


# ICT & STEAM Learning & Teaching sharing about A.I. Education

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# Agenda

- Introduction
  - A.I. Curriculum planning
  - Teachers' readiness
  - Lessons preparation
  - Pedagogical approach in teaching CT
  - Students' performance
  - Resource allocation
  - Communities of Practice (CoP)
- 

# Concordia Lutheran School (路德會協同中學)



 **AI** >  
*for the Future*

CUHK Jockey Club AI for the Future Project  
中大賽馬會智為未來計劃

夥伴學校工作坊  
開拓與創新教育 校本課程先導計劃

教育燃新  
EDNOVATORS

【賽馬會運算思維教育嘉許禮 🏆 實時睇!】

由 CoolThink at JC 賽馬會運算思維教育發佈

787 次觀看

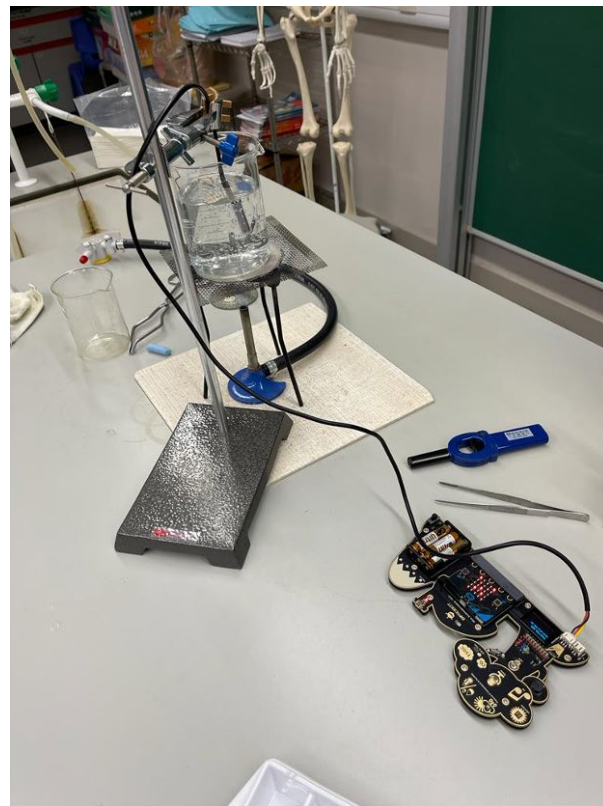
Resource School  
資源學校



路德會協同中學

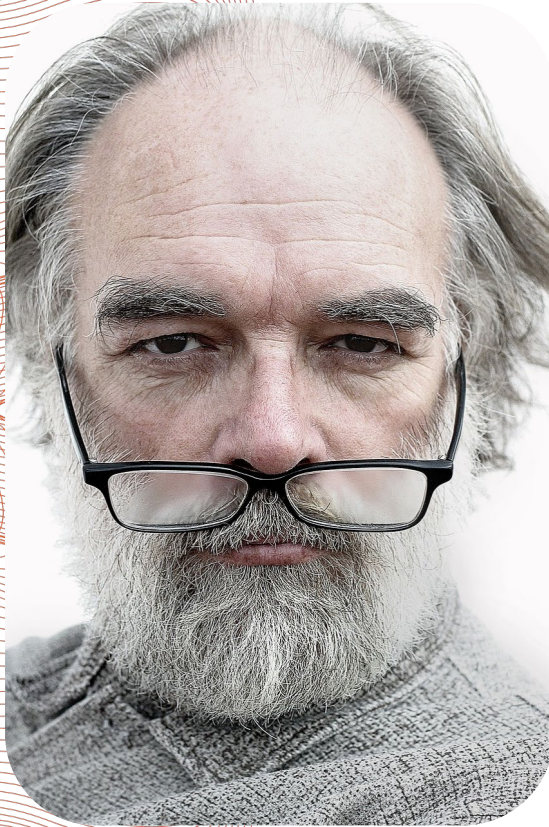


# CT + STEAM in our school



# CT / coding + A.I.





## Challenges for Teachers

- Implement AI in the curriculum
- Professional development and training to support the use of AI in the classroom





