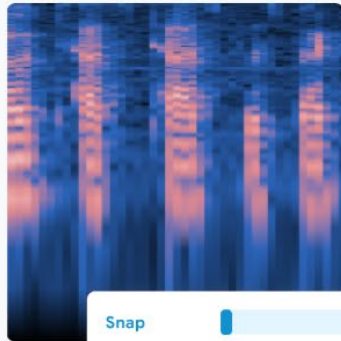
# 訓練模型 : Teachable Machine

- Teachable Machine 是一個網頁版的簡單Machine Training 體驗網頁。
- 支援圖像、聲音及動作識別



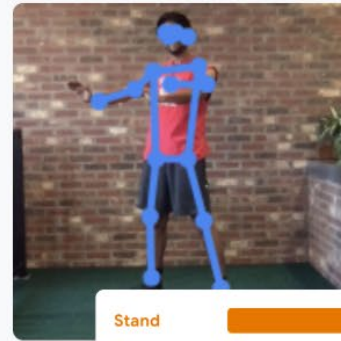
## Images

Teach a model to classify images using files or your webcam.



## Sounds

Teach a model to classify audio by recording short sound samples. (WAV/MP3/etc file support coming soon.)



## Poses

Teach a model to classify body positions using files or striking poses in your webcam.

- 現在試試用來作人像識別<https://teachablemachine.withgoogle.com/>

# A 訓練模型 : Teachable Machine

## 分辨手寫文字紙幣 及 樣貌 辨析

The screenshot displays the Teachable Machine interface. On the left, there are three classes of training data:

- plant**: 87 Image Samples
- \$20**: 125 Image Samples
- Me**: 45 Image Samples

Each class has 'Webcam' and 'Upload' buttons and a row of image thumbnails. A 'Training' panel in the center shows 'Model Trained' and 'Advanced' options. The main preview window shows a live webcam feed with classification results:

Class	Confidence
plant	100%
\$20	99%
Me	0%

Two smaller preview windows on the right show handwritten numbers '3' and '2' with their respective classification results:

Class	Confidence
1	0%
2	90%
3	9%
4	0%

At the bottom, there is a language dropdown set to 'English (U.S.)' and a version/release number: 'release-2-2-2 - 2.2.2#062770 - 83'.