



Experience sharing on teaching “Module on Artificial Intelligence for Junior Secondary Level”

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Associate Executive Committee Members, AiTLE

Agenda

AI Resources by EDB

Computer Literacy in KTLS

School-based curriculum
vs EDB resources



A blurred background image of a classroom. A teacher is standing at the front, and several students are seated at desks. One student in the foreground is raising their hand. The scene is brightly lit, likely from a window on the left.

AI Resources by EDB

Module on
Artificial Intelligence
for Junior Secondary Level

1

(Teacher Version)

Technology Education Section
Curriculum Support Division
Education Bureau
July 2023

Module on
Artificial Intelligence
for Junior Secondary Level

2

(Teacher Version)

Technology Education Section
Curriculum Support Division
Education Bureau
July 2023

Module on
Artificial Intelligence
for Junior Secondary Level

3

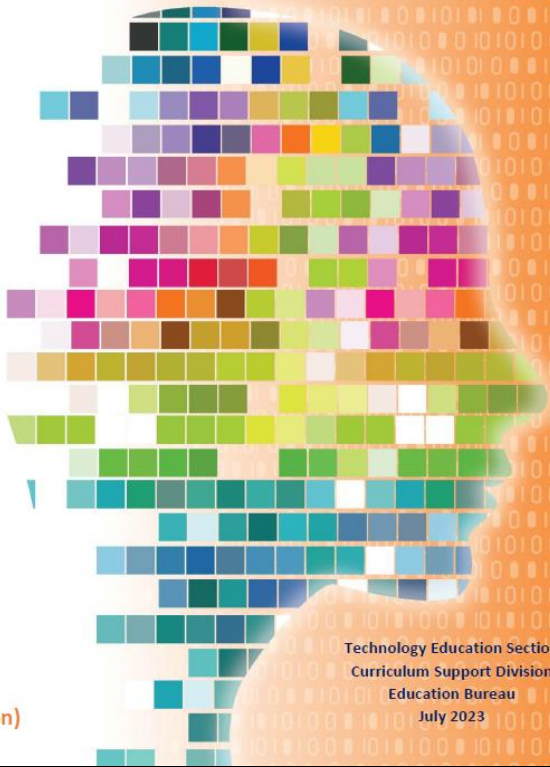
(Teacher Version)

Technology Education Section
Curriculum Support Division
Education Bureau
July 2023

Systematic Framework for Innovation and technology Integration

- Designed for 10–14 hours within the ICT category
- Adapted from the CUHK Jockey Club AI for the Future Project
- Targets junior secondary students to understand AI capabilities, limitations, and ethics

Module on
Artificial Intelligence
for Junior Secondary Level



- Introduction to AI
- AI Basics (I)
- AI Ethical Principles
- Computer Vision (I)
- Computer Speech and Language (I)
- AI and Computer Simulation (I)
- AI in Robotic Reasoning (I)

Task 3: Experience Machine Learning with Teachable Machine

A trained AI machine learning model is provided for classifying images of cats or dogs whose output should be labelled as “Cat” or “Dog”. Please use the model to classify the following images and write down the result of the model’s recognition in the table below.

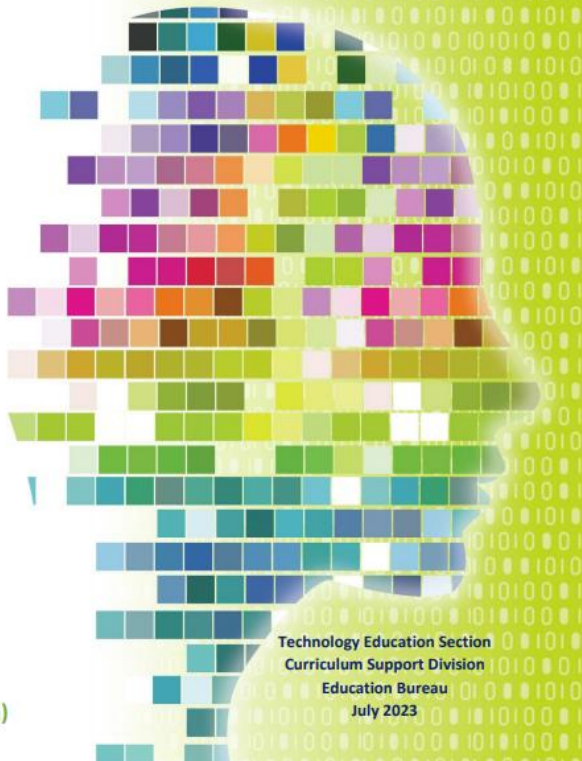
Testing images					
Result	Cat		Cat		Cat
		Dog		Dog	

(1) Describe the two classification errors of the above machine learning model and try to explain why the error occurred.

a. The model classified an input image (i.e. the third photo) of a dog to be a cat.

The volume and variety in the training data may not have modelled this kind of image sufficiently well.

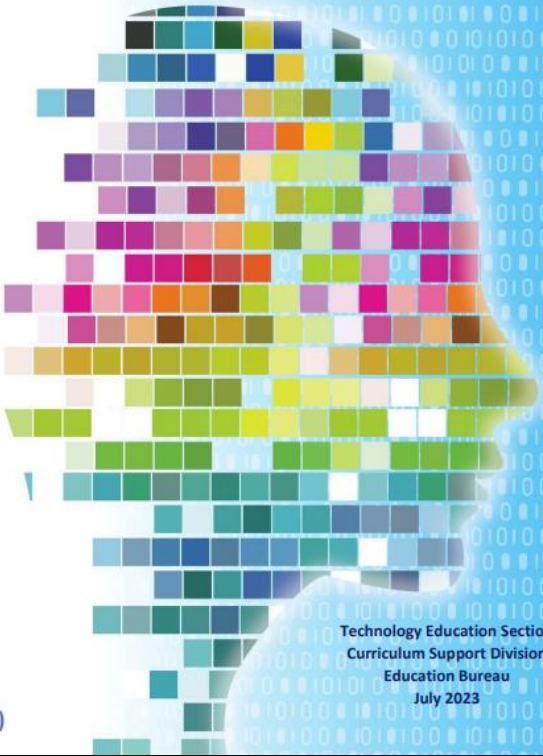
Module on
Artificial Intelligence
for Junior Secondary Level



- AI Basics (II)
- AI Ethical Issues
- Computer Vision (II)
- Computer Speech and Language (II)
- AI in Robotic Reasoning (II)
- AI and Future of Work (I)
- Societal Impact of AI (I)

Event	Characteristics
First Industrial Revolution (18th century)	• Technological breakthroughs: steam engines and metal forging • Manufacturing processes became mechanized
Second Industrial Revolution (19th century)	• Technological breakthroughs: electricity • Standardization, mass production, and industrialization • Mechanical production grew in speed
Third Industrial Revolution (20th century)	• Technological breakthroughs: computers, internet, and software • Software system carried out management processes
Fourth Industrial Revolution (Today)	