Linguistic Creativity

ALL-Purpose Text Generation



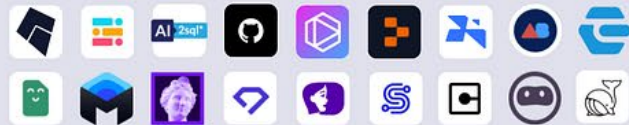
Marketing & Sales Copy



Text Optimization



Coding & Web Development



Musical Creativity

Sound & Music Generation

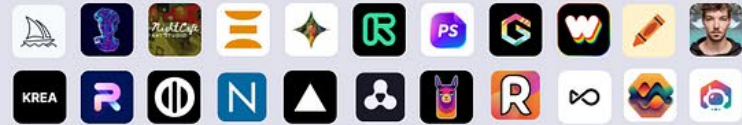


Voice Synthesis



Visual & Artistic Creativity

Image Generation



Video Generation



Design

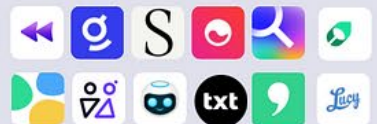


Scientific Creativity



Other

Knowledge Management & Search



Customer Support & Automation



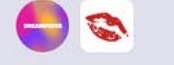
Characters



Gaming



Erotica

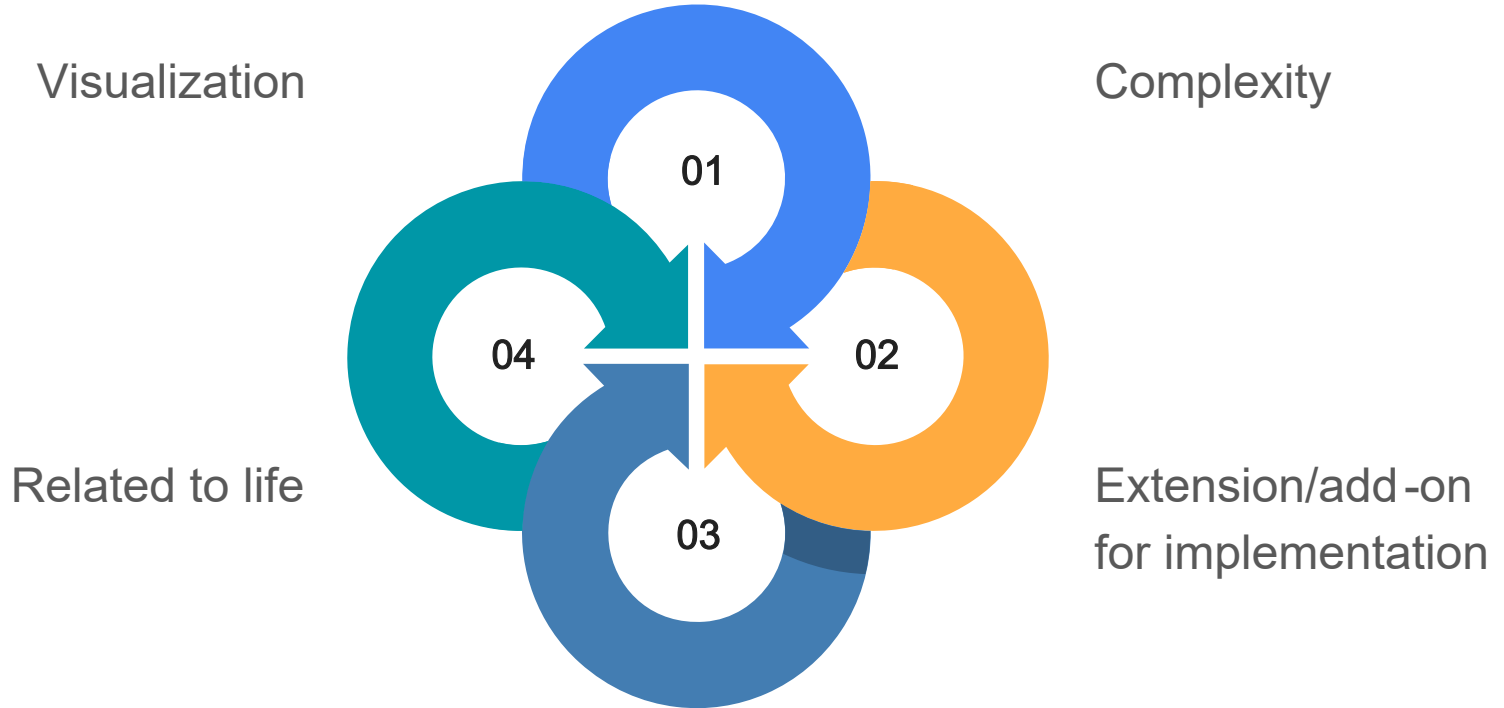


Market Intelligence

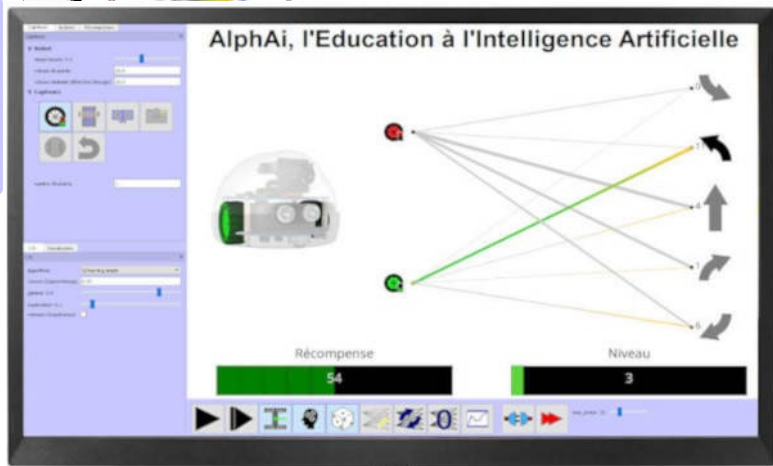




# What we need to consider about:



# ▶ Visualization for learning



happy new year 2023, cute cat - @Akane Lee (relaxed)

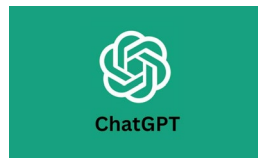
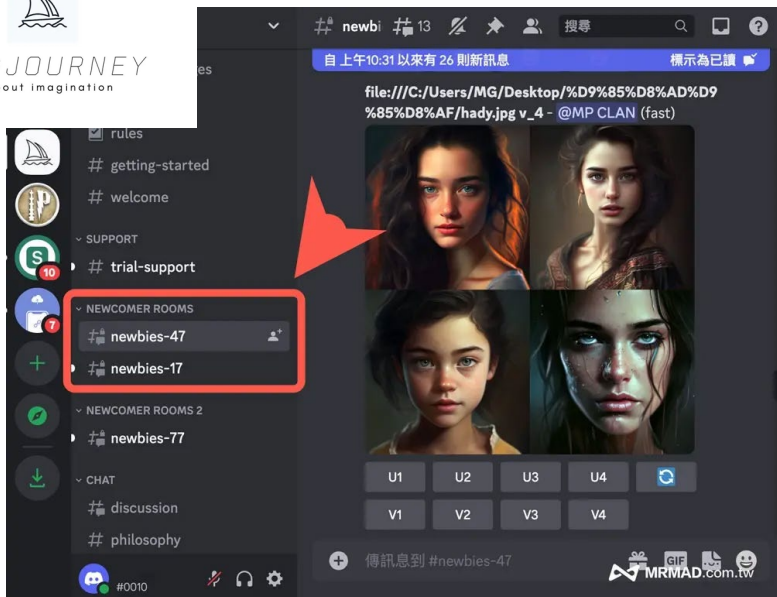
重新運算

U1	U2	U3	U4
V1	V2	V3	V4

渲染大圖 (Red text above U2-U4)

