

資訊科技教育教學法系列：  
概述運用人工智能於教育（小學）

EI0020200293

第一節

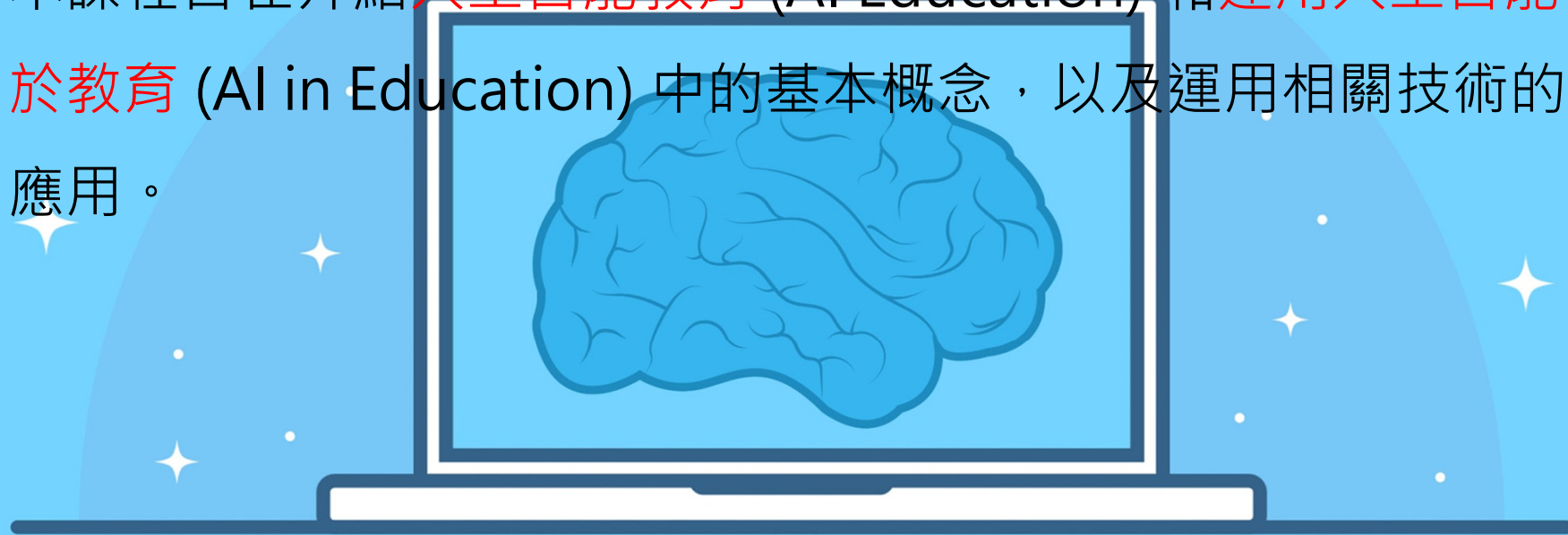


**e-Learning Development Laboratory**

Department of Electrical and Electronic Engineering  
The University of Hong Kong

## 工作坊目標

本課程旨在介紹**人工智能教育 (AI Education)** 和**運用人工智能於教育 (AI in Education)** 中的基本概念，以及運用相關技術的應用。



## 請加入課程群組

- HKU\_概述運用人工智能於教育\_SS\_R3AA
- <https://chat.whatsapp.com/DC2ESRCr23BDfJwDUbFHc6>



## 工作坊詳情

1. 概述 **人工智能教育 (AI Education)** 和 **運用人工智能於教育 (AI in Education)** 中的基本概念；
2. 工作坊：了解 AI in Education 如何提升當前和未來的學與教效能；
3. 介紹使用一些 AI in Education 有關的資訊科技工具和硬件套件的功能；
4. 討論 AI in Education 的未來發展方向。

## 導師簡介

Course Designer:

Mr. Wallace MAN

Course Instructors:

Mr. Edwin CHING



# 課堂詳情

課程共分為兩節，每節三小時，有關課程內容簡述如下：

## 第一節 (三小時)：

- 1) 概述**人工智能教育** (AI Education AIEd) 和**運用人工智能於教育** (AI in Education) 中的基本概念
- 2) 工作坊：**人工智能教育** (AI Education AIEd)
  - Part 1: Google Experiment
  - Part 2: mBlock5
- 3) 習作討論  
如何應用人工智能於教育中



1) 概述人工智能教育 (AI Education) 和運用人工智能於教育 (AI in Education) 中的基本概念

# AI & IOT

## A POWERFUL COMBINATION

HOW TWO BROAD TECHNOLOGIES ARE INFLUENCING LIFE IN THE LAB





## Alpha Go!? (HK01新聞)



世界第一棋手  
柯潔

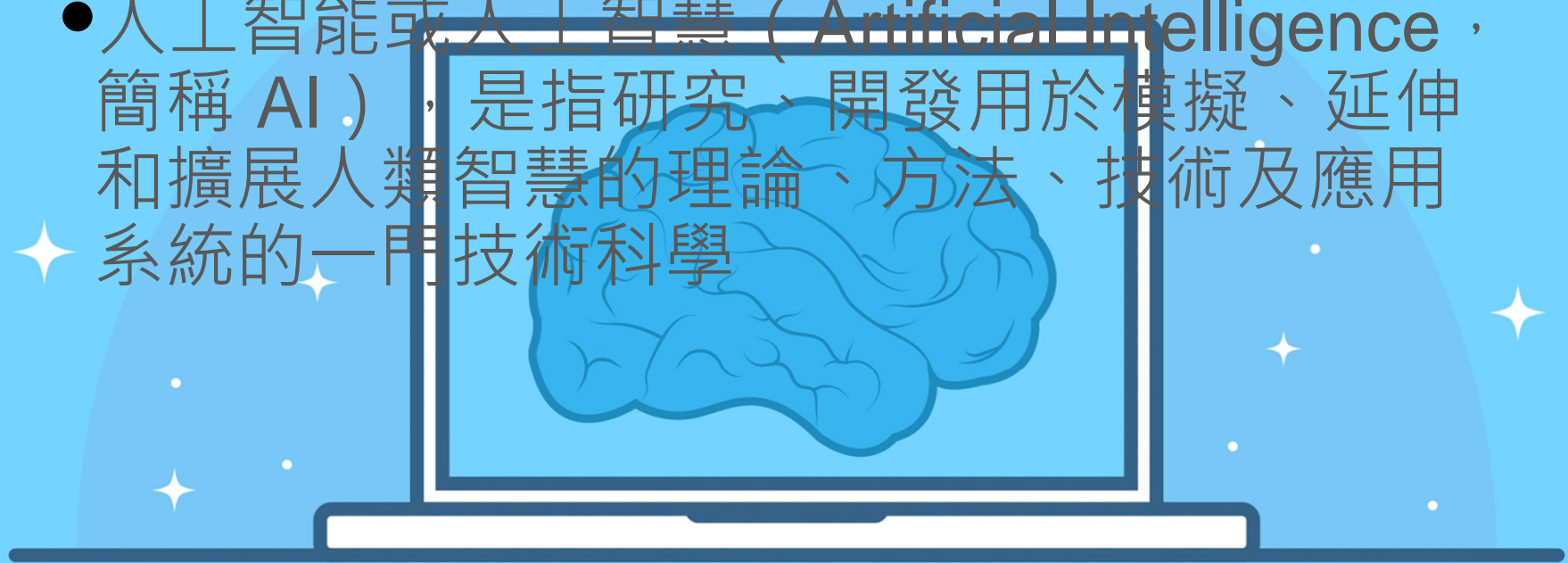
解構原理

點解 AlphaGo  
咁勁嘅?

宅

## 人工智能 ( AI )

- 人工智能或人工智慧 ( Artificial Intelligence , 簡稱 AI ) , 是指研究、開發用於模擬、延伸和擴展人類智慧的理論、方法、技術及應用系統的一門技術科學

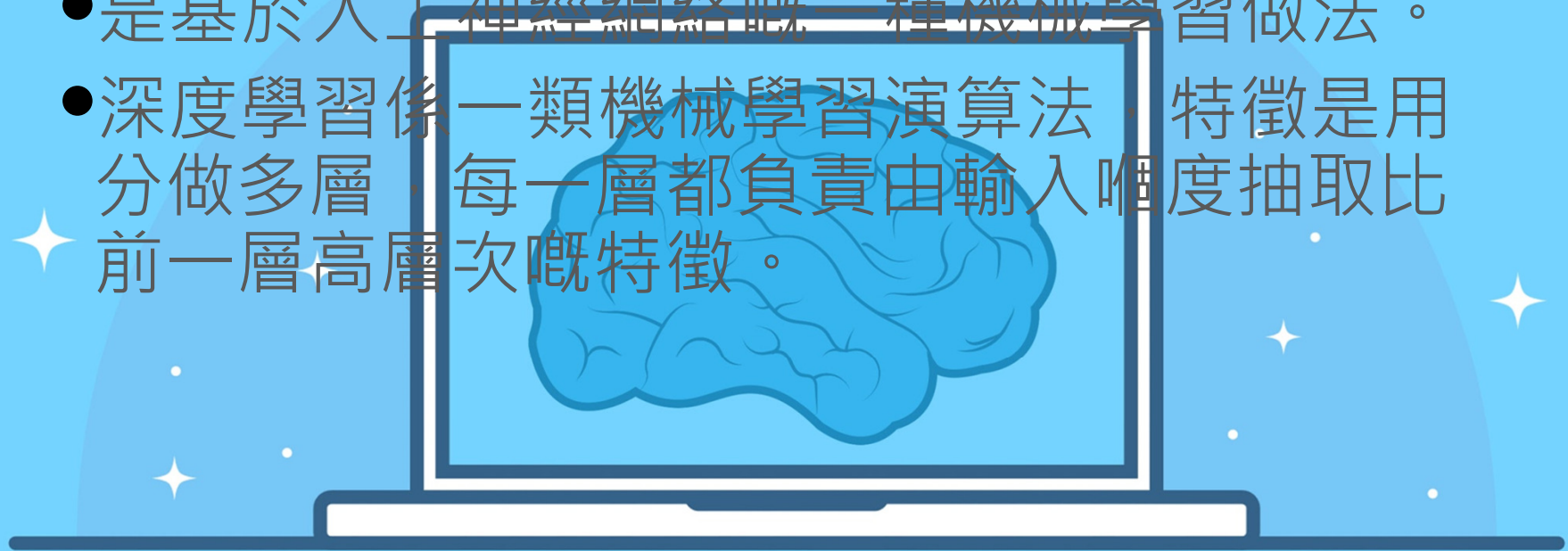


# 機器學習 ( ML )

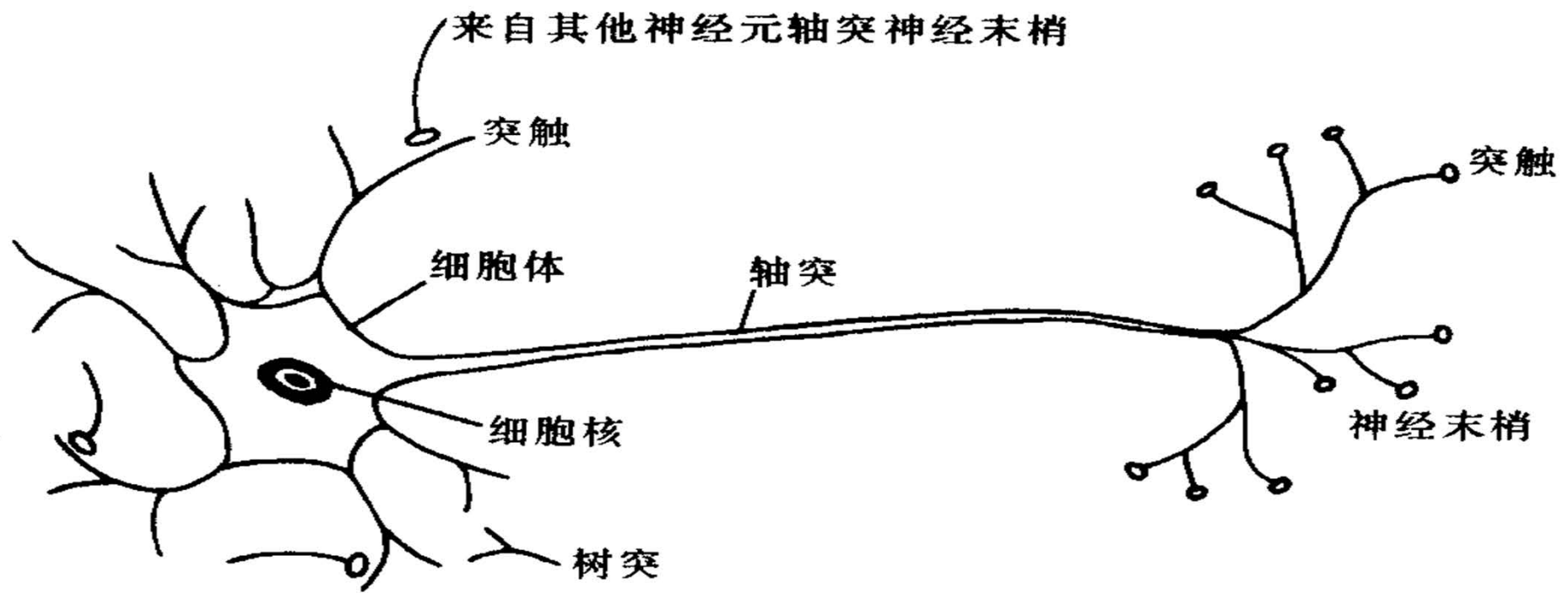
- 用於模式辨識和學習。機器學習的核心是演算法的集合，可根據記錄的資料學習和進行預測、優化不確定情況下的特定公用程式函數、從資料擷取隱藏的結構，以及將資料分類成精確的描述。如果明確的程式設計太過於死板或不實際，通常會使用機器學習。