Module on
Artificial Intelligence
for Junior Secondary Level



3

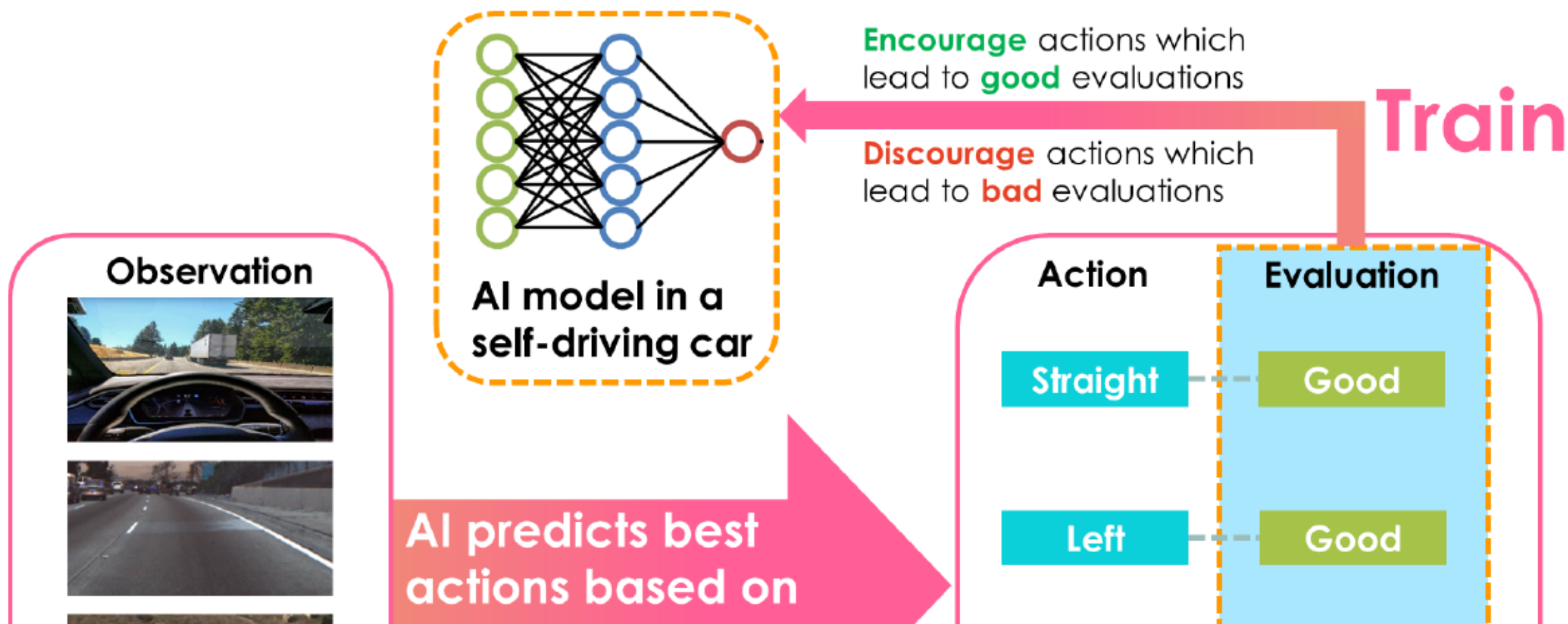
(Teacher Version)

Technology Education Section
Curriculum Support Division
Education Bureau
July 2023

- Computer Vision (III)
- AI and Computer Simulation (II)
- AI in Robotic Reasoning (III)
- AI and Future of Work (II)
- Societal Impact of AI (II)

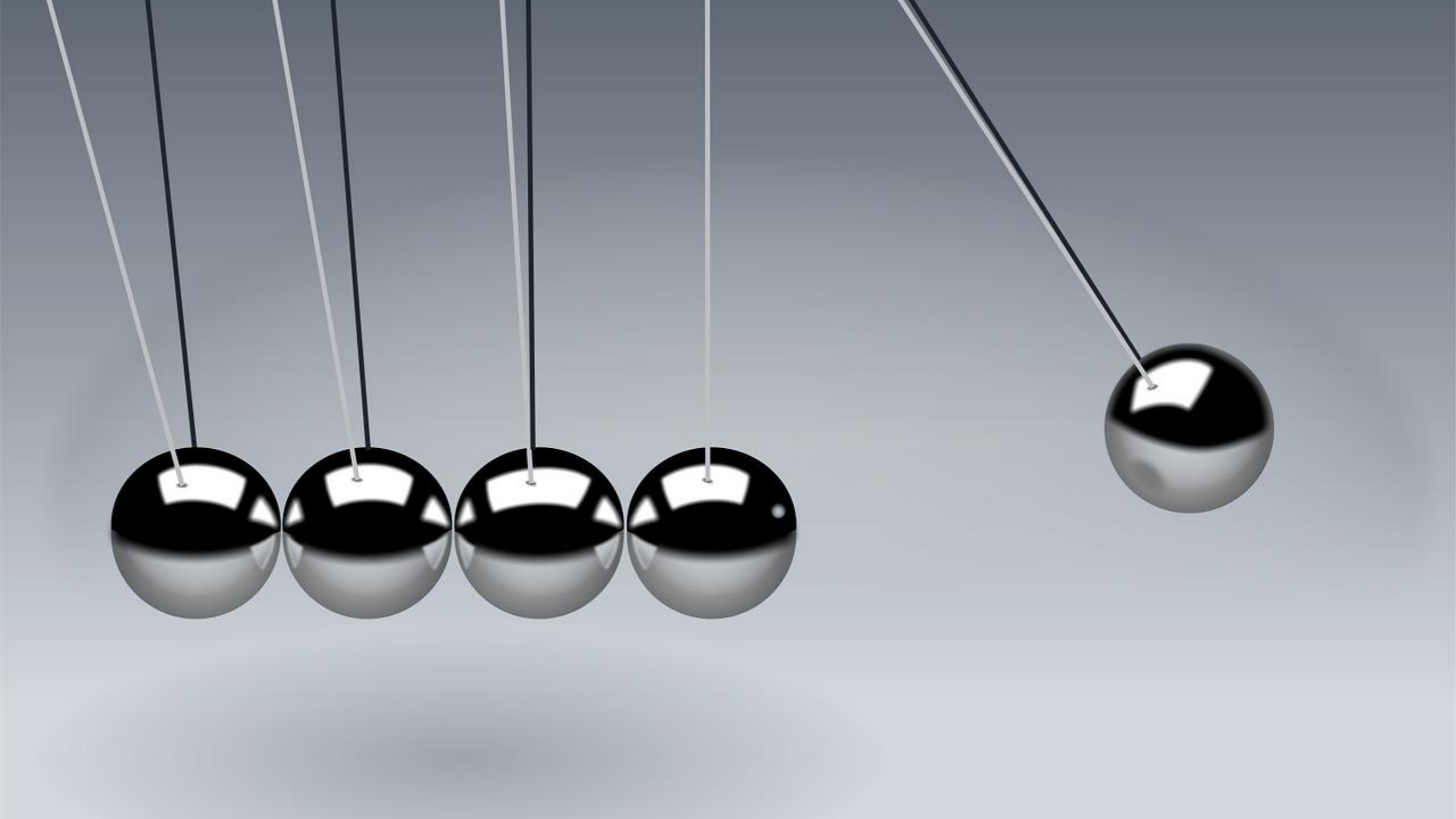
Task 2: RL in Self-driving

When learning to drive with RL, the AI will first collect observations about the environment and make a prediction on what action to take given the observations and its current knowledge of driving. After taking the action, evaluation of the consequence(s) of the action are received. AI is trained by encouraging actions which lead to good evaluations and discouraging those lead to bad evaluations.