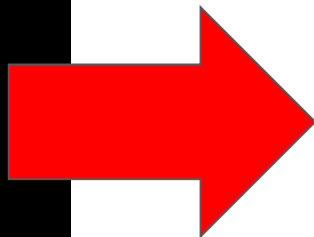
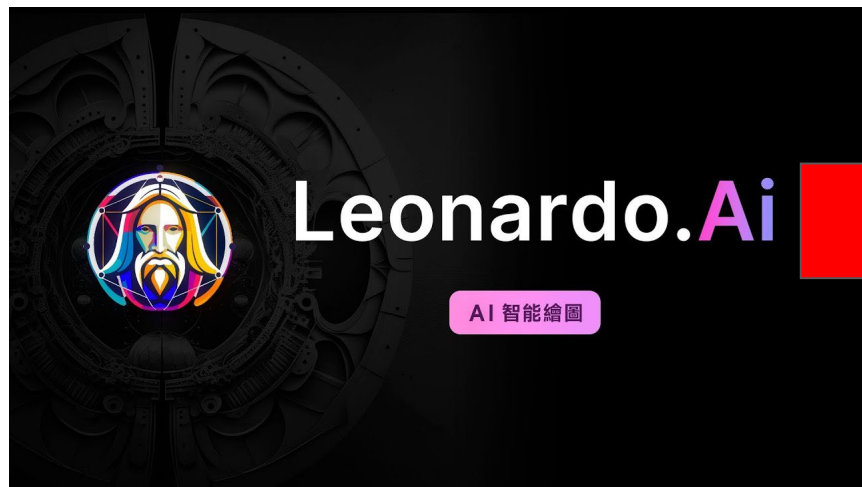
延伸變化 (Green text below V1-V4)

# ▶ Extension/ add-on for implementation





# ▶ Complexity





# Related to life

Get the  
right  
formula,  
in seconds

AI EXCEL BOT

aiexcelbot.com

Sum of column A when words in column B contains "Excel" and column C is yesterday's date.

```
=SUMIFS(A:A,B:B,"Excel",C:C,TODAY()-1)
```

```
=LINEST(B1:B10,A1:A10,TRUE,TRUE)
```

The above Excel formula is using the LINEST function to calculate the linear regression line for the data set in columns A and B. The function is set to calculate the standard error of the regression, the R-squared value, and the intercept and slope of the regression line.

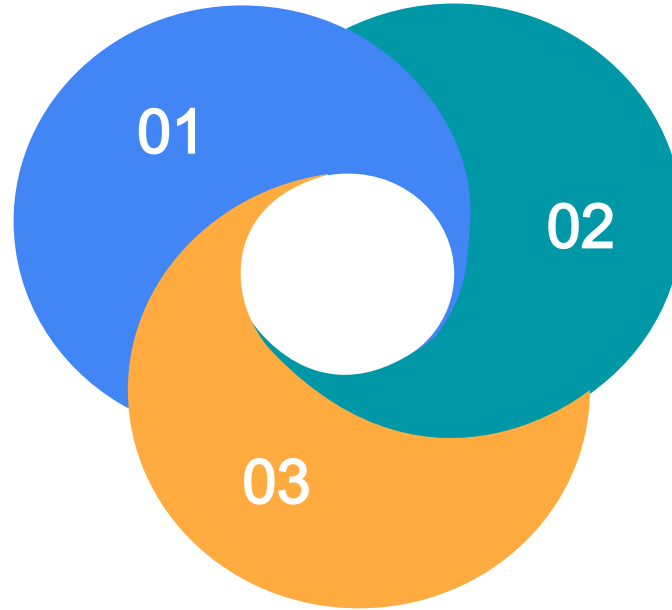
VS



ChatGPT

# Explaining AI to Students

Strategies for teachers  
to explain the concept  
of AI

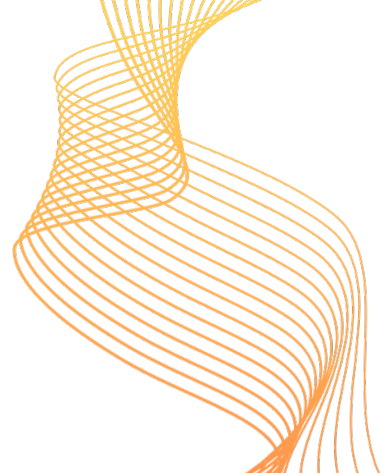


Visualization tools and  
activities to help  
students understand  
AI

Considerations for  
choosing a suitable AI  
tool/platform for  
students



# ▶ For students: engaging with AI



## 1. Description/explanation skills required

Content Type

Description

A photograph of an angry full-bodied wolf in the foggy woods, by alex horley-orlandelli, by bastien lecouffe-deharme, dusk, sepia, 8k, realistic

Style

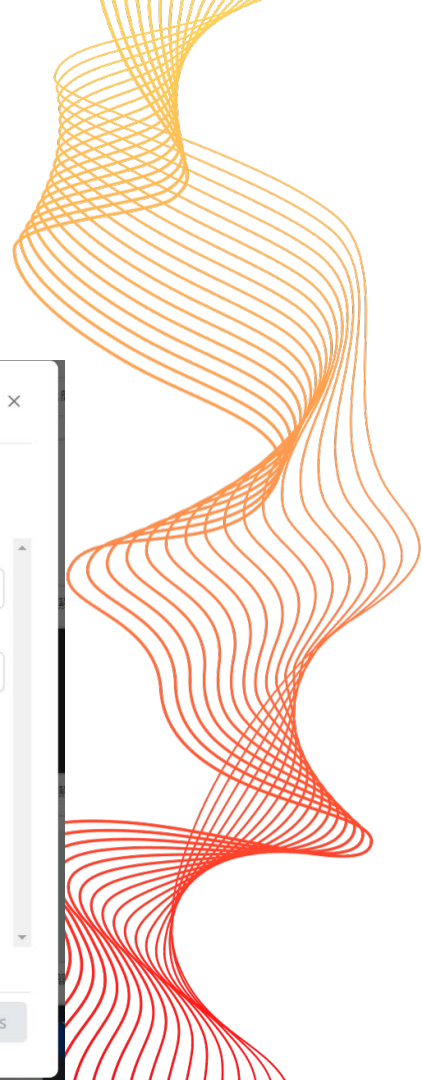
Composition





## SlidesAI.io - Create S...

AI-Powered tool that transforms any text into visually appealing slides, saving you hours of time and effort. Choose from a variety of presentation types and colour...