## 深度學習 ( Deep Learning )

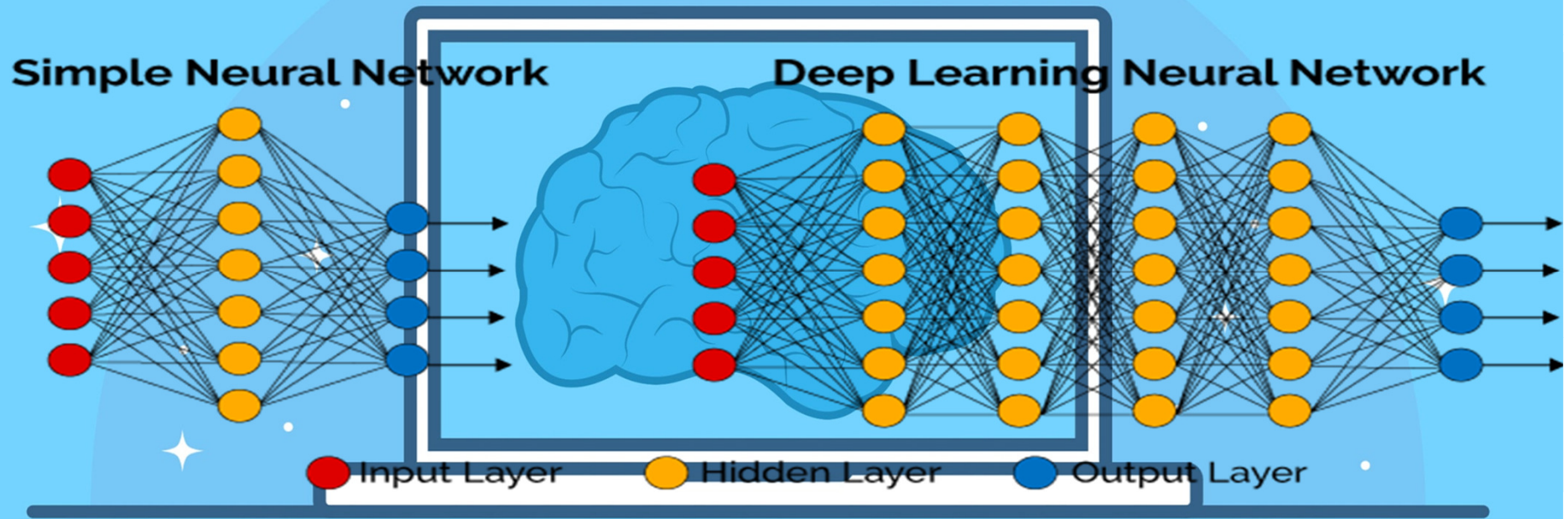
- 是基於人工神經網絡嘅一種機械學習做法。
- 深度學習係一類機械學習演算法，特徵是用分做多層，每一層都負責由輸入嗰度抽取比前一層高層次嘅特徵。



# 神經元 (Neuron)

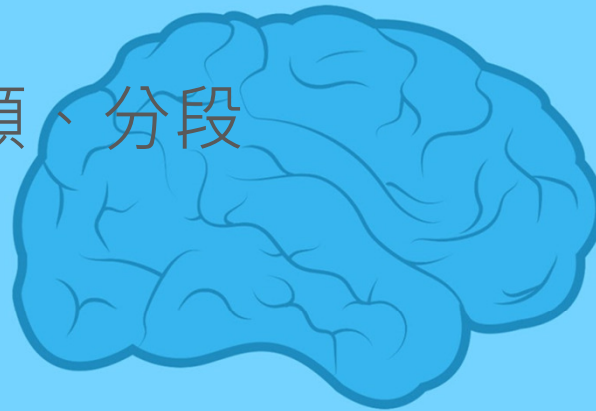


# 神經網絡 ( NN )

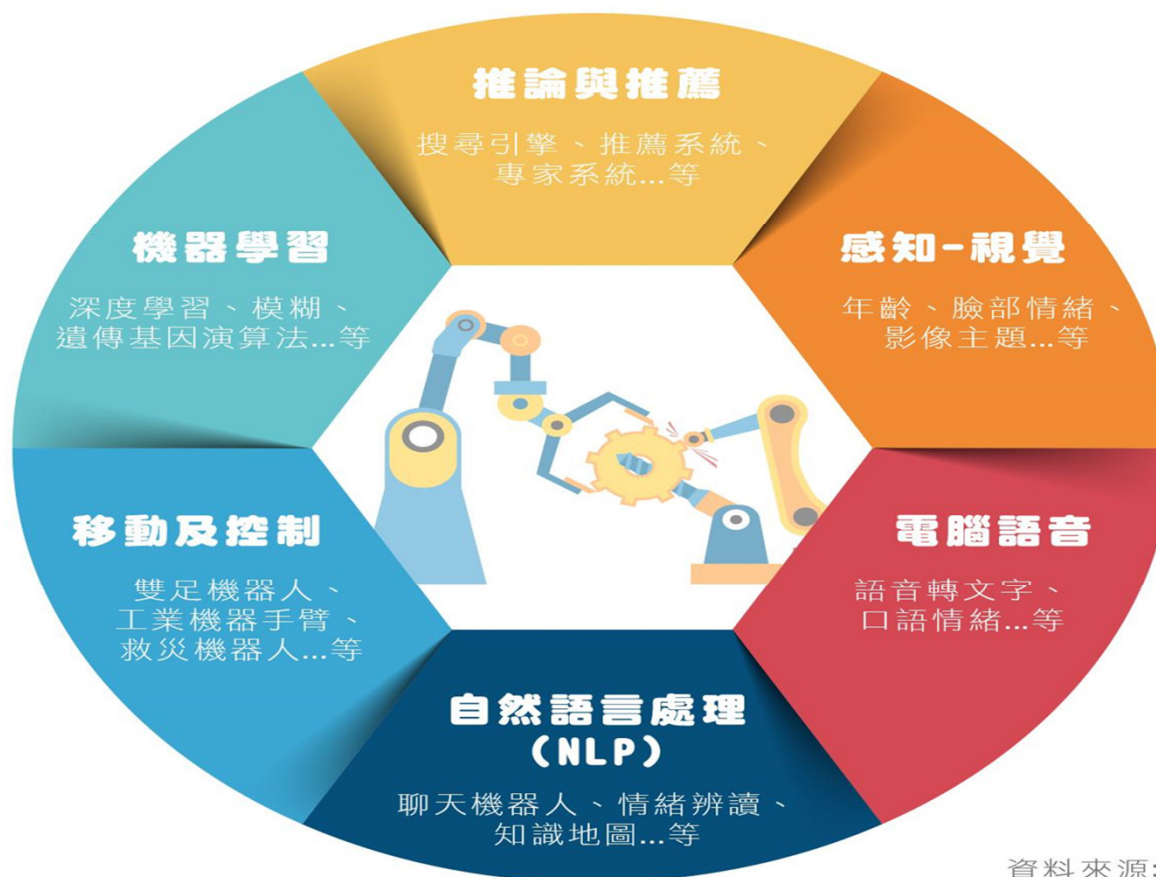


## 使用人工智能的應用例子

- 圖像辨識
- 語音辨識
- 影像和影片分類、分段
- 自然語言理解
- 推薦引擎
- ...



# 人工智慧主要技術分類



資料來源:資策會MIC, 2017年6月



# 商業應用的案例

- **異常偵測**

- 識別與預期模式或資料集其他項目不一致的項目、事件或觀察。

- **詐騙偵測**

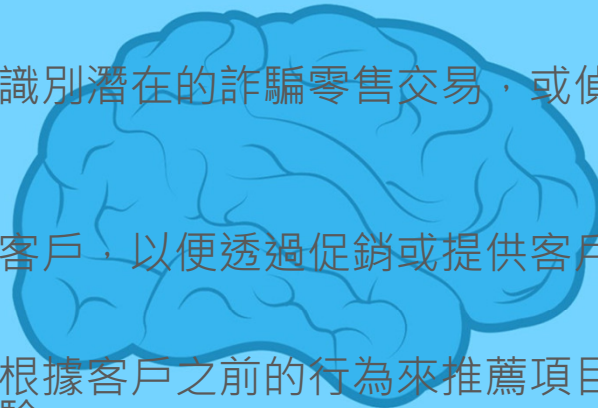
- 建立預測模型，協助識別潛在的詐騙零售交易，或偵測詐騙或不適當的項目評論。

- **客戶流失率**

- 找出流失風險最高的客戶，以便透過促銷或提供客戶服務積極與客戶接觸。

- **內容個人化**

- 使用預測分析模型，根據客戶之前的行為來推薦項目或優化網站流量，以提供更加個人化的客戶體驗。



# 聊天機器人 (Chatbot)



## 什麼是聊天機器人 Chatbot?

它是能自動幫你導入客流量好幫手!

**gogo PARTNERS**  
夥伴行銷設計有限公司

## AI 人工智慧發展四大條件

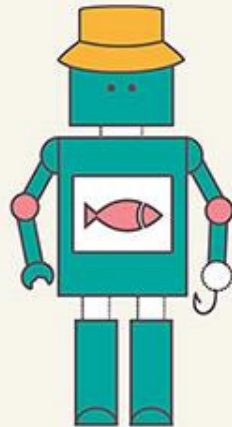


資料來源：投資家日報

Risk of being replaced:



Taxi Drivers



Fishermen



Bakers

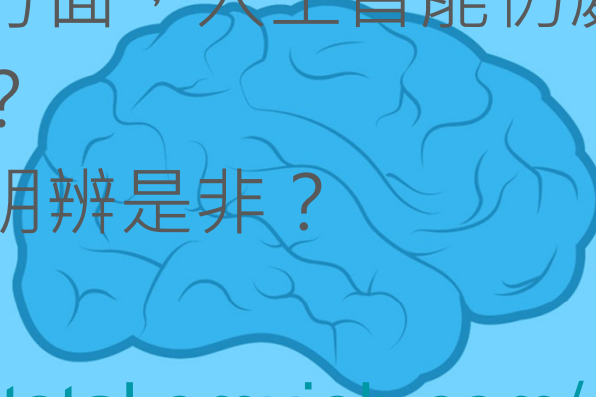


Fast Food Cooks

## 人工智能應用的限制

- 理解人類的語言的真正意義
- 在藝術和創作方面，人工智能仍處於起步階段
- AI駭客的攻擊？
- 人工智能是否明辨是非？

- <https://willrobotstakemyjob.com/>



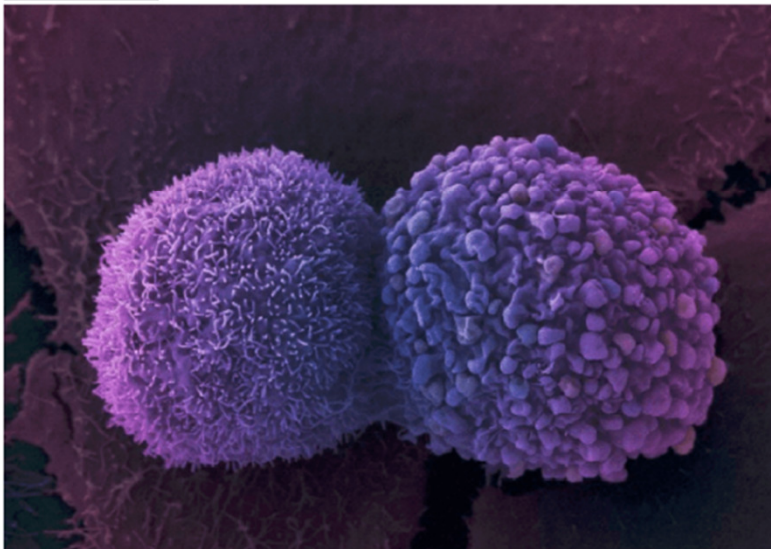
Robots can learn how to cook by watching YouTube videos, thanks to DARPA