AI education in KTLS

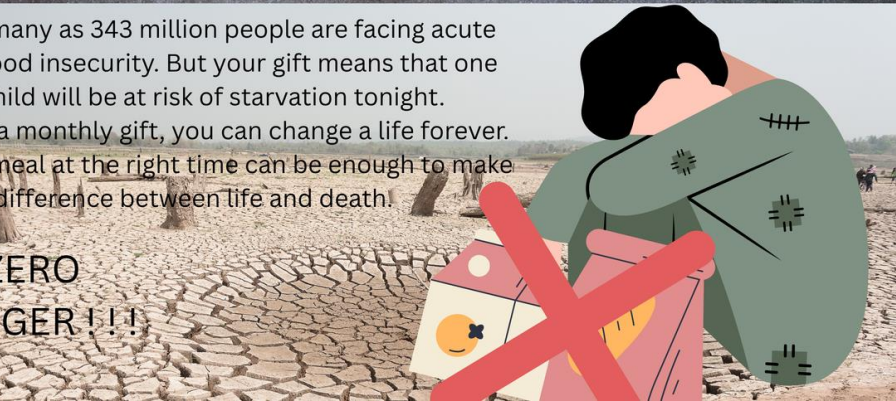




After 3 years...

- Understanding theories and development of Artificial Intelligence
- Developing students' computational thinking
(Bridging HKDSE syllabus)
- Nourishing creativity through digital art and generative tools
- Emphasizing information literacy and AI ethics

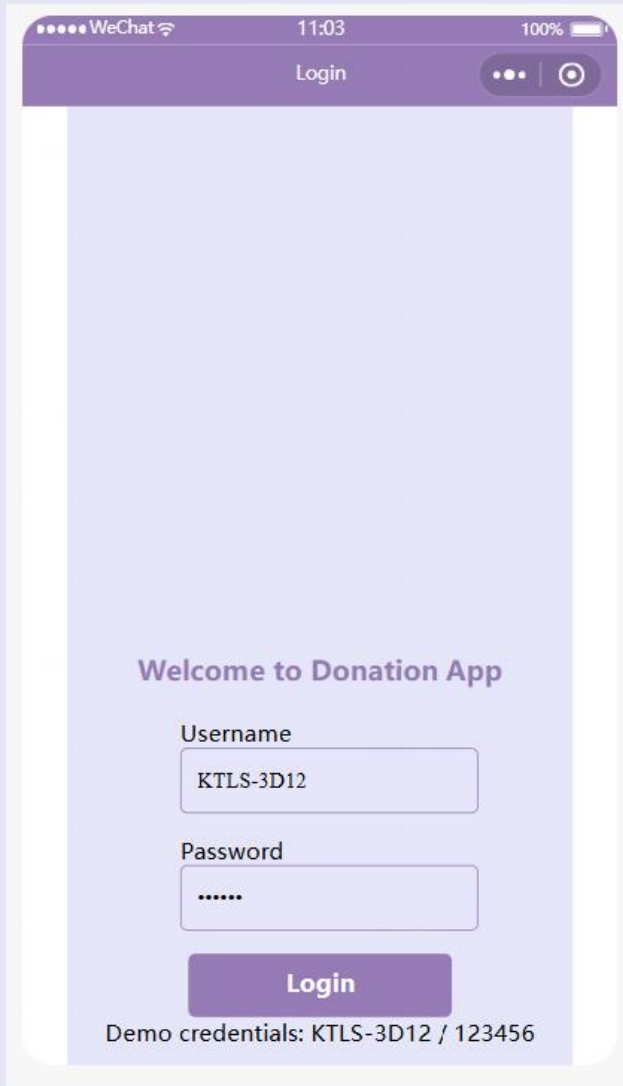
Level	Computer Literacy Curriculum
S1	Information Literacy
	Digital content creation with GAI
	Programming algorithm (Basic Concept with blockly)
	Maker Project
S2	Experience on Generative AI
	Mobile Apps development with vibe coding
	AI Ethical Issues
	AI and Computer Simulation
	Programming algorithm (Python)
	Information Literacy in AI
S3	Introduction of networking
	Cyber Security and Technologies Crimes
	Advanced programming algorithm (Python)
	Game design with IoT equipment







Outlook:



A screenshot of a mobile app's login screen. The status bar at the top shows 'WeChat', signal strength, time '11:03', and '100%' battery. The app header is purple with 'Login' text and a menu icon. The main content area is light purple and contains the text 'Welcome to Donation App'. Below this are two input fields: 'Username' with the value 'KTLS-3D12' and 'Password' with masked characters '.....'. A purple 'Login' button is at the bottom, with 'Demo credentials: KTLS-3D12 / 123456' written below it.

11:03 100%

Login

Welcome to Donation App

Username

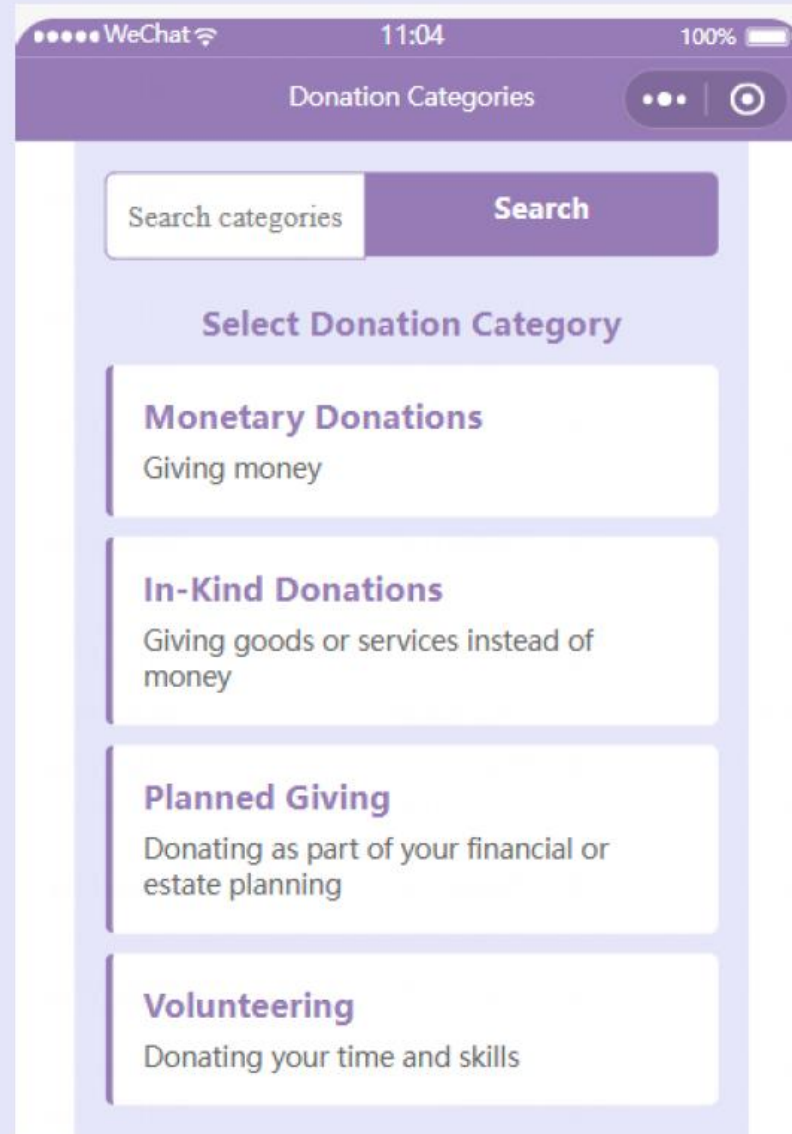
KTLS-3D12

Password

.....