### Generate Slides With SlidesAI.io

**Text** | Your Own Text | From a topic (beta)

Themes

Refer a Colleague

Get Help

Share your feedback

Your Account

English

Enter Text Or try an example →

Please enter at least 500 characters for better results. Your current character limit is 2500 , You can upgrade for a higher character limit

0 characters [\(How does it work?\)](#)

Replace existing slides

Presentation Type: **General**

No. of Slides: **4**

Add Title and Thank you Slide

Add Images

**Create Slides**



## Challenges for Students

- 01 Visualization and hands-on activities required
- 02 Difficult to understand the execution and training process





# School AI L&T Consideration

- Senior Form & Future
- Technical vs Mindset
- Learnt A.I. VS not familiar with A.I. students
- How does school decide A.I. as a major concern?
- Resources allocation
  - Human resources
  - Hardware & software
  - Time allocation



# Human resources & Timetable allocation

	<b>On or Before 19-20</b>	<b>20-21/21-22/22-23/..</b>
<b>Periods</b>	S1: 2 lessons per cycle S2: 2 lessons per cycle S3: 1.5 lessons per cycle	S1: 3 lessons per cycle S2: 3 lessons per cycle S3: 2 lessons per cycle S4: 2 lessons per cycle
<b>Human Resources</b>	S1-S3: co-teaching (2 teachers per class)	S1-S3: co-teaching (2 teachers per class) S1-S4: co-teaching (8 teachers in the whole form)

# Curriculum about A.I., CT and Coding in our school


<b>S.1</b>	<b>S.2</b>	<b>S.3</b>
<p>A.I. Micro:bit (MakeCode) Micro:bit Extension (IoT) Scratch (Level 1) Photo Editing (Adobe P.S.) Swift Playground</p>	<p>A.I. App Inventor 2 (Level 2-3) mBlock (mBot 2) Codeblocks in TinkerCAD Cospaces Edu Pro Photo Editing</p>	<p>A.I. Computer Network Blockchain SQL Python programming Video Production (Adobe Pr)</p>

# Timeline for school years (A.I. + CT/ coding)

	2021-22	2022-23	2023-24 (future)
<b>S.1</b>	Level 1 (Scratch) STEM	Level 1 module A.I. (Introduction to AI, Fundamentals of AI, AI and Ethics) School-based STEAM module	Level 1 module A.I. (Introduction to AI, Fundamentals of AI, AI and Ethics) School-based STEAM module
<b>S.2</b>	Level 2-3 App Inventor 2	Level 2-3 module A.I. (Introduction to AI, Fundamentals of AI, See) School-based STEAM module	Level 2-3 module A.I. (See, Hear, Simulation) School-based STEAM module
<b>S.3</b>	School-based A.I. module	A.I. (Introduction to AI, Fundamentals of AI, See, Think and Create)	A.I. (See, Speak, Think and Create, AI and Ethics, AI and Future of Work)
<b>S.4</b>	Design Thinking in community problem (A.I. - Social Good, Social Impacts and Challenges of AI & CoolThink module)		

# Learning objective of Introduction to A.I.

## Learning Objectives:

- To develop an awareness of AI, what it can do and what it cannot do;
  - To identify the use of AI in daily life;
  - To obtain knowledge of the history of AI;
  - To obtain knowledge of different types and subtypes of AI, possible inputs/outputs and the concept of machine learning; and
  - To recognize the importance of ethical principles in AI.
- 



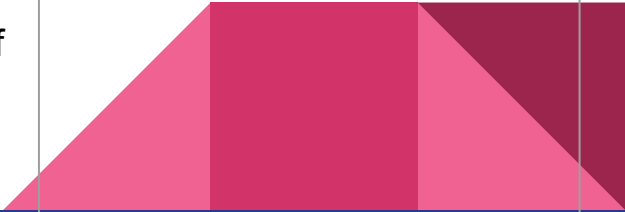
## Areas include:

- Awareness
- Knowledge
- Ethics
- Interaction
- Empowerment




# A.I. + STEAM interdisciplinary learning planning

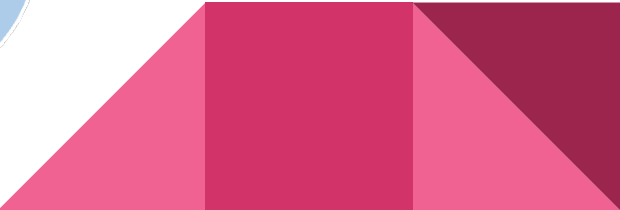
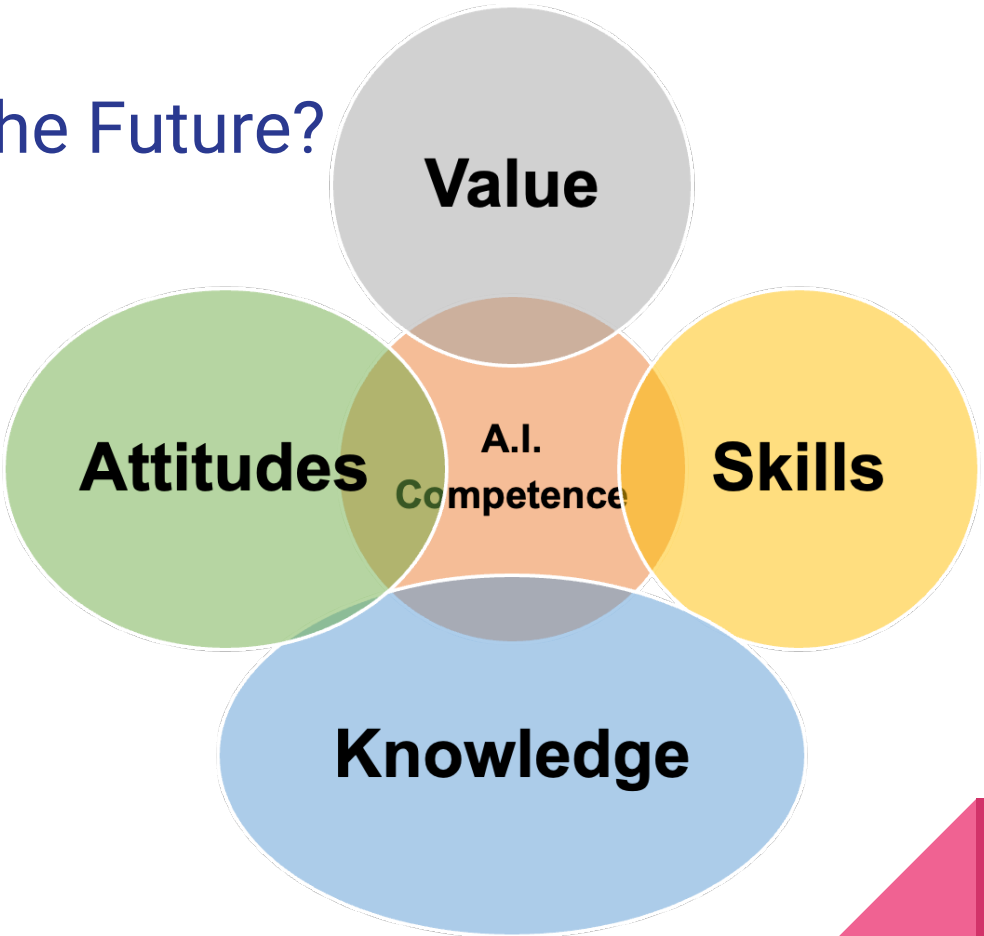
Level	Mathematics	Computer Literacy	Science
S.1	<b>Linear equations in one unknown</b> Formulate linear equations in one unknown from a problem situation	<b>Introduction to A.I.</b> Examples Limitation of ChatGPT (related to English Language)	
S.2		<b>Hear &amp; Speak</b> Digital data and analog data To gain awareness of how machines can “perceive” speech through ASR technologies	<b>Hearing</b> Understand that sound is produced by vibrations Observe the wave pattern when a vibrating tuning fork is placed in water
S.3	<b>Probability</b> Integrate the knowledge in statistics and probability to solve simple real-life problems.	<b>See</b> Image Classification Knowledge: Confidence Level of a trained model Activity: Teachable machine experiment	



# Difficulties promoting A.I. / CT / coding

- A.I. mindset change of teachers
  - Schools' resources
  - Professional developments for teachers
  - How to promote A.I. to other subjects
  - Relations between A.I. and STEAM
  - Whole-school approach vs ECA
- 

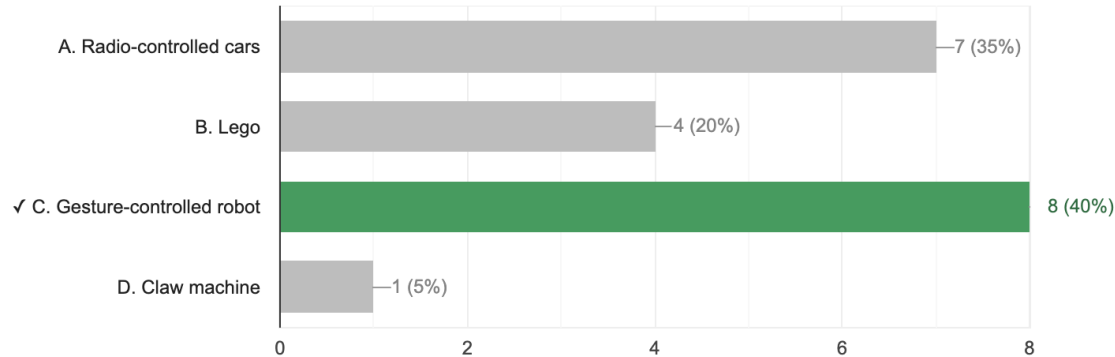
# Education in the Future?



# Assessment

Which of the following toy has applied AI technologies?

8 / 20 correct responses



	Function 1:	Function 2:
AI technology applied	<u>Sensor</u> <del>x</del> ?	<del>Turning</del> <u>Wheels</u> <del>x</del>
Big data	Sensor things eg: <u>Obstacles</u> <del>x</del>	When will they turn accordingly to the <u>Accelerations</u>
Big copy	<u>How</u> <del>x</del> other cars avoid them	<u>How fast</u> / slow should they go
ring	Not to hit them again <del>x</del>	<del>to</del> Controlling speed of the <u>wheels</u> <del>x</del>
uting	<u>coding</u> <del>x</del> , road,	How other AI cars move <del>x</del>



Search...



Basic

Input

Music

Led

HuskyLens

Radio

Loops

Logic

Variables

Math

Extensions

on start

HuskyLens initialize I2C until success

HuskyLens switch algorithm to Face Recognition

HuskyLens change mode algorithm until success.