# This Biotech Startup Hopes to Cure Cancer with Artificial Intelligence

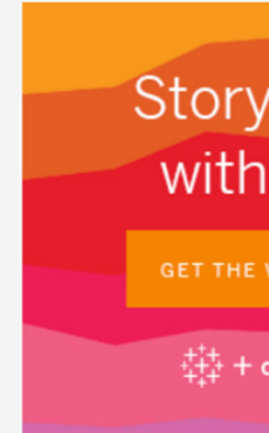
by Shannon Dauphin Lee 11/10/2015 0 Comments



**AIA**  
**「癌症全方位保障2」**  
**每日只需 HK\$5\***  
**高達3.5個月保費回贈**  
**瞭解更多**

健康長久好生活

\*以一名25歲的不吸煙的男士為例，「癌症全方位保障2」特設計劃，於申請時繳付保費，每個月保費只需繳付港幣5元。此外，保費回贈最高可達3.5個月保費。個人保費會視乎投保人的年齡而定。保費回贈優惠僅適用於保單生效日期起計，詳情請向保險代理人查詢。



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Latest insightful articles to your inbox

# Maths Whizz – Virtual tutor

- Makes students advance in mathematical knowledge by 18 months

- <https://www.whizz.com/>



Parents



Students



## 人工智能應用的優點及缺點

### 優點

- 機器可長時間工作
- 處理一些低技術而重複勞動的工作

### 缺點

- 大規模失業危機
- 加劇貧富懸殊
- 機械失控危機
- 隱私權的保護
- 透明度和安全性

# Finland

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



## Chapter 1 What is AI?

Section	Exercises
I. How should we define AI?	1/1
II. Related fields	0/2
III. Philosophy of AI	0/1



## Chapter 2 AI problem solving

Section	Exercises
I. Search and problem solving	0/2
II. Solving problems with AI	---
III. Search and games	0/1



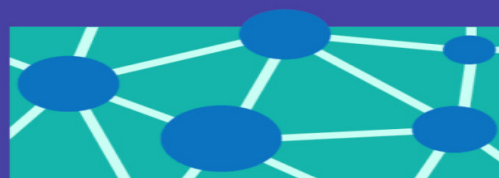
## Chapter 3 Real world AI

Section	Exercises
I. Odds and probability	0/2
II. The Bayes rule	0/2
III. Naive Bayes classification	0/2



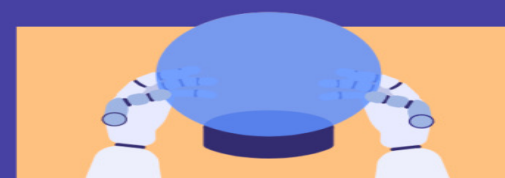
## Chapter 4 Machine learning

Section	Exercises
I. The types of machine learning	---
II. The nearest neighbor classifier	0/2
III. Regression	0/4



## Chapter 5 Neural networks

Section	Exercises
I. Neural network basics	0/1
II. How neural networks are built	0/2
III. Advanced neural network techniques	---



## Chapter 6 Implications

Section	Exercises
I. About predicting the future	0/1
II. The societal implications of AI	0/1
III. Summary	0/1

# 台灣：人工智慧互動平台 鴻海人工智慧導論

<https://ai.foxconn.com>



首頁

圖像辨識

自然語言處理

創作 AI

語音辨識

知識發現

聯絡我們

人工智慧 互動平台  
鴻海人工智慧導論



1st AI-powered adaptive education provider in China

<http://squirrelai.com>

HOME ABOUT IALS



PRESS CONNECT GALLERY

# 1st AI-powered adaptive education provider in China

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# 全球教育智能化发展报告 <https://www2.deloitte.com/content/dam/Deloitte/cn/Documents/technology-media-telecommunications/deloitte-cn-tmt-global-development-of-ai-based-education-zh-191108.pdf>

Deloitte.

德勤



全球教育智能化发展报告

图1-4：国内外人工智能教育应用比较

	国内	国外
发展背景	国内课外付费辅导行业发达,市场前景良好	学生背景复杂,多元化去向明显
技术对比	智适应学习技术在国内积累的数据量稍有落后,处在初步发展阶段	智适应学习技术在美国和欧洲使用时间超过十年,各年龄段都有大量用户使用,累计用户超过1亿
内容运用	智适应教学企业倾向于自己开发教材内容,国内应试教育教材版本众多,需要针对不同的版本开发不同的考点内容,知识点较为新细致且主要针对应试教育	教学内容主要为学校和出版社提供,知识产权明晰,内容体系相对完整
应用场景	K12辅导、英语辅导	K12+、高等教育、职业教育
代表公司	叉学教育—松鼠AI、新东方、好未来、作业帮、流利说等	ALEKS, Realizeit, Knewton, Dreambox Learning, Duolingo, Renaissance Learning; Cognitive Learning


数据来源：德勤研究

图1-6：人工智能教育关键技术示意图




数据来源：德勤研究

Microsoft | AI Products & Services | Approach | AI for Good | Learn | Blog | All Microsoft

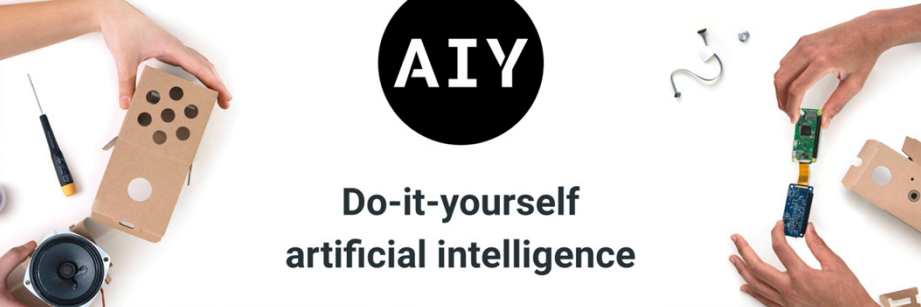


# AI Robot Challenge

AIY VISION KIT VOICE KIT EDGE TPU MODELS HELP



## Do-it-yourself artificial intelligence




Primary AI Education | Meanings of AI Education | AI Education

### AI Textbooks for everyday learning

#### Introduction to Artificial Intelligence

'Introduction to Artificial Intelligence' converts complex AI knowledge into simple images and texts that are easy for students to understand. The course is presented through a combination of various tasks where students learn AI knowledge by solving the problems. It enables middle school students to learn the knowledge and applications of AI technologies just like any other basic skill.



EMPOWER THE WORLD WITH A.I. | 科大讯飞 IFLYTEK | 股票代码: 002230

首页 | 行业方案 | 个人产品 | 讯飞超脑 | 讯飞商城 | 讯飞伙伴 | 讯飞开发者 | 讯飞社区

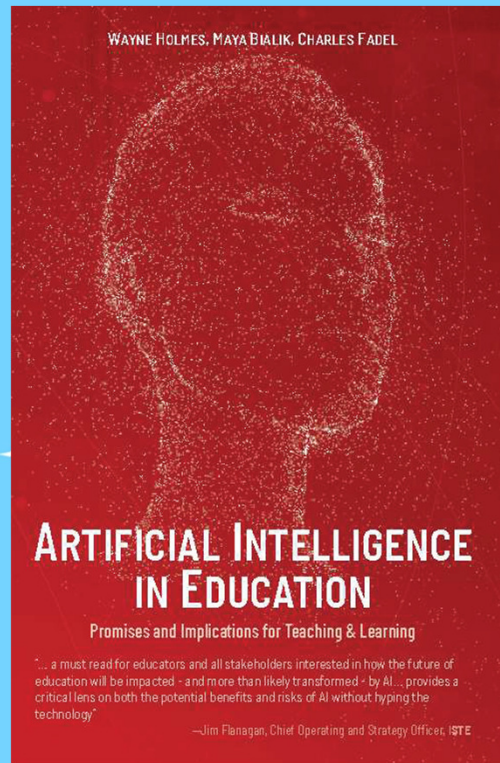
# 和A.I.一起快乐成长

6.1-6.18

左右左右#尽享好物







*Wayne Holmes, Maya Bialik, Charles Fadel March 2019*

Artificial Intelligence In Education Promises and Implications for Teaching and Learning

Center for Curriculum Redesign

<https://curriculumredesign.org/our-work/artificial-intelligence-in-education/#1445977470587-f8dc16b8-5787>

## *10 Roles For Artificial Intelligence In Education*

1. Artificial intelligence can **automate basic activities** in education, like grading.
2. **Educational software** can be adapted to student needs.
3. It can point out **places** where courses need to improve.
4. Students could get additional support from **AI tutors**.
5. **AI-driven programs** can give students and educators helpful feedback.
6. It is altering how **we find and interact with information**.
7. It could change the **role of teachers**.
8. AI can make trial-and-error learning **less intimidating**.
9. **Data powered** by AI can change how schools find, teach, and support students.
10. AI may change where **students learn, who teaches** them, and how they **acquire basic skills**.

# The Age of AI

1. 我不對機器編程，我讓他們自己學習
2. 實現人與機器的合作，先讓 AI 盡可能逼真
3. 對 AI 最大的誤解，是以為有超級智能的存在
4. AI需要真正了解人類，讓其具有同理心
5. 數位分身 — 靈魂機器人 Soul Machines
6. 從某種程度來說，我們都是機器人
7. 人們總害怕被AI取代，但AI反而能提升人類
8. 我們是否該/又如何讓數位角色具有『自由意志』？

<https://youtu.be/mQl-l3qbCZ0>

# AI in Education



人臉辨識進入台灣校園  
學生隱私誰來把關？

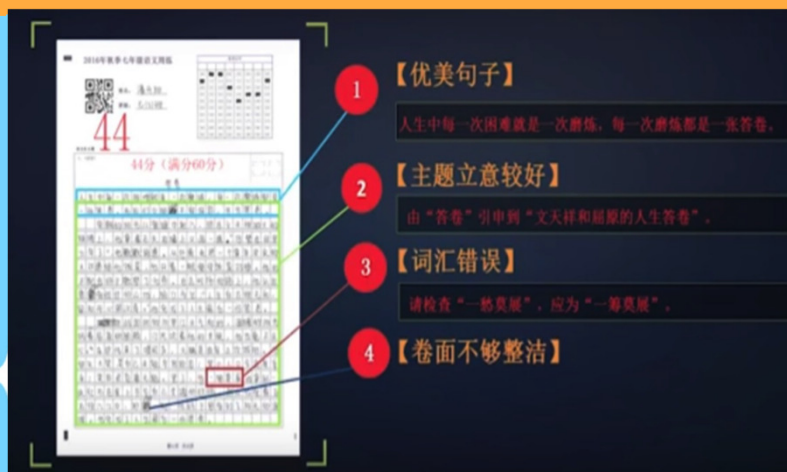
<https://futurecity.cw.com.tw/article/1082>

校園「靠臉點名」正風行 安全  
vs 監控兩面刃

<https://tw.appledaily.com/news/realtime/20191001/163970>



# AI in Education



2018年数学中考模拟试卷

44 (满分60分)

- 1 【优美句子】  
人生中每一次困难就是一次磨炼，每一次磨炼都是一张答卷。
- 2 【主题立意较好】  
由“答卷”引申到“文天祥和屈原的人生答卷”。
- 3 【词汇错误】  
请检查“一碧莫展”，应为“一碧万顷”。
- 4 【卷面不够整洁】



1-6年级模式计算  
小猿口算批改准确率超越人类  
占每日批改题目数 180%

小猿口算

雪球 量子位

准确率99.9%！小猿口算靠AI批改数学题，  
误判率仅为人工1/10，计算填空应用题都能批：  
<https://xueqiu.com/1097649362/136041042>

# Quillionz



World's first AI-powered platform for creating questions, quizzes and notes

ENTER YOUR EMAIL ID

**United States**

America, the United States is bordered on the west by the Pacific Ocean and to the east by the Atlantic Ocean. Along the northern border is Canada and the southern border is Mexico. There are 50 states and the District of Columbia.