Login

Demo credentials: KTLS-3D12 / 123456



A screenshot of the 'Donation Categories' screen in the app. The status bar shows 'WeChat', signal strength, time '11:04', and '100%' battery. The app header is purple with 'Donation Categories' text and a menu icon. Below the header is a search bar with 'Search categories' placeholder and a purple 'Search' button. The main content area is light purple and lists four categories: 'Monetary Donations' (Giving money), 'In-Kind Donations' (Giving goods or services instead of money), 'Planned Giving' (Donating as part of your financial or estate planning), and 'Volunteering' (Donating your time and skills).

11:04 100%

Donation Categories

Search categories Search

Select Donation Category

Monetary Donations
Giving money

In-Kind Donations
Giving goods or services instead of money

Planned Giving
Donating as part of your financial or estate planning

Volunteering
Donating your time and skills

Know More About Organizations

U.S. Fund for UNICEF

Helen Keller International

St. Jude Children's Research Hospital

World Wildlife Fund

World Vision International

Action Against Hunger

Greenpeace

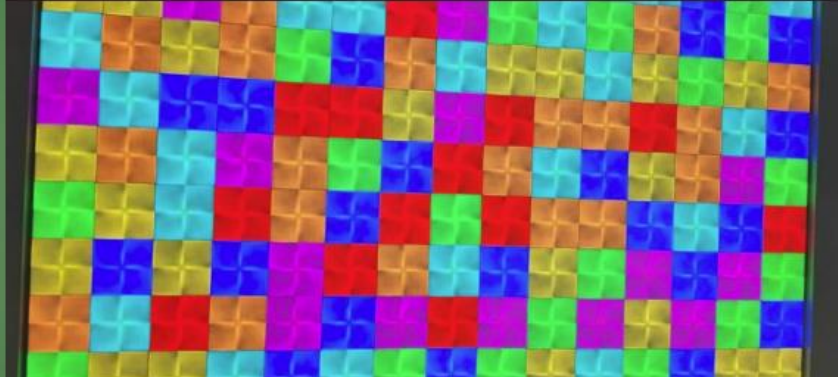
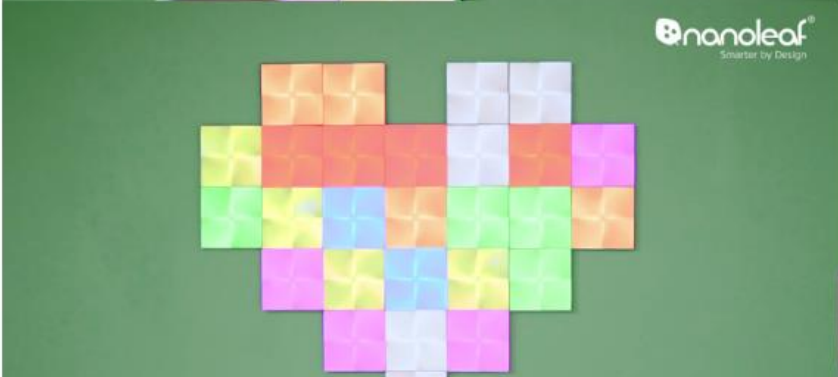
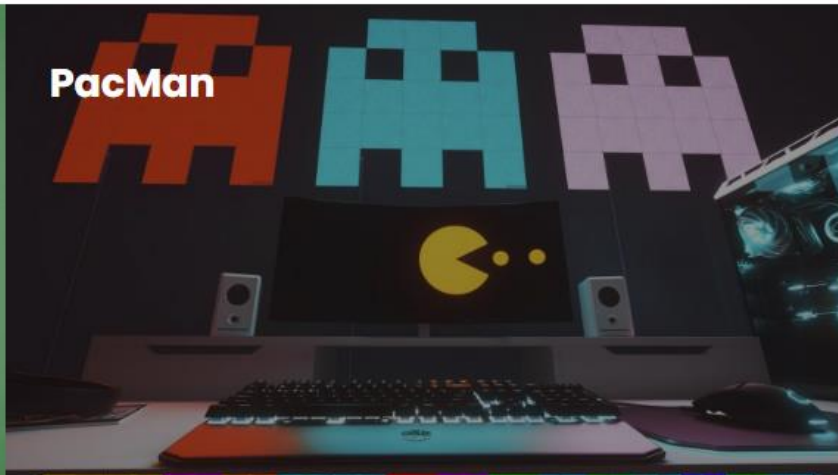
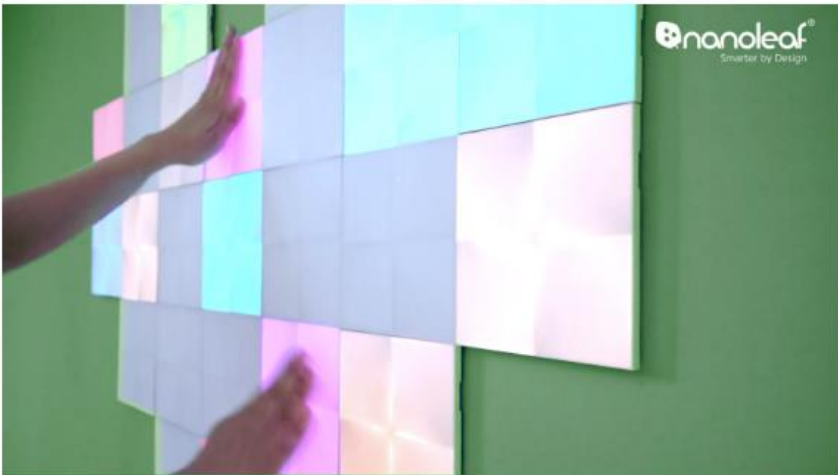
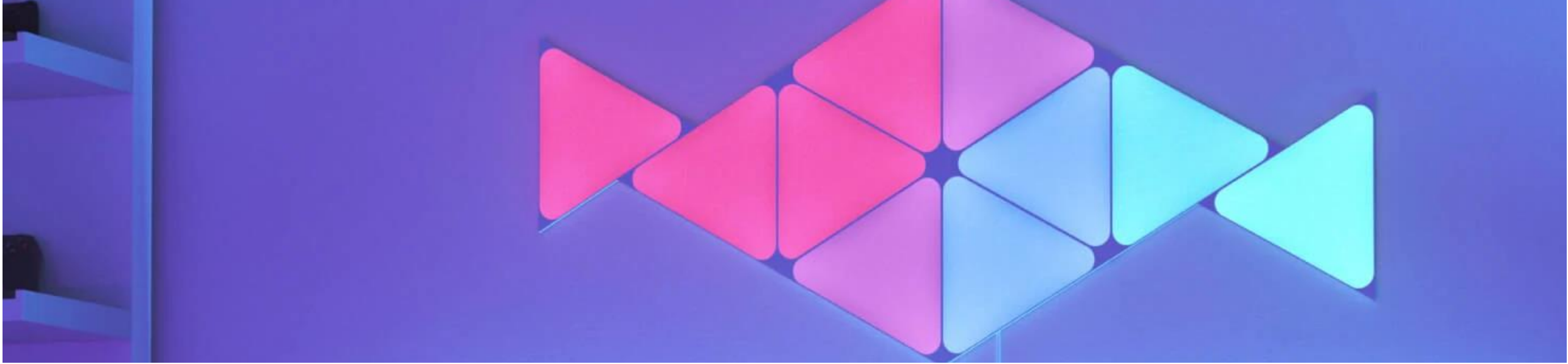
Need Help?