forever

HuskyLens show custom texts "peter" at position x 150 y 30 on screen

HuskyLens request data once and save into the result

if HuskyLens check if ID 1 frame is on screen from the result then

show icon

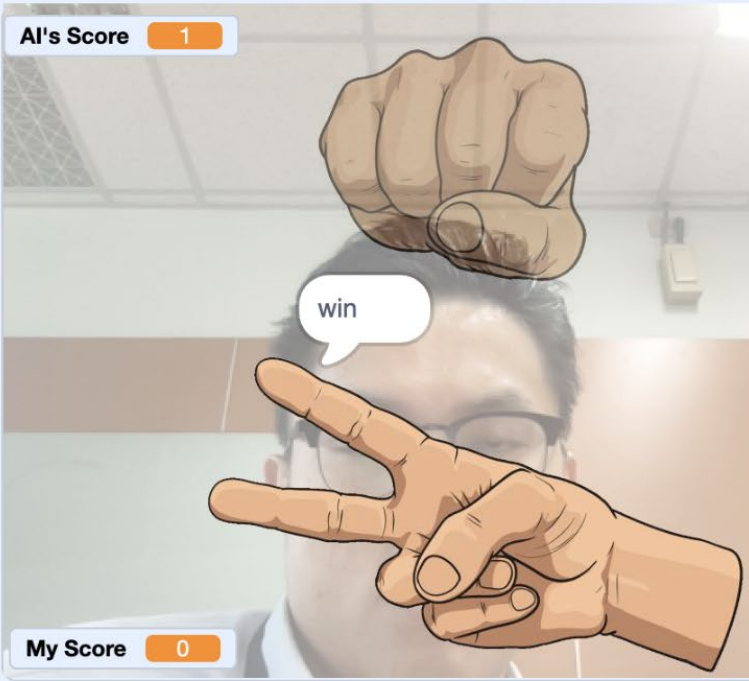


else

show icon



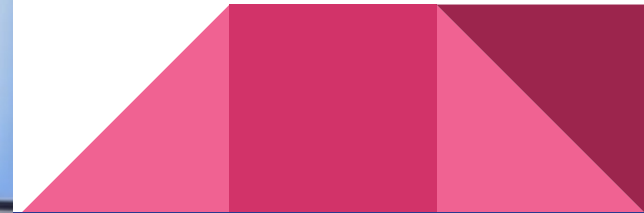
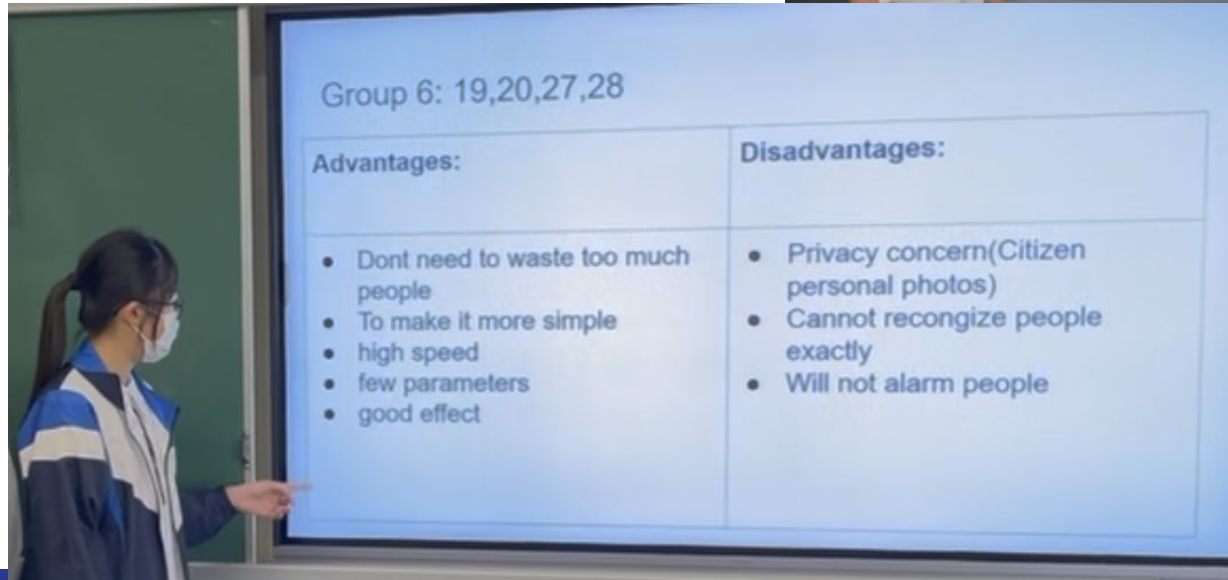
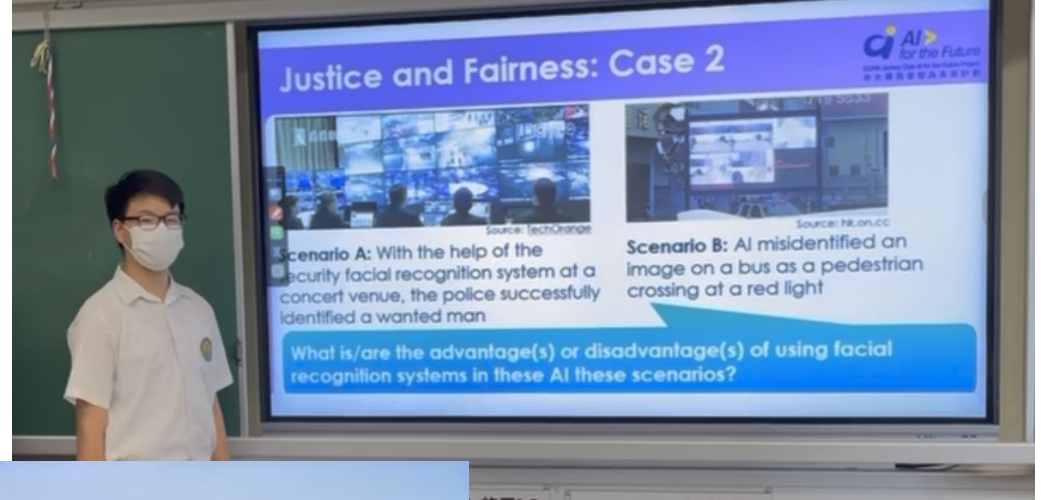
```
when clicked
  use model
  switch costume to what
  say 3 for 1 seconds
  say 2 for 1 seconds
  say 1 for 1 seconds
  switch backdrop to random backdrop
  if prediction is 布 then
    switch costume to 布
  else
    if prediction is 石头 then
      switch costume to 石头
    else
```