Unlike the other countries of the European Union, the United States has a long coastline on the west and a vast central plain. The lowest point in the country is the Death Valley which is at -282 feet and the highest point is Mt. McKinley at 29,000 feet (29,000 feet).

Throughout **its** history, the United States has been a nation of immigrants. The population is diverse with people from all over the world seeking refuge and a better way of life.

**96%** Content Readiness Meter  
Great! Your content is now perfect for the Quillionz AI engine to process. [Get Questions Ideas](#)

© 2020 Harbinger AI Inc. All rights reserved.

Step 3 : Review Content - Get your content ready for Quillionz AI engine.

**Replace with**

- United States
- Culture
- McKinley
- Mt.
- Dismiss

1 Submit Content

2 Choose Keywords

3 **Review Content**

- 0 Lengthy sentences
- 0 Subjective sentences
- 0 Incomplete sentences
- 2 Pronoun replacements
- ? Help

4 Done

1

2

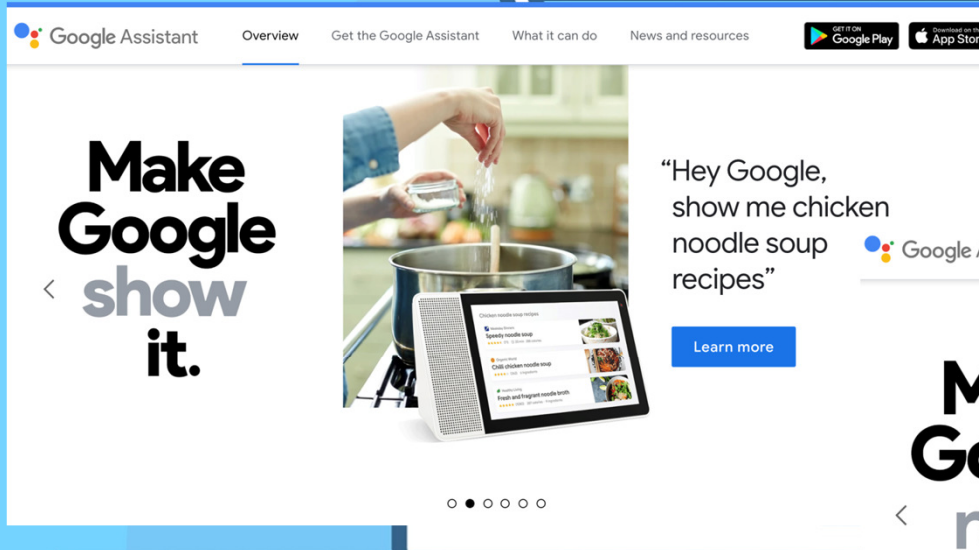
3

4

5


# AI in Education

## Google Assistant



Google Assistant Overview Get the Google Assistant What it can do News and resources [GET IT ON Google Play](#) [Download on the App Store](#)

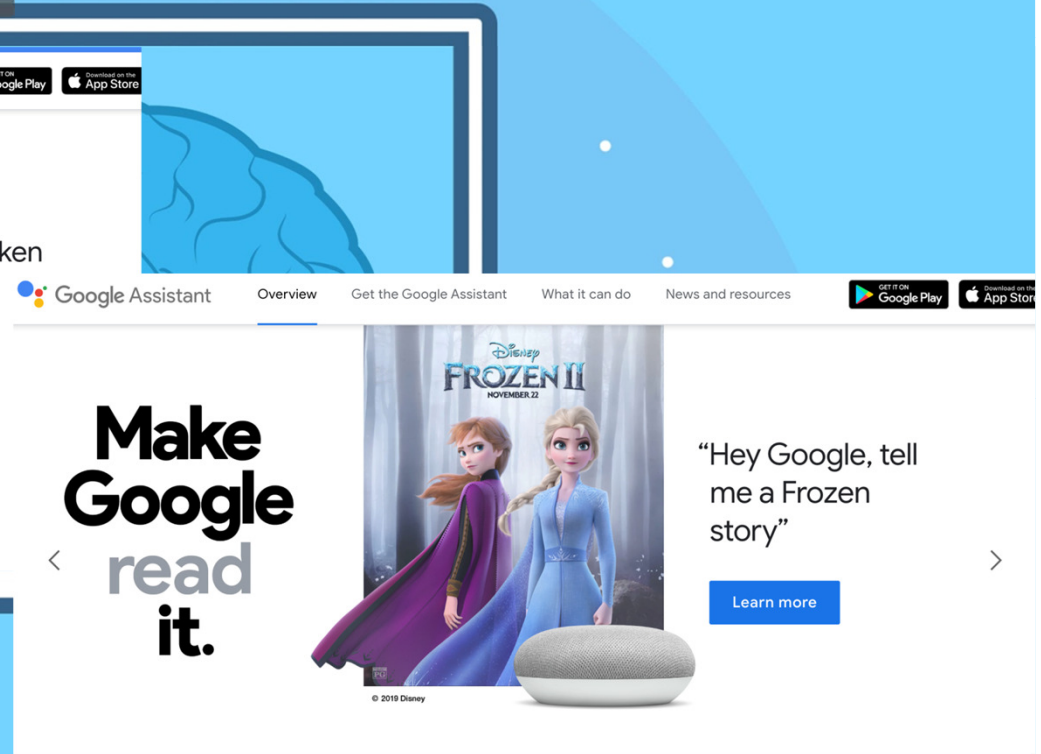
**Make Google show it.**



“Hey Google, show me chicken noodle soup recipes”


[Learn more](#)

○ ● ○ ○ ○ ○



Google Assistant Overview Get the Google Assistant What it can do News and resources [GET IT ON Google Play](#) [Download on the App Store](#)

**Make Google read it.**



“Hey Google, tell me a Frozen story”

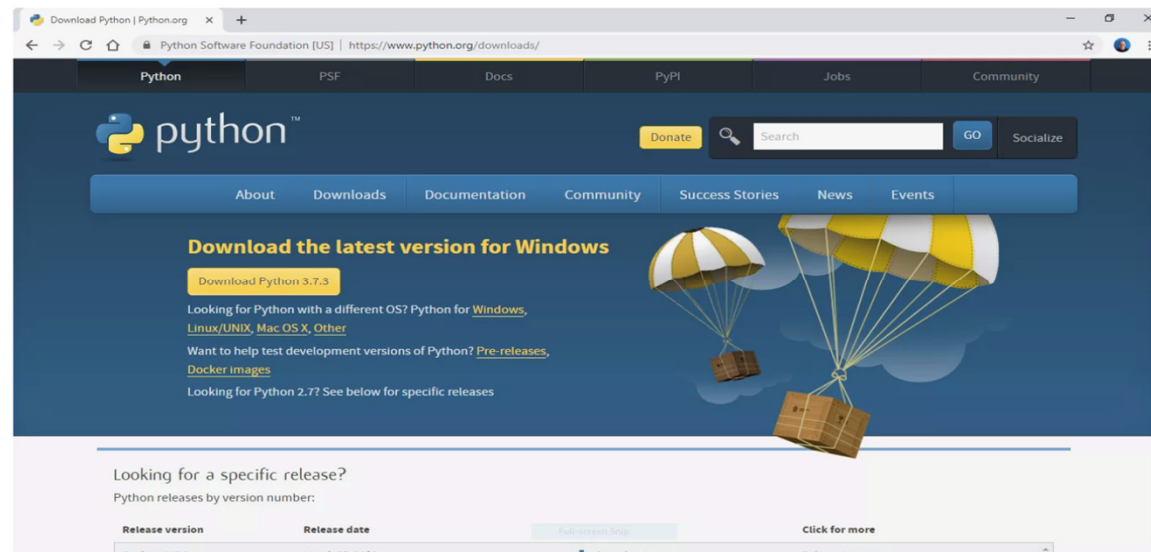
[Learn more](#)

© 2019 Disney

# AI in Education

## How to Get Google Assistant for PC on Windows

<https://www.lifewire.com/google-assistant-on-windows-4628292>

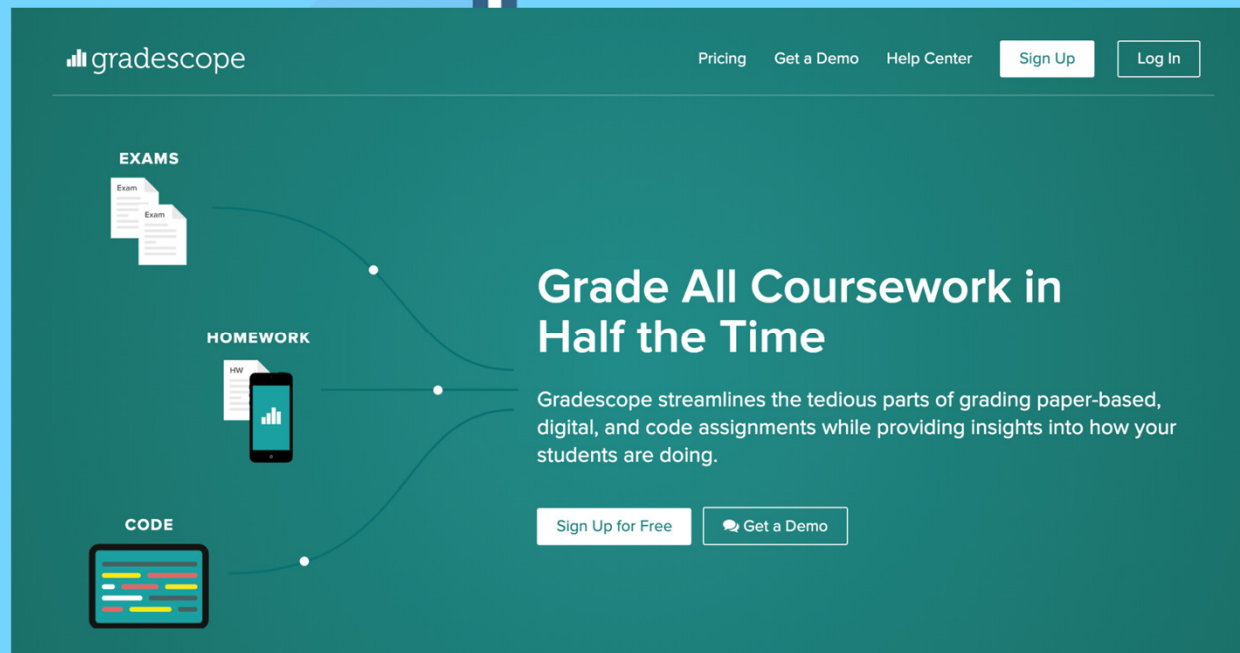




# AI in Education

Gradescope

<https://www.gradescope.com>



The screenshot shows the Gradescope website homepage. The header includes the Gradescope logo, navigation links for Pricing, Get a Demo, Help Center, Sign Up, and Log In. The main content area features three categories: EXAMS (represented by document icons), HOMEWORK (represented by a smartphone icon with a bar chart), and CODE (represented by a code editor icon). The central headline reads "Grade All Coursework in Half the Time". Below this, a paragraph states: "Gradescope streamlines the tedious parts of grading paper-based, digital, and code assignments while providing insights into how your students are doing." At the bottom of the main content area, there are two buttons: "Sign Up for Free" and "Get a Demo".