If you encounter any problems, please contact us:

Email: support@donationapp.com

Phone: +1 (800) 123-4567

⚠ If the app is slow or not responding, try reloading or logging in again.



School-based curriculum vs EDB resources



Digital Content Creation with Generative AI

- Students use Canva AI to design social media posts and different platforms to generate digital graphics
- Students experience generative tools to see how AI transforms prompts into images.
- Mapping:
Booklet 2, Unit 1 (Task 7) Try image generation tools
Booklet 3, Unit 4
AI and Future of Work



Task 7: Try image generation tools

Next, we will try some generative AI applications to generate images. When given a text prompt, such tools can generate images based on the text prompt. The images are generated rather than crawled from the Internet. Below are some examples of prompts and the generated images. You can try input the same prompts in Midjourney or Craiyon to view the results or try out different prompts.

Access Midjourney or
Craiyon
Midjourney:
<https://www.midjourney.com>



*Subscription is required
to use Midjourney.

Prompt: /imagine cartoon character rabbits having a picnic, concept art, chibi



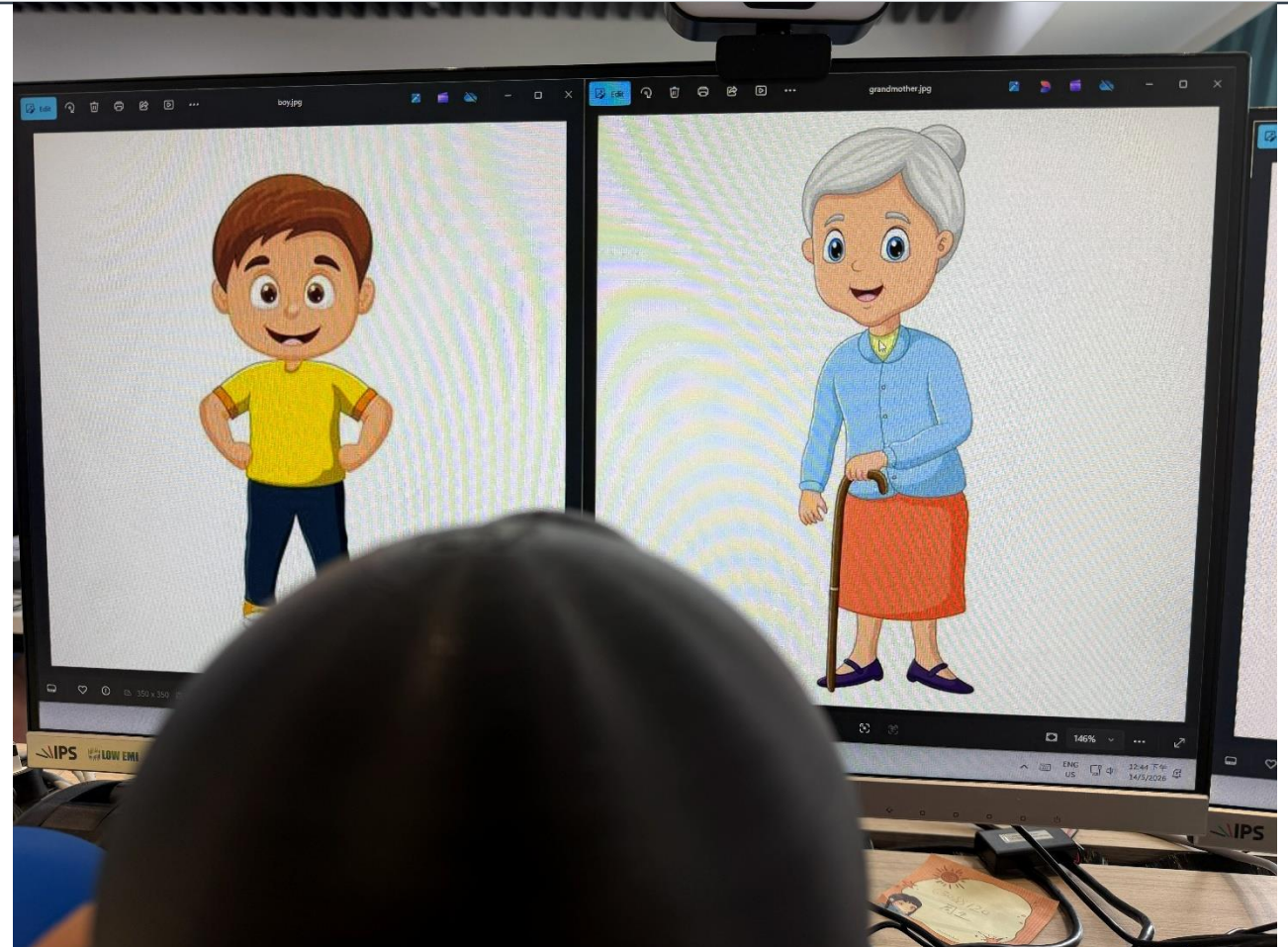
Prompt: /imagine Barbie, blonde hair, beautiful face, charming eyes, a multi-layered pink dress, French court stairs, twinkling and dazzling and sparkling





AI Ethical Issues – AI bias

- Students use **Teachable Machine??** to demonstrate how an image classifier can be intentionally biased.
- Showing misclassification through biased training data
- Mapping:
Booklet 1, Unit 2 (Task 3)
Booklet 2, Unit 2 (Task 3)



the ability to kill just 1 person? What should be the trade-off in the engineer's decision? Can there be sacrifices that are acceptable? If similar types of decisions need to be made by the self-driving car, what kind of moral choices should be programmed into the AI models? Please read the following materials and answer the questions below.