Sprite: 包 x: 12 y: -93  
Show: [ ] Size: 100 Direction: 90

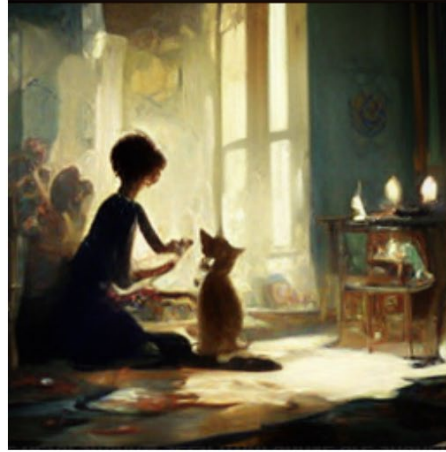


# Students' presentation




/imagine elegant lady playing with a kid in a room of cats,  
warm, peaceful

## Students' work

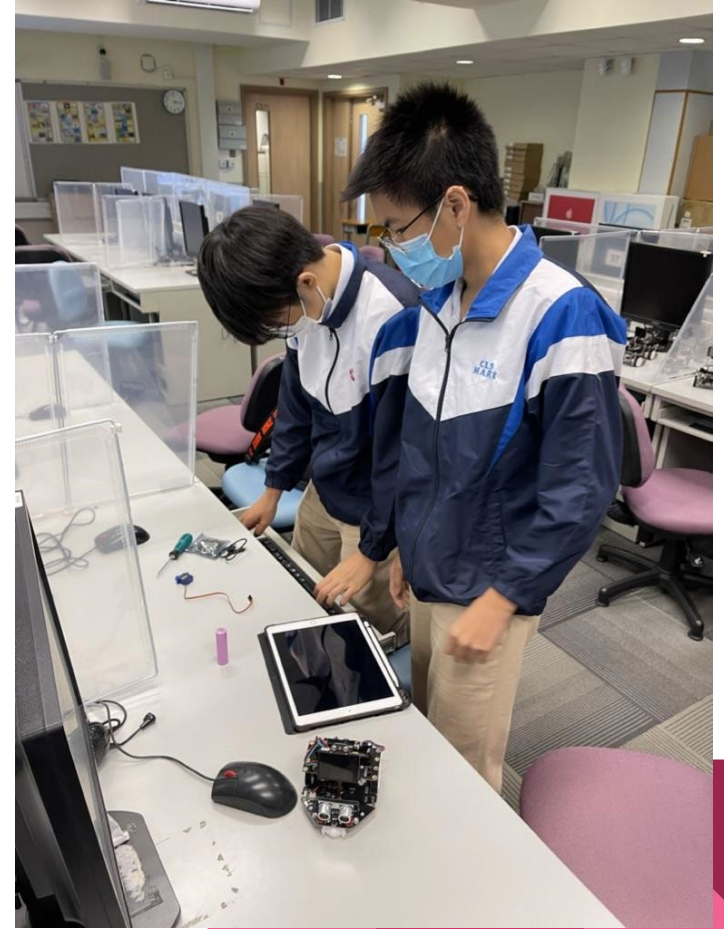


# Open Discussion about Generative AI Results

- Who owns the copyright of the results? (and is that the same if you then make changes to it or 'touch it up in results editing software later) ?
  - Is there also separate copyright on the written prompt? And who owns that?
  - If there is copyright on the written prompt, does this exist separate from the results produced from it, or does it now become associated with the image copyright that was produced from it?
  - (List all advantages and disadvantages)
- 