gradescope

Pricing Get a Demo Help Center Sign Up Log In

EXAMS

Exam Exam

HOMEWORK

HW

CODE

## Grade All Coursework in Half the Time

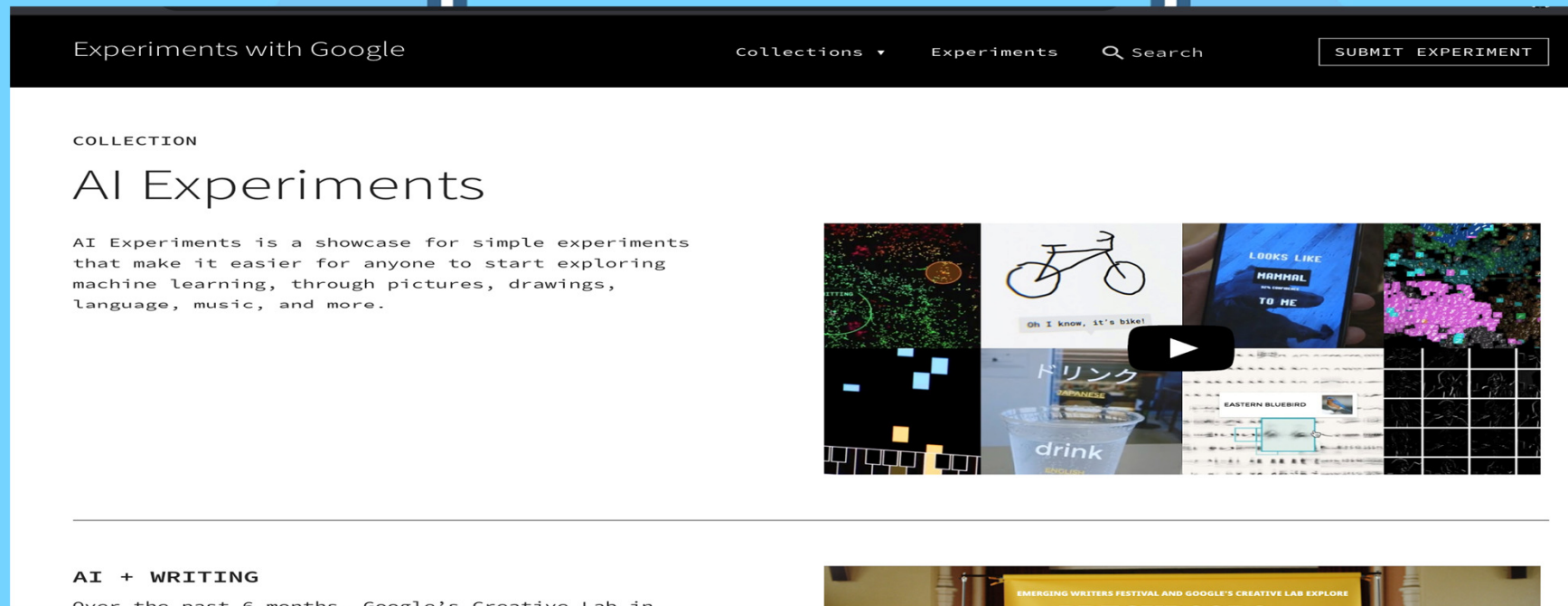
Gradescope streamlines the tedious parts of grading paper-based, digital, and code assignments while providing insights into how your students are doing.

Sign Up for Free Get a Demo

# AI in Education

AI Experiments by Google

<https://experiments.withgoogle.com/collection/ai>



The screenshot shows the 'AI Experiments' collection page on the 'Experiments with Google' website. The page features a dark navigation bar with the site name, menu items for 'Collections', 'Experiments', and 'Search', and a 'SUBMIT EXPERIMENT' button. Below the navigation, the page is titled 'COLLECTION AI Experiments' and includes a descriptive paragraph about the showcase. A central video player displays a collage of AI-related images, including a bicycle drawing, a drink can, and a bird. Below the video, there is a section for 'AI + WRITING' with a partially visible introductory sentence.

Experiments with Google Collections Experiments Search SUBMIT EXPERIMENT

COLLECTION

## AI Experiments

AI Experiments is a showcase for simple experiments that make it easier for anyone to start exploring machine learning, through pictures, drawings, language, music, and more.

Oh I know, it's bikel

LOOKS LIKE MAMMAL TO ME

ドリンク PARADISE drink

EASTERN BLUEBIRD

EMERGING WRITERS FESTIVAL AND GOOGLE'S CREATIVE LAB EXPLORE

AI + WRITING

Over the past 6 months, Google's Creative Lab in

# AI in Education

Grammarly <https://www.grammarly.com/>

The image shows a screenshot of the Grammarly website. On the left, the Grammarly logo is at the top left, and the headline "Great Writing, Simplified" is prominently displayed. Below the headline, a paragraph describes the AI-powered writing assistant. A green button labeled "Add to Chrome It's free" is positioned below the text. At the bottom left, there are five stars and the text "34,000+ Chrome store reviews" and "20 million people use Grammarly to improve their writing". On the right side of the screenshot, a Chrome extension interface is shown. It features a red envelope icon, a "1 CRITICAL" notification, and the Grammarly logo. The main text in the extension reads: "Once you sign the contract, we'll get started. If you have any questions, please don't hesitate to reach out to Alice or myse'f." A red box highlights the word "myse'f", and a dropdown menu offers the correction "me" with the instruction "Change the pronoun".

grammarly LOG IN

## Great Writing, Simplified

Compose bold, clear, mistake-free writing with Grammarly's AI-powered writing assistant.

[Add to Chrome It's free](#)

★★★★★ 34,000+ Chrome store reviews  
20 million people use Grammarly to improve their writing

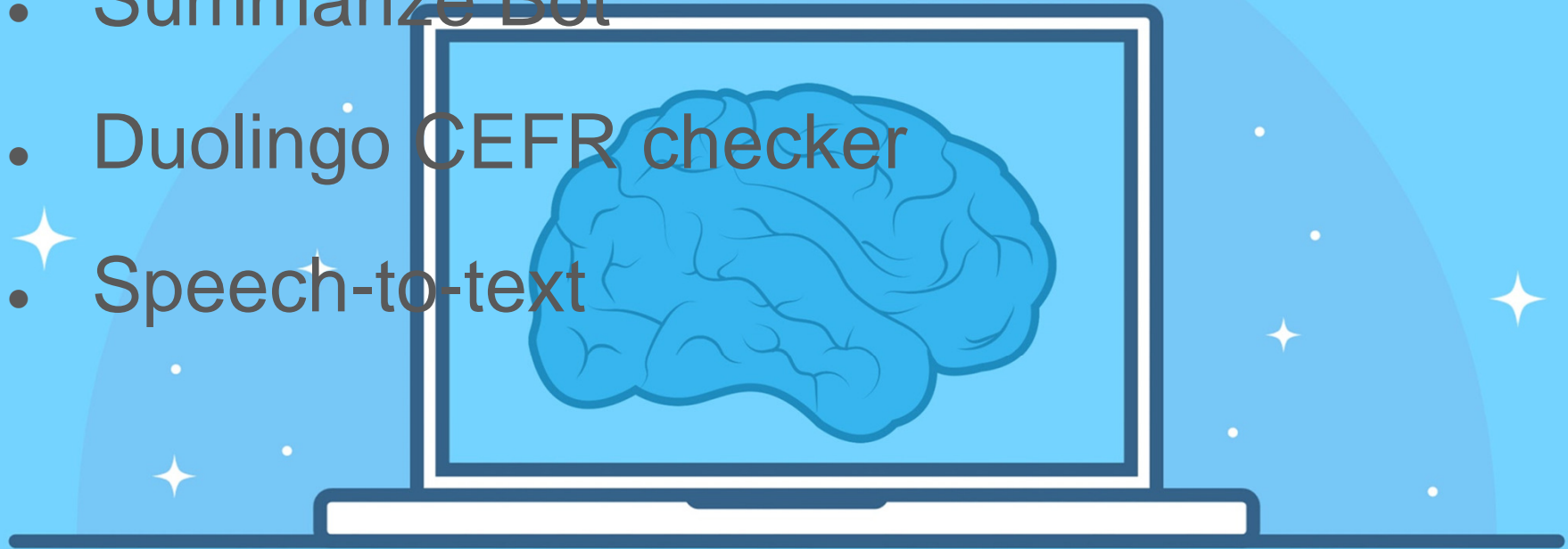
1 CRITICAL

Once you sign the contract, we'll get started.  
If you have any questions, please don't hesitate to reach out to Alice or myse'f.

Change the pronoun  
**me**

## Examples for Language

- Summarize Bot
- Duolingo CEFR checker
- Speech-to-text



# Summarize Bot

- [https://www.summarizebot.com/text\\_api\\_demo.html](https://www.summarizebot.com/text_api_demo.html)

The screenshot displays the Summarize Bot website interface. At the top left is the logo, a blue speech bubble with a list icon, followed by the text "summarizebot". To the right of the logo is a horizontal navigation menu with the following items: "API for Business", "Products", "Technology", "Pricing", "Demo", "Documentation", and "Co". Below the navigation menu is a grid of service categories. The first row contains "Summarization" (highlighted in blue), "Sentiment Analysis", and "Linguistic Analysis". The second row contains "Intent Analysis", "Short Text Language Detection", and "Fake News Detection". The third row contains "Article Extraction", "News Aggregation", and "Scientific Articles Search". Below the grid is a text input form. The input field contains the URL "https://www.reuters.com/article/us-tesla-musk-sec/teslas-musk-mocks-sec-as-judge-demands-they-justify-fraud-settlement-idl". To the right of the input field is a "Summarize" button. Below the input field are two dropdown menus: "Summary Size: 20%" and "General Domain".

Summarization	Sentiment Analysis	Linguistic Analysis
Intent Analysis	Short Text Language Detection	Fake News Detection
Article Extraction	News Aggregation	Scientific Articles Search

https://www.reuters.com/article/us-tesla-musk-sec/teslas-musk-mocks-sec-as-judge-demands-they-justify-fraud-settlement-idl

Summary Size: 20%    General Domain

Summarize

# Duolingo CEFR checker

- <https://cefr.duolingo.com/>

**duolingo**  
CEFR checker

About Us Duolingo AI Work with Us

This tool determines whether texts are appropriate for beginner, intermediate, or advanced learners of English or Spanish. It works by analyzing vocabulary and highlighting words by their reading proficiency level according to the **Common European Framework of Reference (CEFR)**. Duolingo uses interactive tools like this one to help us revise content (e.g., **Podcasts** and **Stories**) for particular levels, and we're making this version available to language educators and the public. You can learn more about our AI-driven approach to this in **this blog post**.

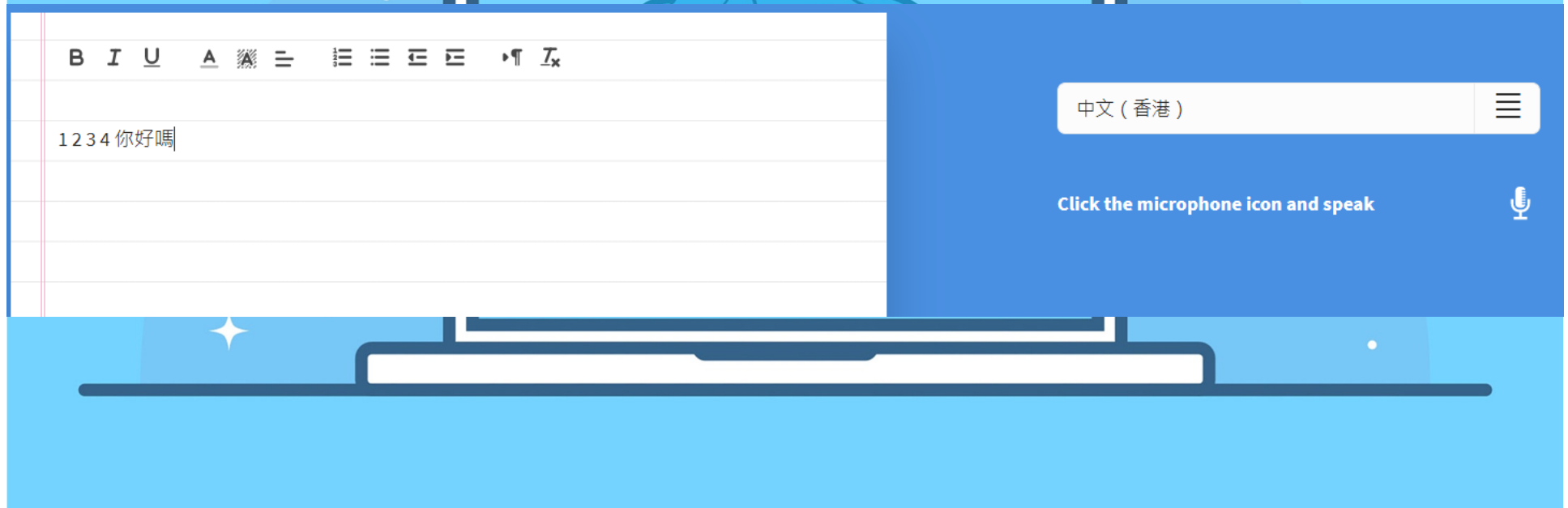
English 921 tokens | 400 types **LEVEL B2**

manner in which aircrew had been forced into pay cuts or job losses. The Hong Kong Aircrew Officers Association (HKAOA) and flight attendants' counterparts had sought to overturn a decision by the city's flag carrier to overhaul pay and conditions, which came on top of 5,900 job cuts, and the closing of regional carrier Cathay Dragon. Cathay pilots arriving at Hong Kong's airport. Photo: [Winson Wong](#) Cathay pilots arriving at Hong Kong's airport. Photo: [Winson Wong](#) "We are very grateful that a majority of our pilots and cabin crew have already signed up to the new conditions of service," the airline said, without specifying a number. "We would like each and every one of our pilots and cabin crew to join us and be part of Cathay Pacific's future." Chris Beebe, general secretary of HKAOA, said if the airline's comments