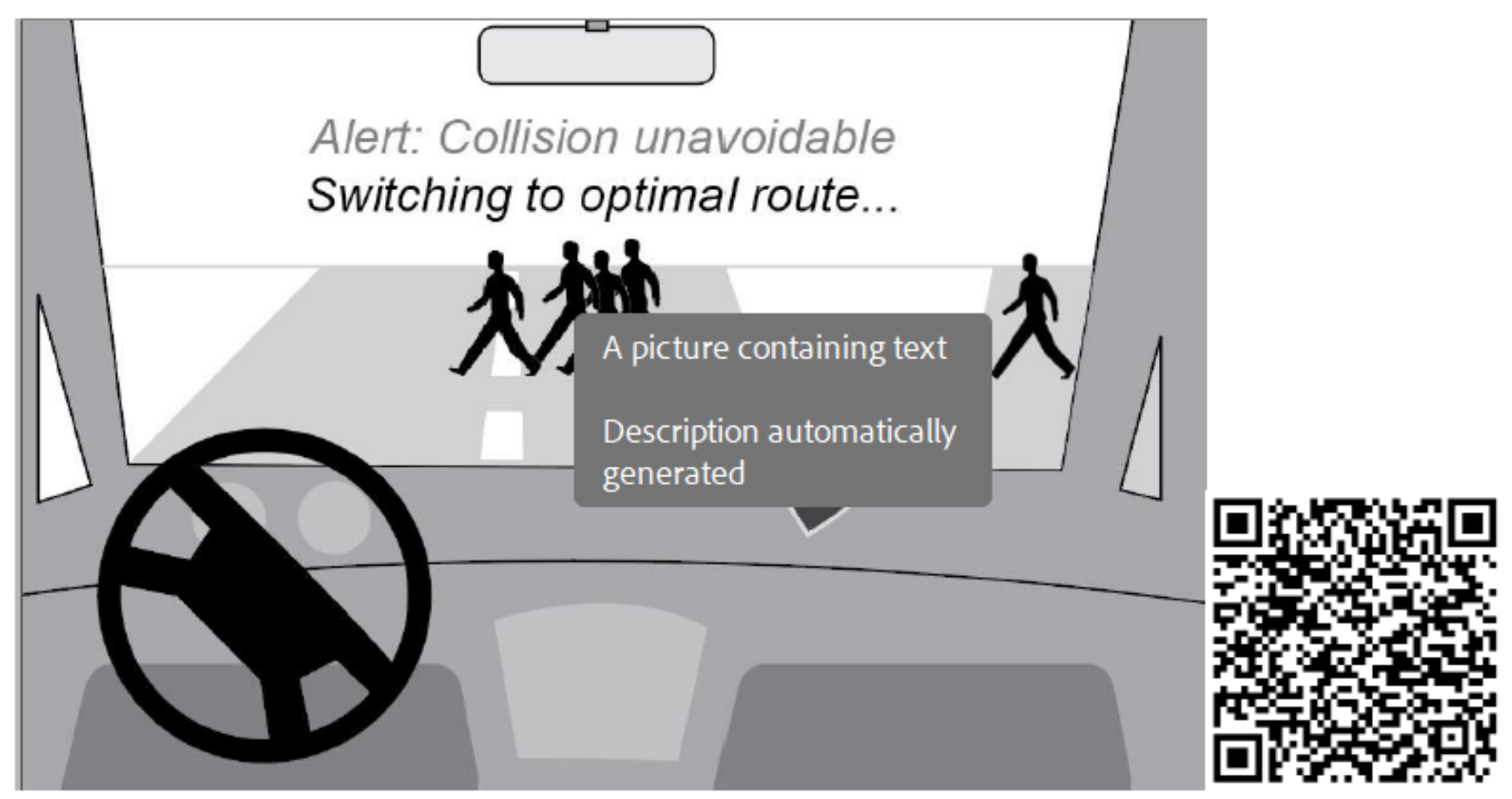
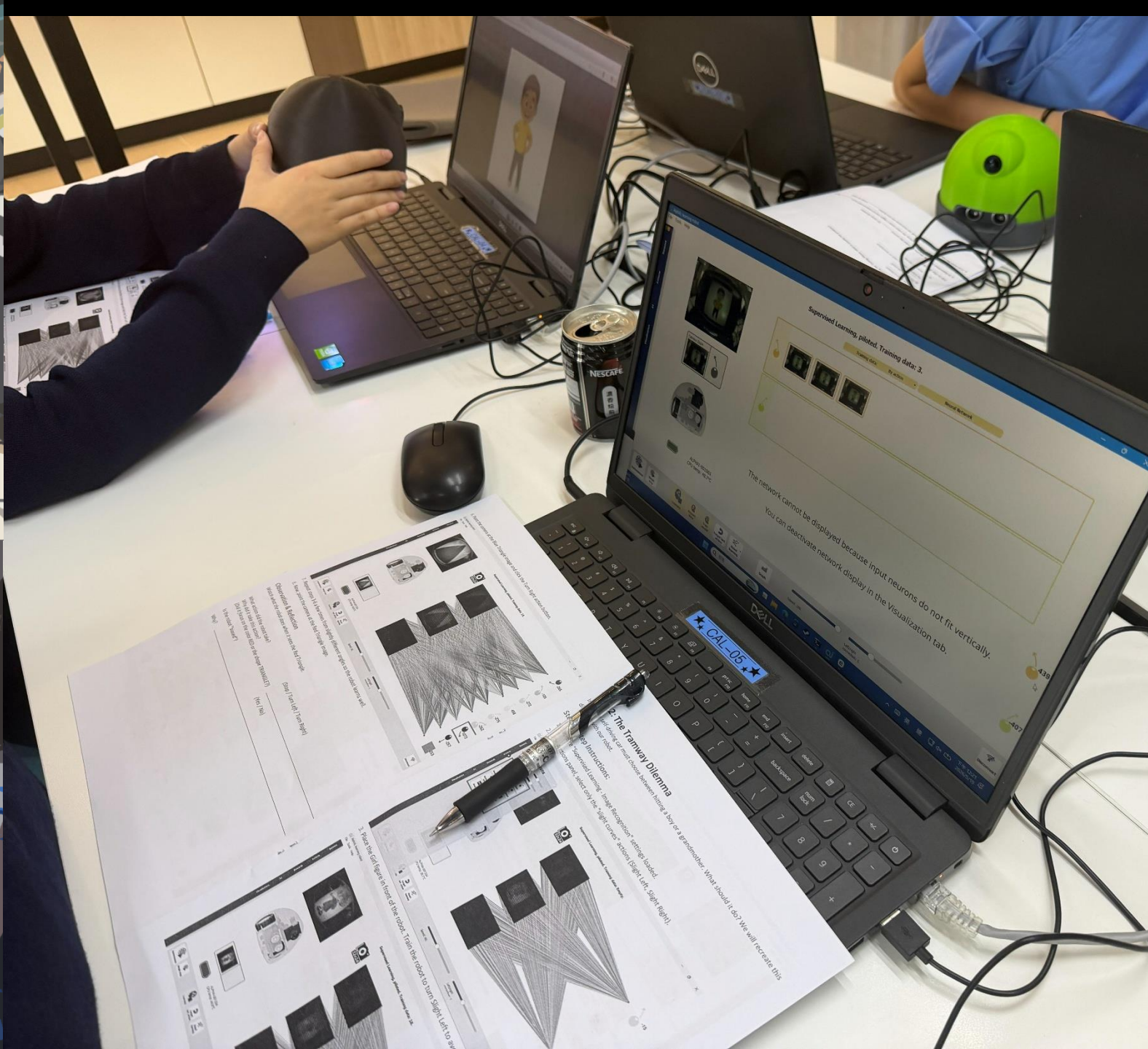
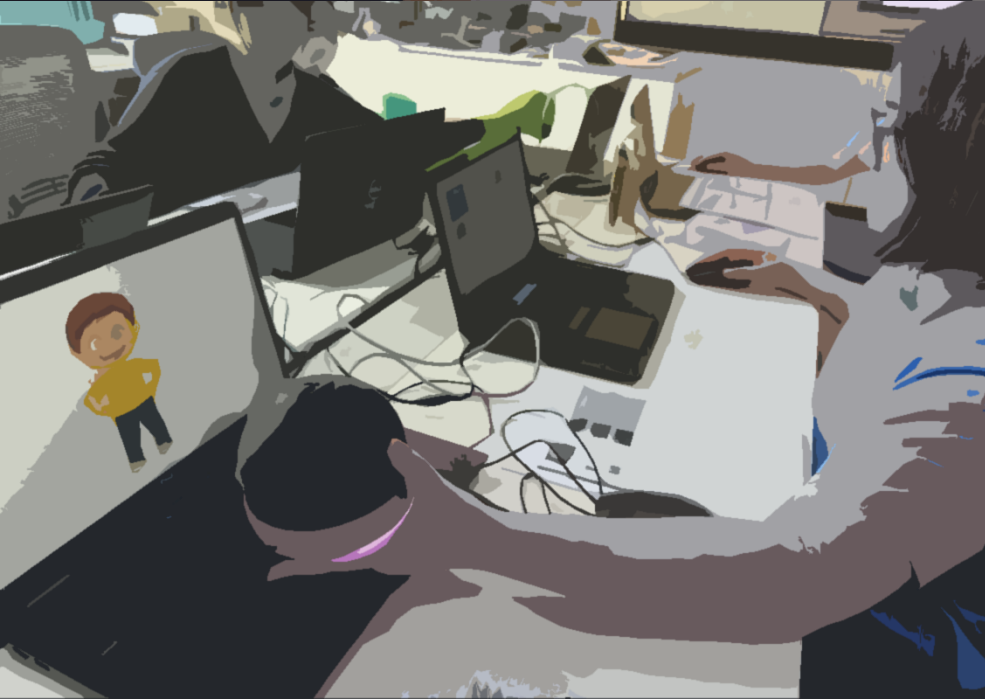