# During A.I. lessons



# Tech KLA Week

- ChatGPT experience



# Students' work 1

- 為手機電話寄存櫃加入新功能智能拍喺器具備人工智能面部識別系統並且運用了database功能，實用性高，高效率，有效改善排隊等候的問題，高安全係數。



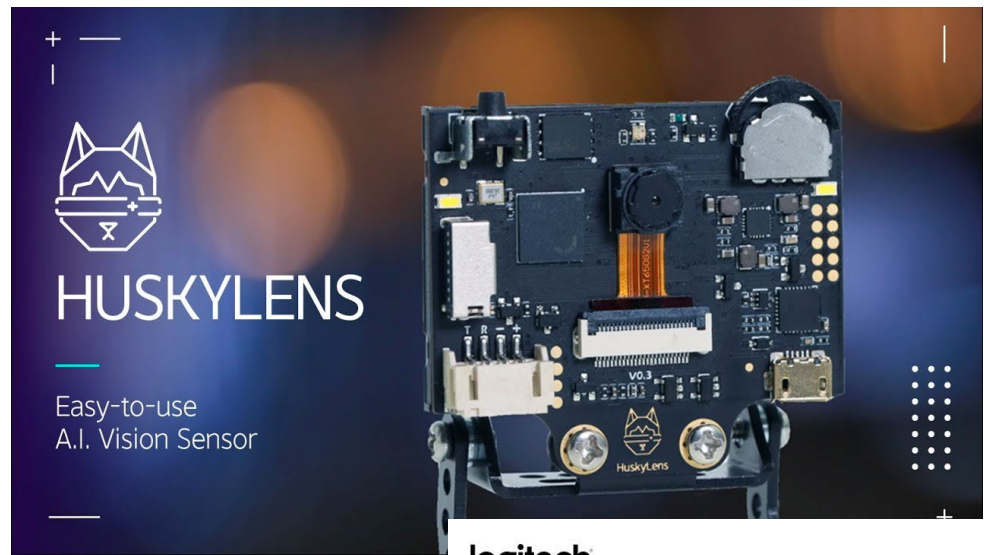
## Students' work 2





# Hardware

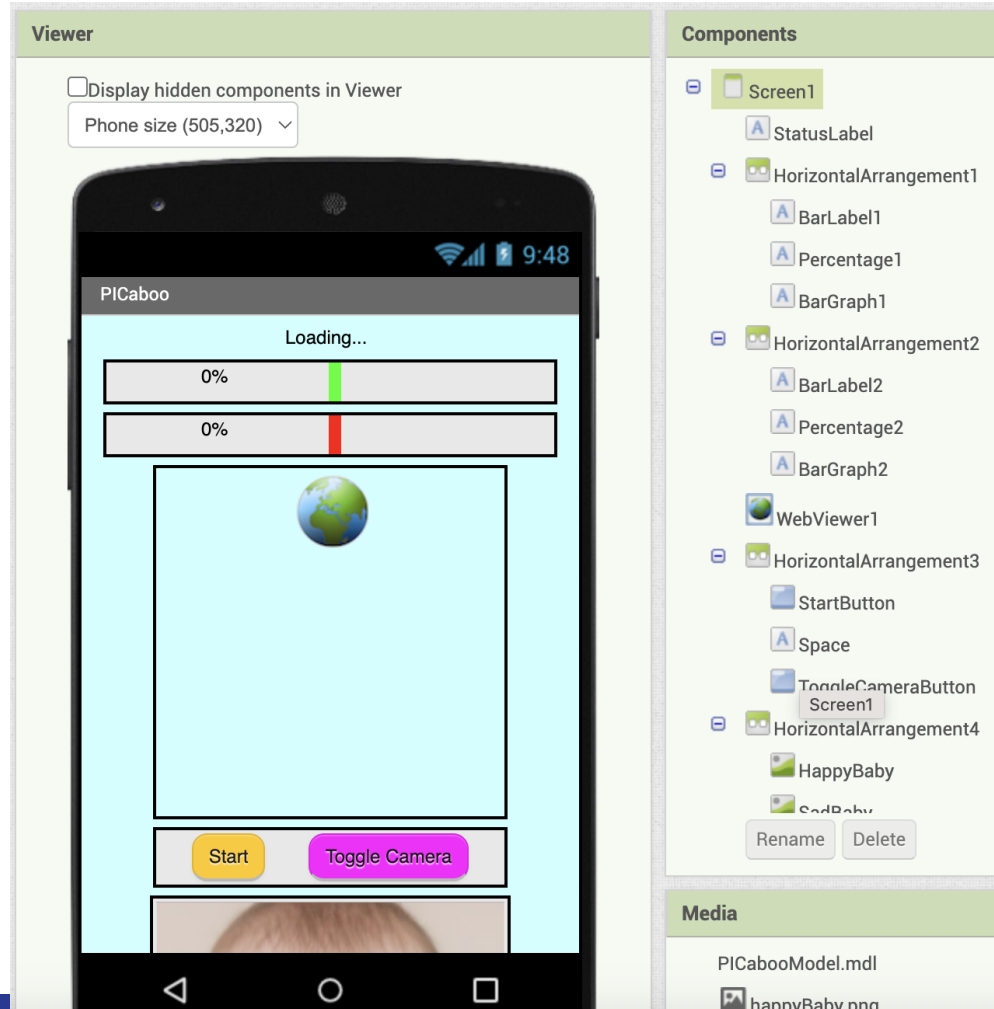
- Desktop PC
  - webcam
  - microphone
  - earphones
- Notebook / Macbook Pro
- Tablets (iPads)
- Android Smartphones
- micro:bit v2 with extension boards (AloT)
- mBot 2 (AloT)
- dfrobot maqueen plus v2 + Huskey Lens






# Software Tools

- Scratch
  - RAISE Playground
- MakeCode editor (micro:bit)
  - Huskylens
- App Inventor 2 + AI extension
  - Personal Image Classifier
- Teachable Machine
- Thunkable
- Google Colab
- Swift Playground (iPadOS)
- Microsoft VSCode



# Teaching Tips

- How to prepare a lesson.
  - How to cater learning diversity.
  - How to manage the IDE?
  - How to assess the AI abilities?
  - Block-based programming vs Text-based programming
  - Best Programmable Robots To Teach Kids Code ?
  - Blended learning
  - ...
- 

# Communities of Practice (CoP)



AiTLE AI (in) Edu Group 

群組 · 212位群組成員



HKACE AI for Education 

群組 · 360 位參與者



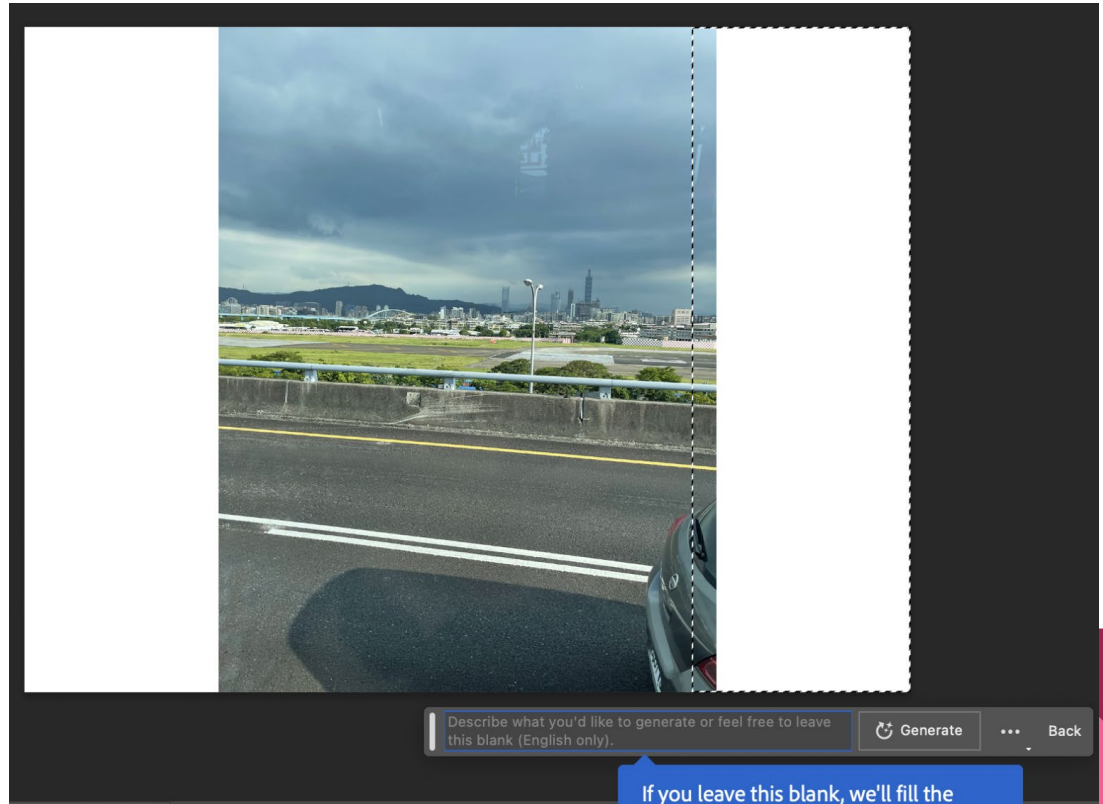
翻協FlipEdu會員22-25 


群組 · 188 位參與者

# No midjourney? So?



Adobe Photoshop (Beta)





Thank you  
Q&A