English Words Predicted CEFR	
<div style="width: 40%;"></div>	<b>A1</b> 40% (160)
<div style="width: 19%;"></div>	<b>A2</b> 19% (75)
<div style="width: 15%;"></div>	<b>B1</b> 15% (61)
<div style="width: 19%;"></div>	<b>B2</b> 19% (74)
<div style="width: 6%;"></div>	<b>C</b> 6% (22)
<div style="width: 2%;"></div>	<b>?</b> 2% (8)

# Speech-to-Text (English / Chinese)

- <http://dictation.io/>



# Speech-to-Text (English / Chinese)

- <https://speechnotes.co/yue/>

The screenshot displays the Speechnotes website interface. At the top, there is a navigation bar with the text '港式粵語筆記簿', 'GET IT ON Google Play', 'About (English)', '文字转语音', and '音频和视频文件的自动转录'. Below this, a note titled 'Note\_3, 30 Oct 2020' is visible, with a language dropdown set to 'English, US'. A red microphone icon is positioned to the right of the note. On the right side of the interface, there are sections for '標點符號' (Punctuation) and '粵語字詞參考' (Cantonese Word Reference), which includes links for '粵語用辭', '粵語本字表', '粵語用字習禮', and '粵語審音記詞字庫'. A pop-up window titled '港式粵語筆記簿 使用說明' (Cantonese version is customized and enhanced by Patrick 劉肇庭, at Taipei City) is overlaid on the left side of the note. The pop-up contains the following text:

港式粵語筆記簿 使用說明

Cantonese version is customized and enhanced by Patrick 劉肇庭, at Taipei City

- 按右上方的 啟動或暫停 Speechnotes 語音輸入文字，按右方的符號鍵插入標點符號。
- 按上方的【常用廣東字】顯示選項鍵，即「㗎」、「㗎」、「㗎」、「㗎」、「㗎」、「㗎」、「㗎」、「㗎」、「㗎」、「㗎」，再按一下選項鍵把它插入內文。
- 你也可以根據廣東字的發音按上方的 A 至 Z 鍵，例如：
  - 按 D 會出現「㗎」、「㗎」、「㗎」、「㗎」、「㗎」等選項
  - 按 H 會出現「㗎」、「㗎」、「㗎」、「㗎」、「㗎」等選項
- 你也可以用傳統 o+ 的方式輸入廣東字，例如：
  - 輸入「o的」自動轉 → 「㗎」
  - 輸入「o地」自動轉 → 「㗎」
  - 輸入「o既」自動轉 → 「㗎」



# NLP for Chinese

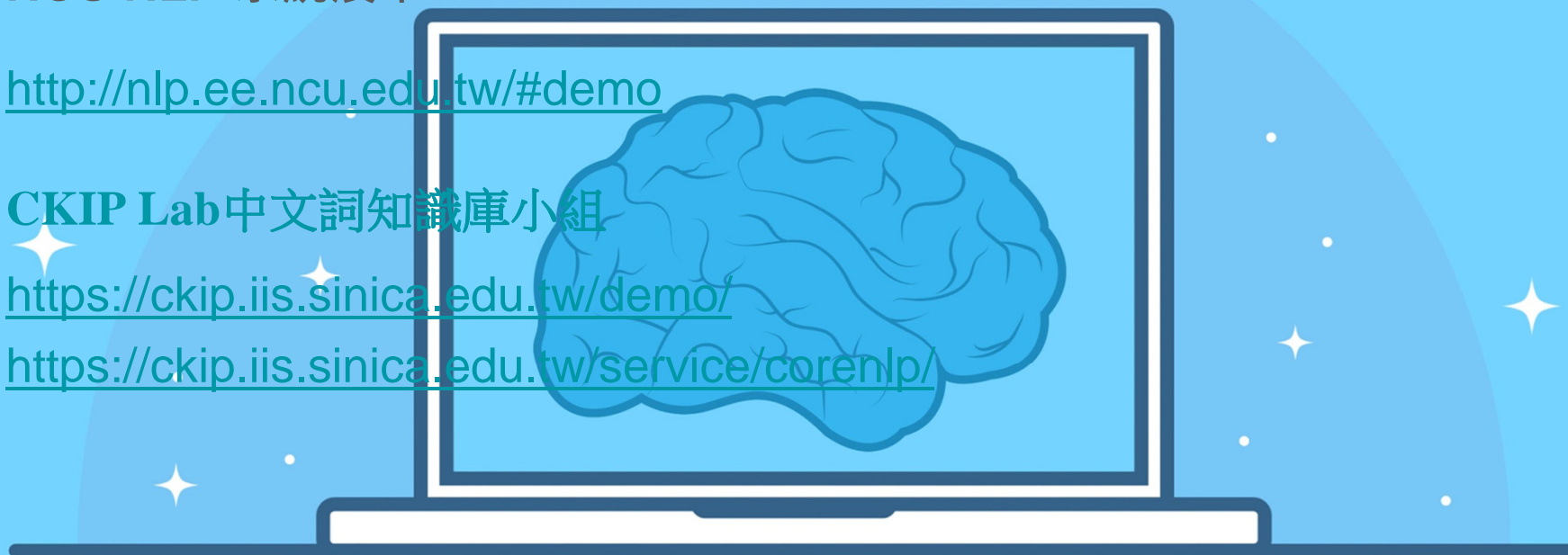
NCU NLP 系統展示

<http://nlp.ee.ncu.edu.tw/#demo>

CKIP Lab 中文詞知識庫小組

<https://ckip.iis.sinica.edu.tw/demo/>

<https://ckip.iis.sinica.edu.tw/service/corenlp/>



# AI Education in Hong Kong

## Curriculum Matrix



✓ Beginner Unit (BU)
 ✓ Intermediate Unit (IU)
 ✓ Advanced Unit (AU)

Modules \ Teaching Units (✓)	Awareness	Ethics and Impact	Knowledge	Interactions	Empowerment
1. Introduction to AI	✓	✓	✓	-	-
2. Fundamentals of AI	✓	✓	✓	✓	-
3. "See the World"	✓	✓	✓	✓	✓
4. "Hear"	✓	✓	✓	✓	✓
5. "Speak"	✓	✓	✓	✓	✓
6. "Read"	✓	✓	✓	✓	✓
7. "AI Reasoning"	✓	✓	✓	✓	✓
8. "Simulate"	✓	✓	✓	✓	✓
9. "Think and Create"	✓	✓	✓	✓	✓
10. Societal Good, Social Impact and Challenges of AI	✓	✓	✓	✓	✓
11. AI and Ethics	✓	✓	✓	-	✓
12. AI and Future of Work	✓	✓	✓	-	✓

12 Chapters with 55 Modules divided into three levels to allow for flexible teaching by secondary schools

# Text-to-Speech (TTS)

Google

<https://hiddentao.github.io/google-tts/>

## Demo of Google Text-to-Speech API

Language:

Text:

中文

Play!

Player: HTML5 Audio

# Reading Comprehension

<https://demo.allennlp.org/>

AllenNLP

- Answer a question
- Reading Comprehension**
- Visual Question Answering
- Annotate a sentence
- Named Entity Recognition
- Open Information Extraction
- Sentiment Analysis
- Dependency Parsing
- Constituency Parsing
- Semantic Role Labeling

This model is like BiDAF but uses ELMo embeddings instead of GloVe.

Demo Usage

Enter text or

Passage

A reusable launch system (RLS, or reusable launch vehicle, RLV) is a launch system which is capable of launching a payload into space more than once. This contrasts with expendable launch systems, where each launch vehicle is launched once and then discarded. No completely reusable orbital launch system has ever been created. Two partially reusable launch systems were developed, the Space Shuttle and Falcon 9. The Space Shuttle was partially reusable: the

Question

How many partially reusable launch systems were developed?

Run >

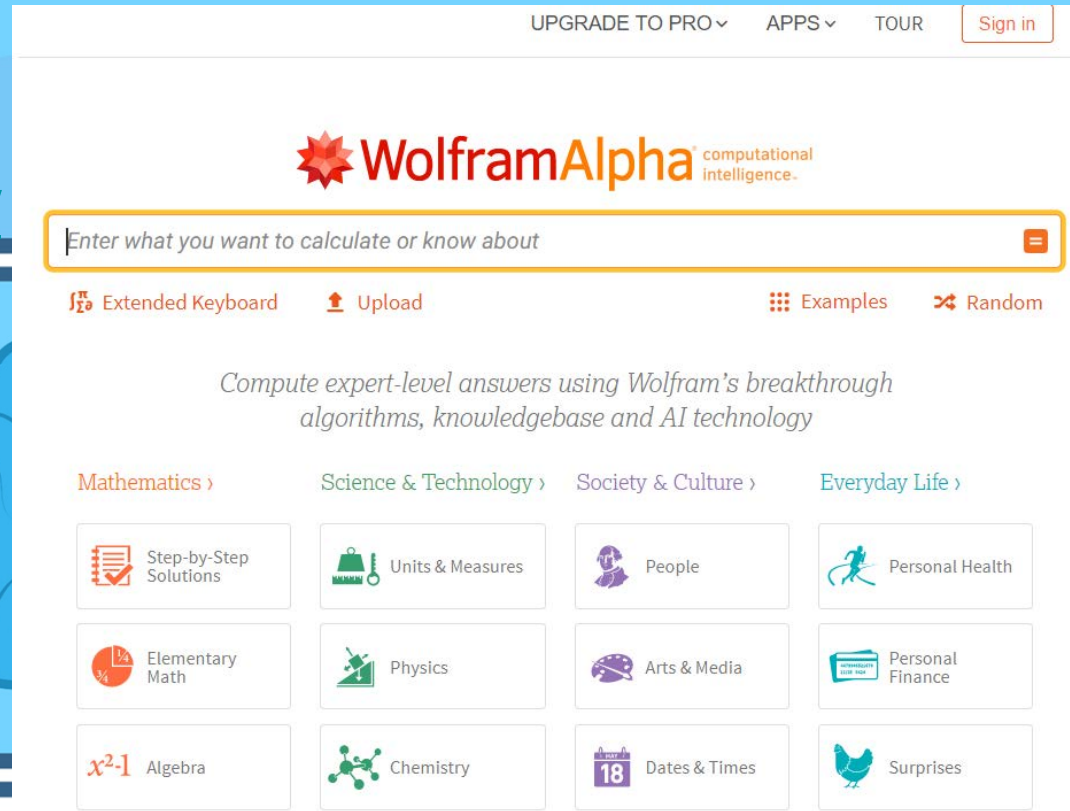
Answer

Two

Passage Context

# Mathematics

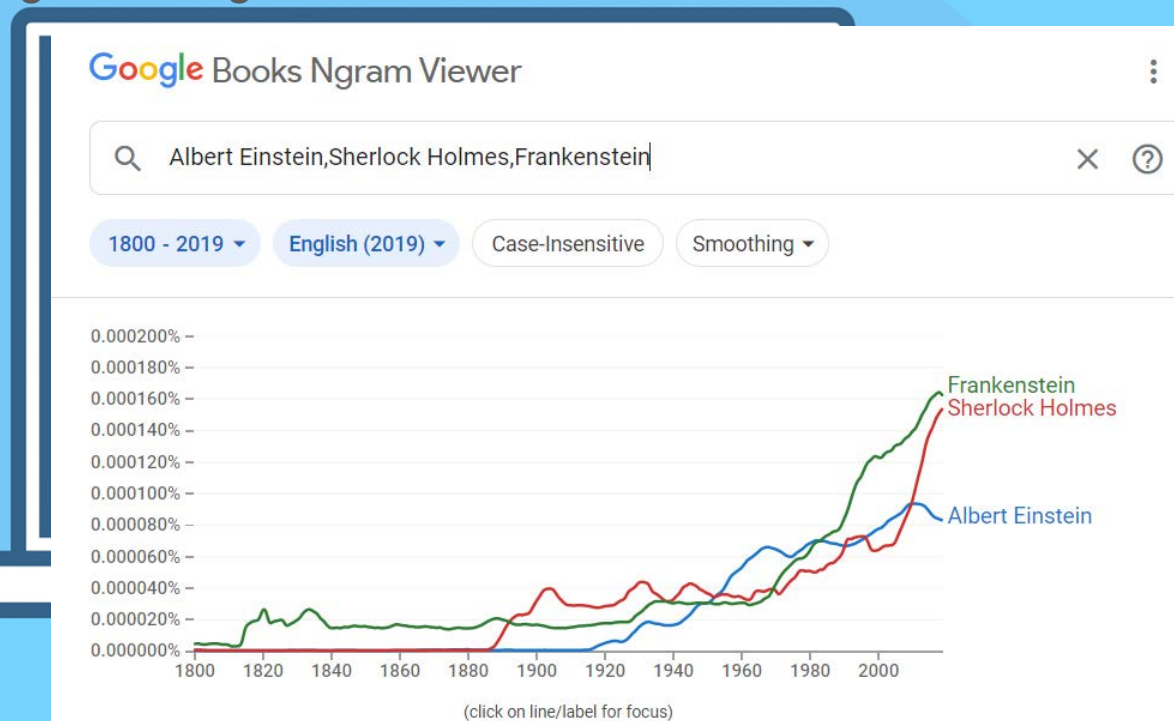
<https://www.wolframalpha.com/>



The screenshot shows the WolframAlpha website interface. At the top right, there are links for "UPGRADE TO PRO", "APPS", "TOUR", and a "Sign in" button. The main header features the WolframAlpha logo with the tagline "computational intelligence". Below the logo is a search bar with the placeholder text "Enter what you want to calculate or know about". Underneath the search bar are icons for "Extended Keyboard", "Upload", "Examples", and "Random". A central message reads: "Compute expert-level answers using Wolfram's breakthrough algorithms, knowledgebase and AI technology". Below this message are four category tabs: "Mathematics", "Science & Technology", "Society & Culture", and "Everyday Life". Each tab is followed by a grid of category-specific icons and labels: "Step-by-Step Solutions", "Elementary Math", "Algebra", "Units & Measures", "Physics", "Chemistry", "People", "Arts & Media", "Dates & Times", "Personal Health", "Personal Finance", and "Surprises".