Figure 2.4: The ethical dilemma faced by a self-driving car (image source: harkeraquila.com, [link](#))



Training a Real Robot Brain to "See" and "Act"

- Students "teach" the robot to recognise obstacles using its camera
- Students understand IPO model
- Different mode of learning: supervised learning and reinforcement learning
- Mapping:
Booklet 1, Booklet 2, Booklet 3



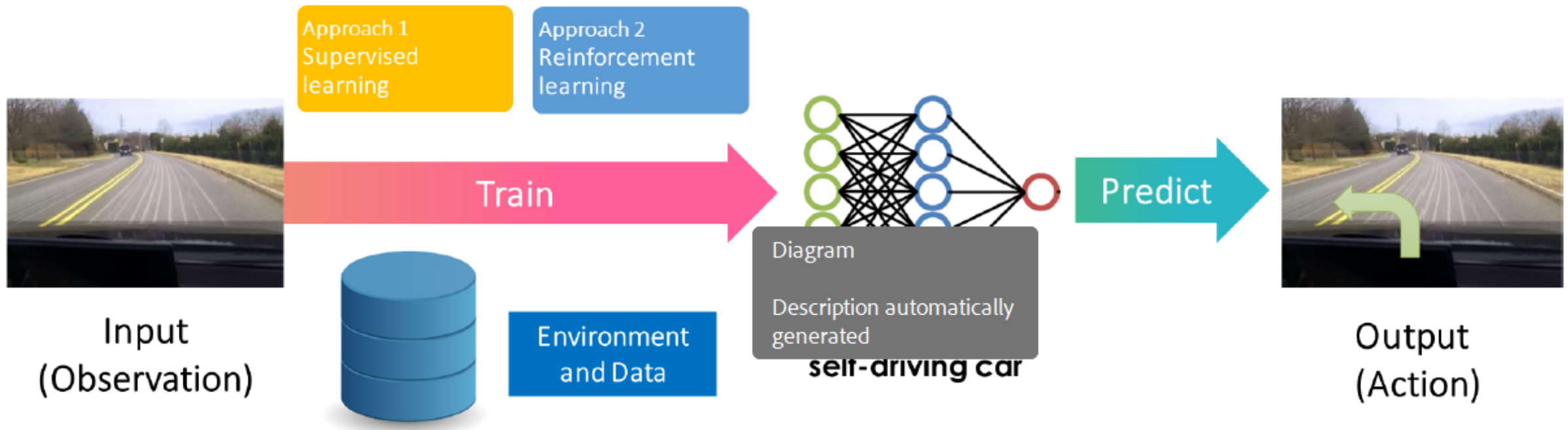


Figure 2.3: Training AI for self-driving

2.2.1 Supervised Learning (SL)

Supervised learning is to learn under supervision. It is similar to how students learn from teachers. Based on their past experiences, teachers can share input data and corresponding output data to support learning by students. The students will analyse the example pairs of input and output data provided by the teacher and learn to predict the output based on the input.



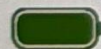
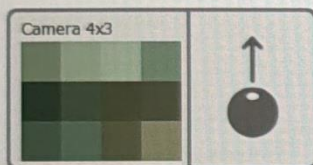
Steer left when
you see a

Supervised Learning, piloted. Training data: Empty.

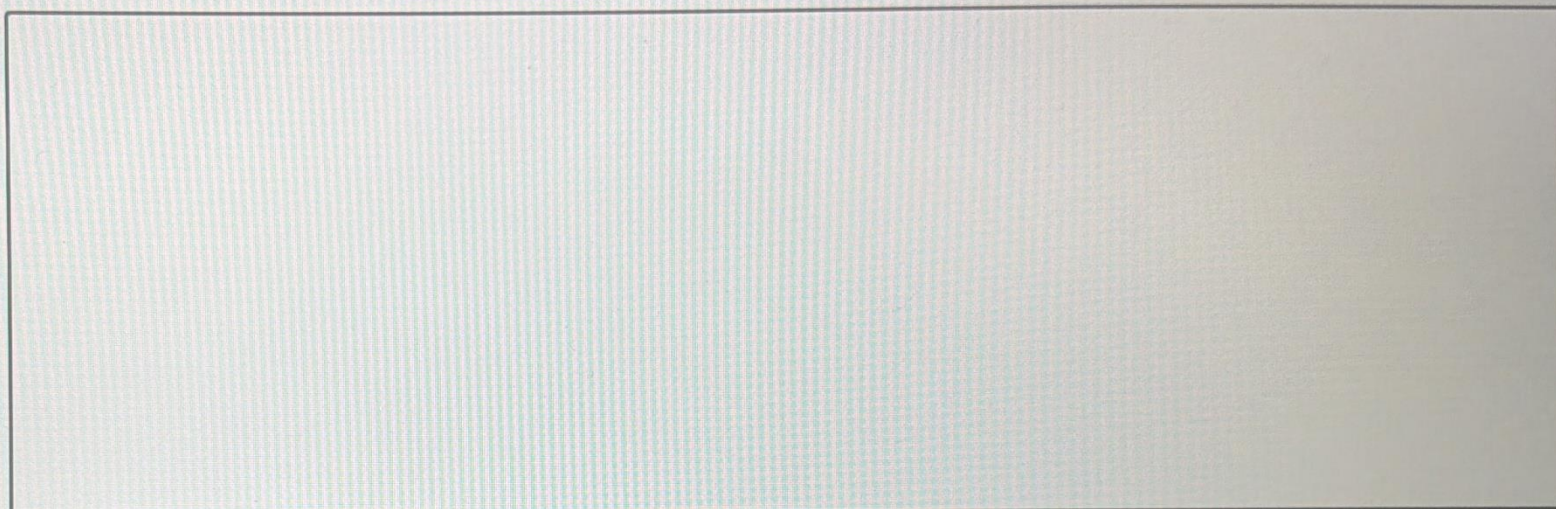
Training data: Chronologically

Neural Network

55	68	72	56
66	78	82	68
58	71	76	61
28	36	40	43
38	48	46	47
32	39	36	39
38	44	46	64
49	58	50	66
43	50	41	57



ALPHAII-001391
CPU temp: 43.5°C

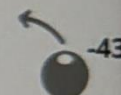


0.55	0.68	0.72	0.56
0.28	0.36	0.40	0.43
0.38	0.44	0.46	0.64

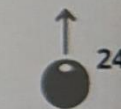
0.66	0.78	0.82	0.68
0.38	0.48	0.46	0.47
0.49	0.58	0.50	0.66

0.58	0.71	0.76	0.61
0.32	0.39	0.36	0.39
0.43	0.50	0.41	0.57

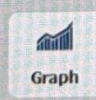
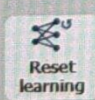
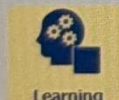
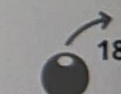
-0.43



0.24



0.18



Speed: 60.

Left/right
correction: 0.89



搜索



下午 05:38
2026/4/28

Building Mobile Apps by Vibe Coding

- Students use vibe coding to develop apps addressing real-world challenges.
- Example scenarios include AI-based fitness instructors and fire detection systems.
- Mapping:
Booklet 2, Booklet 3
Group Project Design



导出代码

100%

Hello World

➤ project.config.json

```
1 {
2   "pages": [
3     "pages/index/index"
4   ],
5   "window": {
6     "navigationBarTitleText": "Hello World",
7     "navigationBarTextStyle": "white"
8   },
9   "renderer": "webview"
10 }
11
```

Information

Personal Details

Calendar

Doctor Appointments

CAL-13

Target Groups



People who wants to donate

The app has clear information about each charity and each donation



People who wants to do services

The app has a variety of different services application



Elderly

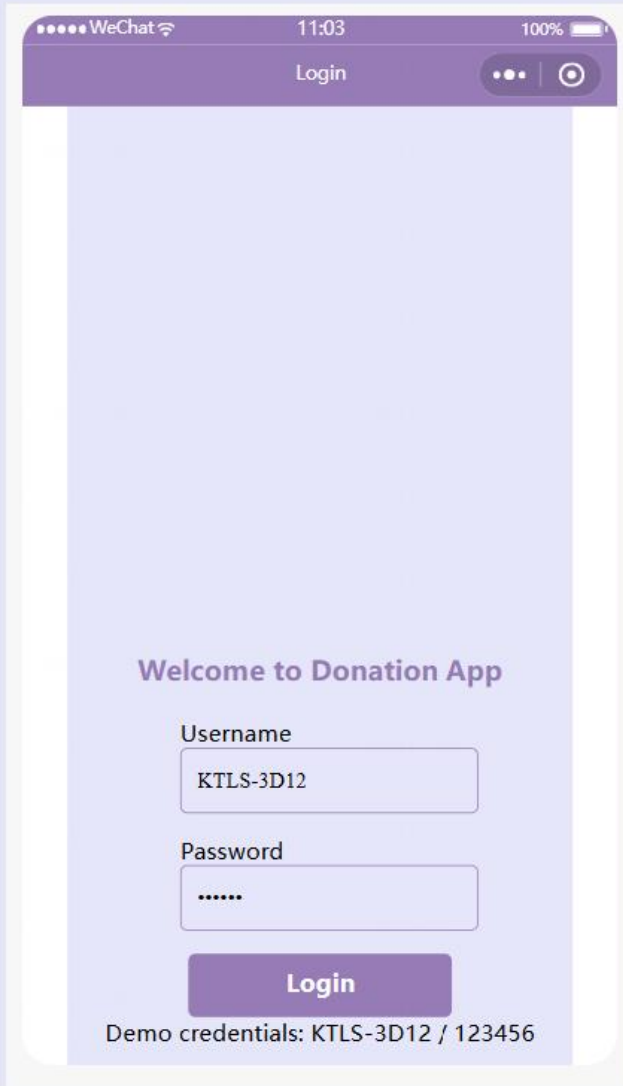
The app is easy to use, convenient for elderly who wants to donate through online to use



Teenagers

There are applications for under 18 years old to choose

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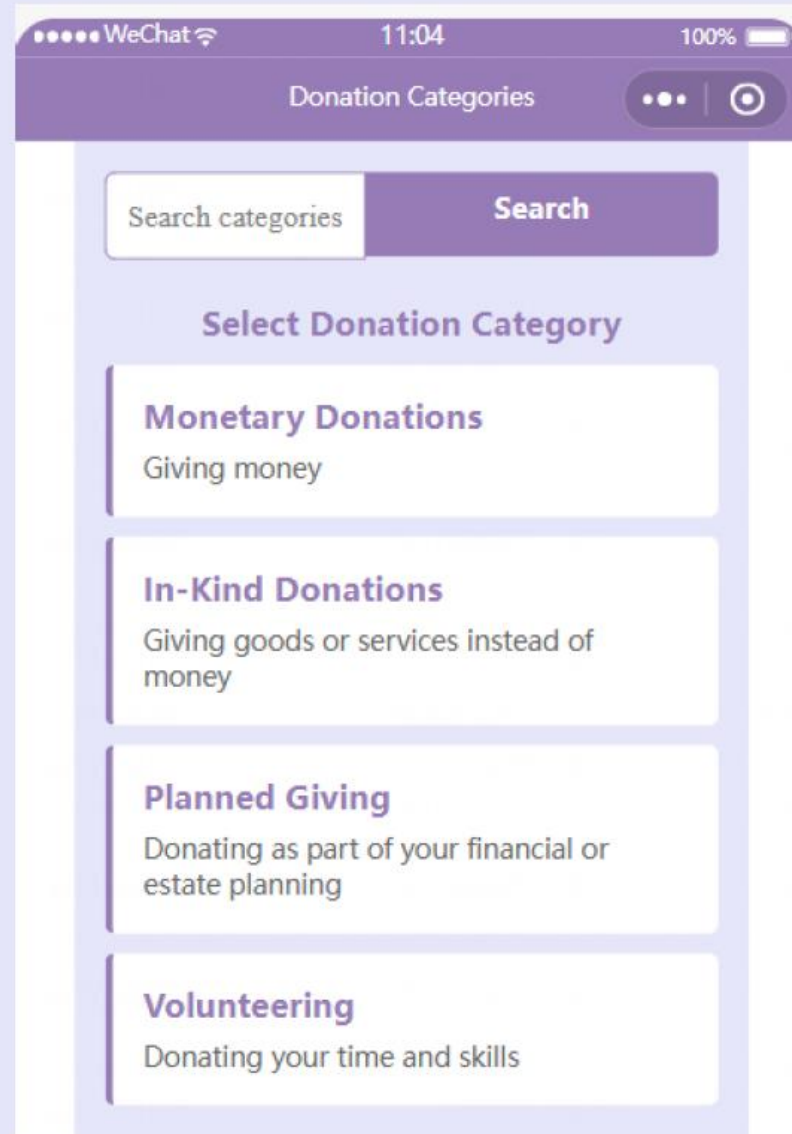
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11:04 100%

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In-Kind Donations
Giving goods or services instead of money

Planned Giving
Donating as part of your financial or estate planning

Volunteering
Donating your time and skills

Know More About Organizations

U.S. Fund for UNICEF

Helen Keller International

St. Jude Children's Research Hospital

World Wildlife Fund

World Vision International

Action Against Hunger

Greenpeace

Need Help?

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AI Literacy – Latest Digital Risks

- Enhancing the awareness of fake news, fraudulent activities, and privacy risks.
- How AI empowering the above risks
- Mapping:
Booklet 2, Unit 7
Booklet 3, Unit 5
Social Impact of AI



AI FOR
EDUCATIONAL
EMPOWERMENT

FUTURE READINESS

From understanding AI to building with AI –
students are ready for their future

PERSONALIZED LEARNING
CRITICAL THINKING
PROBLEM SOLVING
DATA LITERACY
CREATIVITY



AI FOR
EDUCATIONAL
EMPOWERMENT

FUTURE READINESS

Thank you

PERSONALIZED LEARNING

CRITICAL
THINKING

PROBLEM
SOLVING

DATA
LITERACY

CREATI-
LIVITY



HONG KONG
AI LAB SCHOOL