# N-grams Viewer (Google)

- <https://books.google.com/ngrams>



# Google “Talk-to-Books”

<https://books.google.com/talktobooks/?suggestions=18>

The screenshot shows a search interface with a search bar containing the text "What smell brings back great memories?". Below the search bar, the results are titled "Passages from books" and include a "Filters" button. Two search results are visible, each with a text snippet and a book cover thumbnail. The first result is a quote from the book "I Love a Cop" by Ellen Kirschman, discussing the biochemistry of trauma and the smell of forsythia. The second result is a quote from "Improve your eyesight naturally" by Leo Angart, discussing the smell of freshly baked bread.

What smell brings back great memories? Go!

Passages from books Filters

Showing results from all categories

“ The biochemistry of trauma is evident in your sense of smell, which so easily brings up old memories. **The smell of forsythia instantly transports me back to my childhood summers in upstate New York.** So an officer, investigating a gruesome homicide in an apartment next door to where someone is baking cookies, may long... [\(view in book\)](#)

from *I Love a Cop, Revised Edition: What Police Families Need to Know* by Ellen Kirschman  
Guilford Publications, 2006 • [Medicine and Health](#) • [Philosophy and Self-help](#)

“ For example, for some people the smell of freshly baked bread triggers childhood memories. **Freshly cut grass is another common smell that evokes memories.** A certain perfume worn by your mother or grandmother is another direct link to memories. [\(view in book\)](#)

from *Improve Your Eyesight Naturally: Easy, Effective, One-Result-Quickly*

# CENTURY, an AI-powered teaching and learning platform

<https://www.century.tech/>



Register for a webinar

## Supercharge your teaching

CENTURY is the tried and tested intelligent intervention tool that combines learning science, AI and neuroscience.

- Identifies gaps
- Addresses misconceptions
- Supports teacher interventions

Schools/Colleges: Register for a webinar

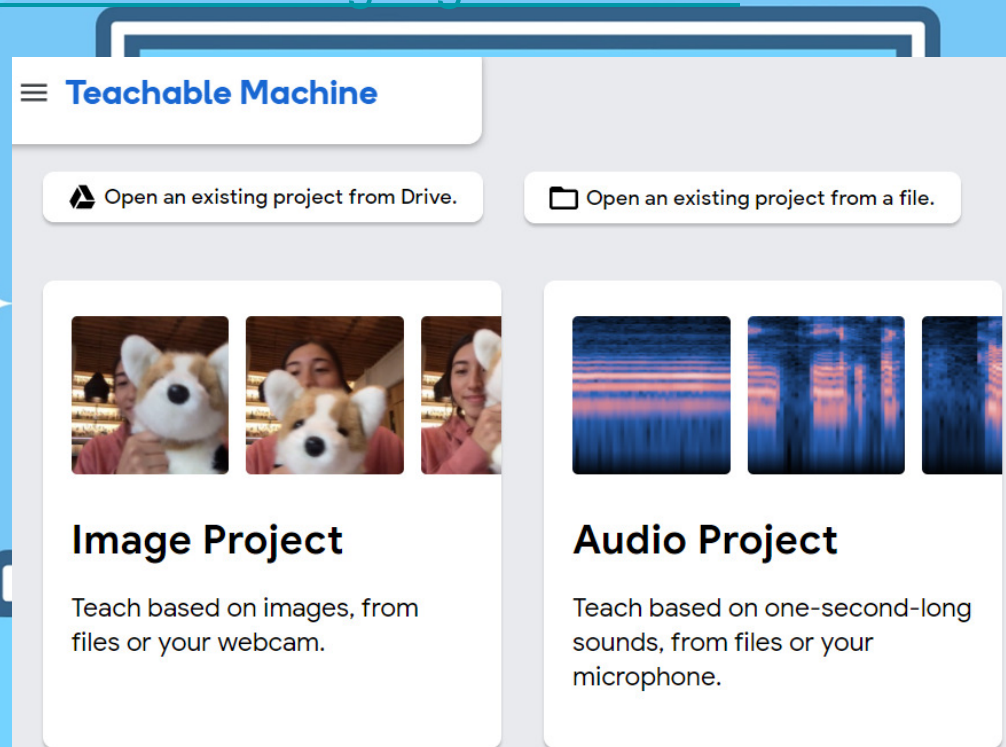
Parents: Buy a subscription





# Teachable Machine (Google)

<https://teachablemachine.withgoogle.com/train>



The screenshot displays the Teachable Machine web interface. At the top left, there is a hamburger menu icon followed by the text "Teachable Machine". Below this, there are two buttons: "Open an existing project from Drive." with a Drive icon, and "Open an existing project from a file." with a folder icon. The main content area is divided into two columns. The left column features an "Image Project" section with three small image thumbnails showing a person holding a dog, followed by the text "Teach based on images, from files or your webcam." The right column features an "Audio Project" section with three small spectrogram-style audio waveforms, followed by the text "Teach based on one-second-long sounds, from files or your microphone."

# WordCheck AI (Hong Kong)

**新增默書**

名稱: \* 默書名稱

類型: \* 讀默 (廣)

默書日期: \* dd/MM/yyyy

\* 以上內容必須填寫

正式默書: 否 → 是: 不可重覆默書  
否: 可重覆「開始默」

限時作答: (i) 可留空 分鐘

默書內容: (i) → 默書內容: (i)

預設為默書內容  
標點及分行自動設定為分句

- 【章節】: 只讀不默。
- 【題號】: 只讀不默。
- 【描述】: 只讀不默。
- 【背默】: 只默不讀。
- 【閱讀】: 不默不讀。
- 【清除格式】

1 抱頭鼠竄  
2 雞鳴狗盜  
3 千軍萬馬 - 先以滑鼠選取需要套用功能的文字  
4 亡羊補牢  
5 杯弓蛇影 - 按下所選取的功能

語音合成: (i)  是  否

一鍵清除

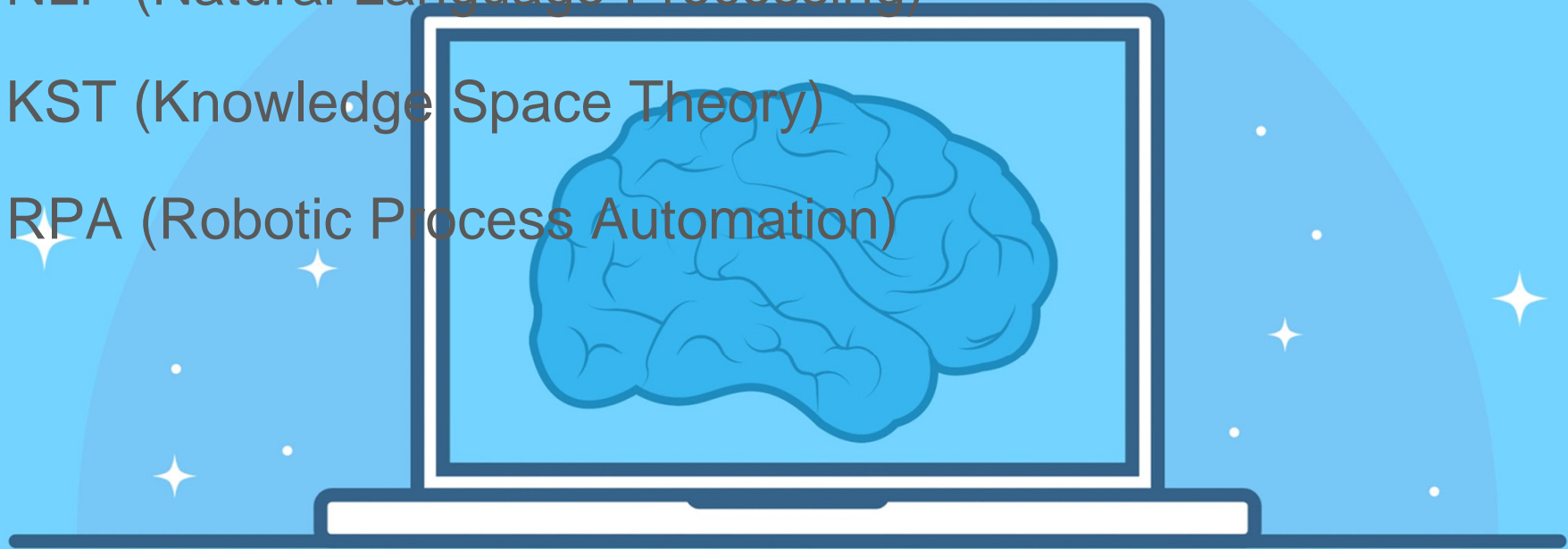
確定 取消

# Keywords for AI related to Education

NLP (Natural Language Processing)

KST (Knowledge Space Theory)

RPA (Robotic Process Automation)



# Text to Speech (IBM Watson)

- <https://speech-to-text-demo.ng.bluemix.net/>

## Transcribe Audio

- Use your microphone to record audio. For best results, use broadband models for microphone input.
- Upload pre-recorded audio (.mp3, .mpeg, .wav, .flac, or .opus only).
- Play one of the sample audio files.\*

\*Both US English broadband sample audio files are covered under the Creative Commons license.

The returned result includes the recognized text, word alternatives, and spotted keywords. Some models can detect multiple speakers; this may slow down performance.

Voice Model:

US English broadband model (16KHz) ▼

Keywords to spot:

IBM,admired,AI,transformations,cognitive,Artificial Intelligence,dz

Detect multiple speakers



Record Audio



Upload Audio File



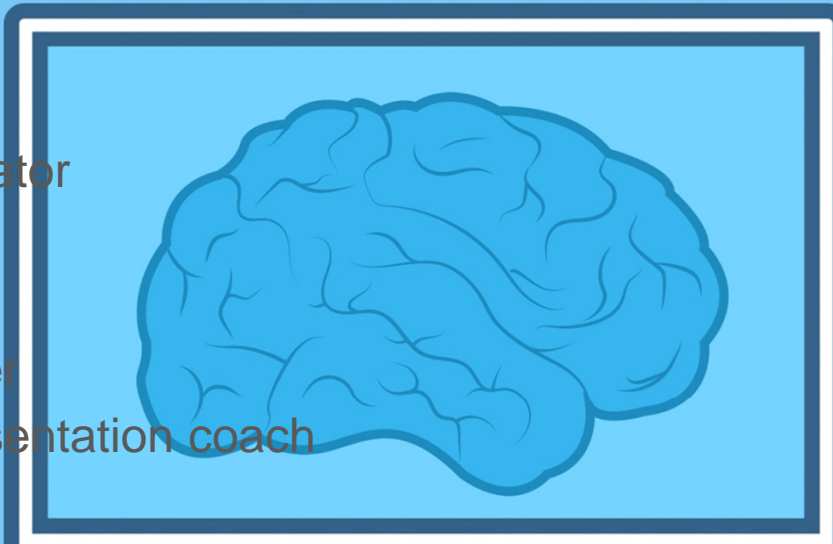
Play Sample 1



Play Sample 2

# Microsoft

- Microsoft Word Online
- Swift keyboard
- Office lens
- Microsoft Translator
- Ink to equation
- Math solver
- Immersive reader
- PowerPoint Presentation coach

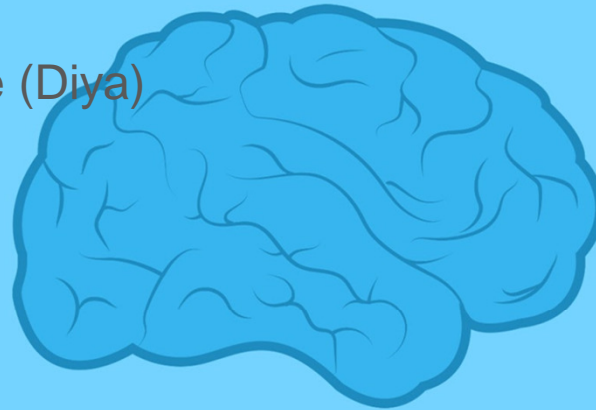


# Google

- Google Translate
- Google Lens
- Google即時轉錄
- Read Along by Google (Diya)

- Extension (Chrome):

- Grammarly
- OneLook Thesaurus



# 廣東話字幕

- <https://subanana.com/>

**HOT!** 為協助受是次疫情影響嘅各行各業，字幕工具現時免費開放使用，方便大家製作影片、線上課程或為線上會議轉錄筆記。

拍 Vlog，開直播  
字幕，唔使再自己打

你拍片，我幫你配字幕。  
你嘅才華，應該用返嚟拍片度。

上傳影片

與字幕嘅 Subanana 對話  
一般回覆時間：幾小時內

登入 Messenger

如果選擇登入，字幕嘅 Subanana 將看到你來自哪個網站，以及你在 Facebook 個人檔案公開的資訊。

唔使入電郵，唔使入信用卡，唔使安裝



What is Azure?

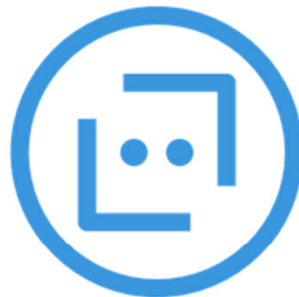


# AI Services in Azure

*Bringing the best of AI to Azure and the best of Azure to AI*



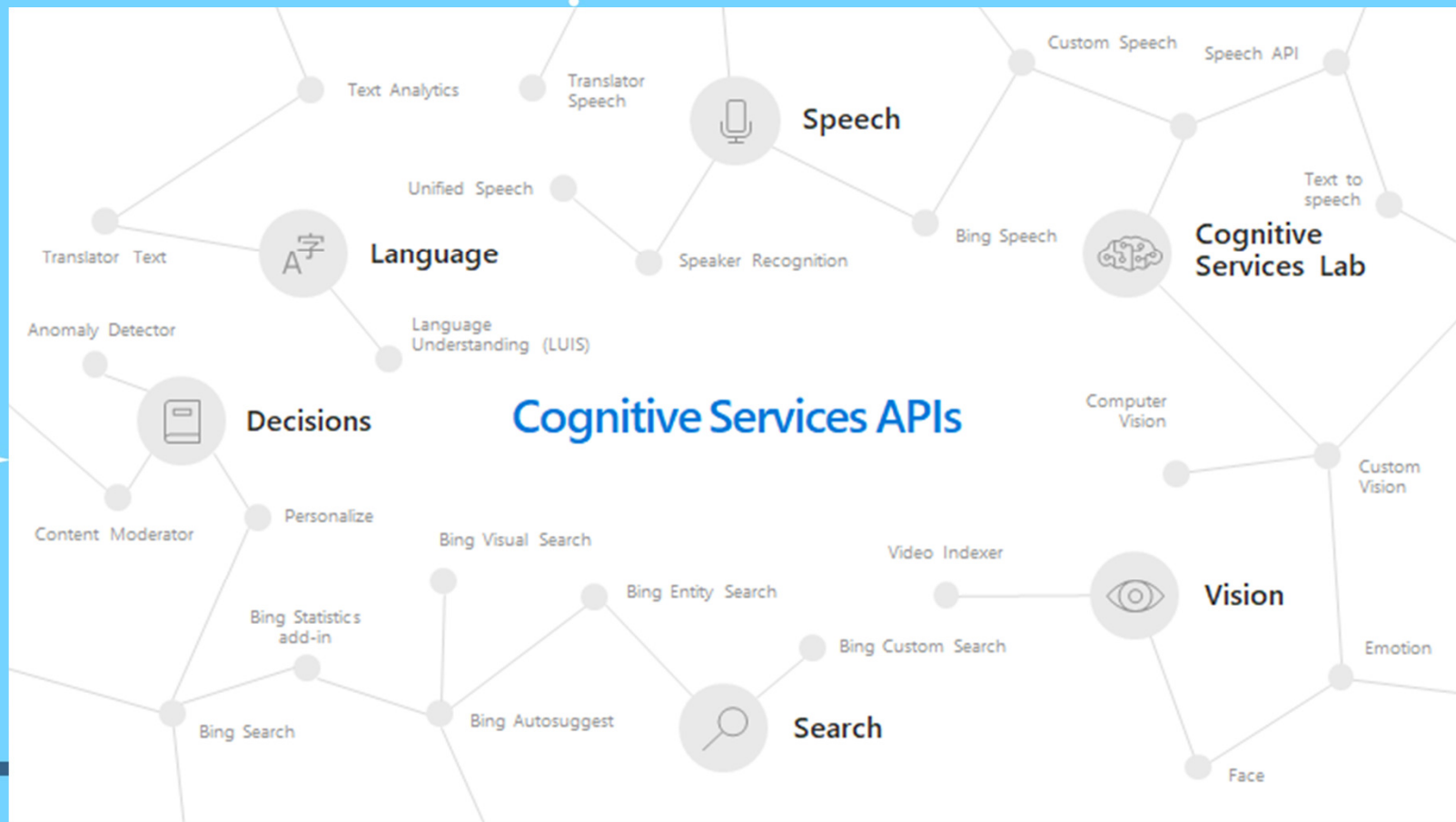
**Pre-Built AI**  
Azure Cognitive Services



**Conversational AI**  
Azure Bot Service



**Custom AI**  
Azure Machine Learning



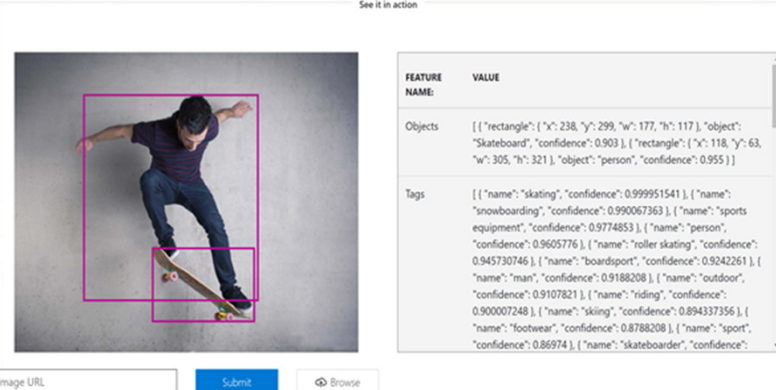
# Computer Vision

- Extract rich information from images to categorize and process visual data

Let's try:

<https://azure.microsoft.com/en-us/services/cognitive-services/computer-vision/>

See it in action

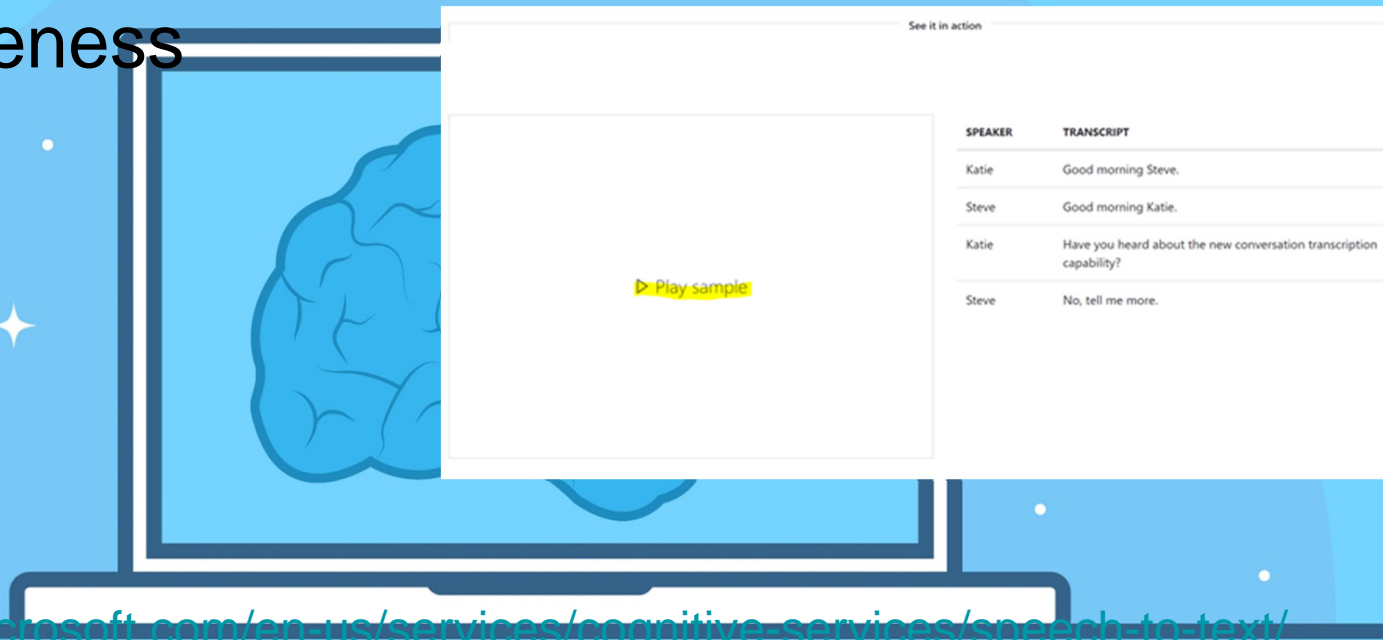


The screenshot displays the Azure Computer Vision API interface. On the left, there is a preview of an image showing a person performing a skateboard trick. Two bounding boxes are overlaid on the image: a larger one around the person and a smaller one around the skateboard. Below the image is an input field for the image URL, a 'Submit' button, and a 'Browse' button. On the right, there is a table showing the JSON output of the API call.

FEATURE NAME	VALUE
Objects	[{"rectangle": {"x": 238, "y": 299, "w": 177, "h": 117}, "object": "Skateboard", "confidence": 0.903}, {"rectangle": {"x": 118, "y": 63, "w": 305, "h": 321}, "object": "person", "confidence": 0.955}]
Tags	[{"name": "skating", "confidence": 0.999951541}, {"name": "snowboarding", "confidence": 0.990067363}, {"name": "sports equipment", "confidence": 0.9774853}, {"name": "person", "confidence": 0.9605776}, {"name": "roller skating", "confidence": 0.945730746}, {"name": "boardsport", "confidence": 0.9242261}, {"name": "man", "confidence": 0.9188208}, {"name": "outdoor", "confidence": 0.9107821}, {"name": "riding", "confidence": 0.90007248}, {"name": "skiing", "confidence": 0.894337356}, {"name": "footwear", "confidence": 0.8788208}, {"name": "sport", "confidence": 0.86974}, {"name": "skateboarder", "confidence": 0.86974}]

# Speech to Text

- Swiftly convert audio to text for natural responsiveness



Let's try:

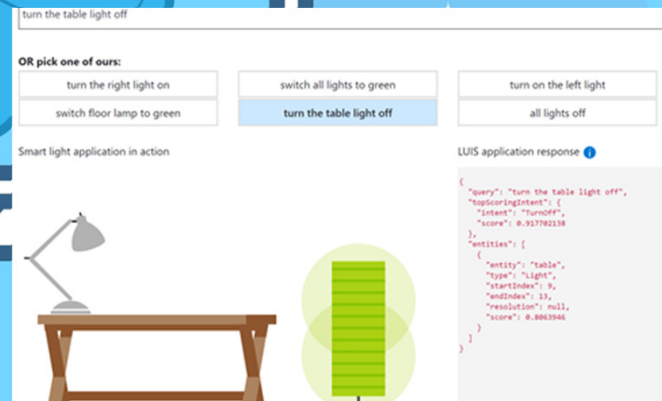
<https://azure.microsoft.com/en-us/services/cognitive-services/speech-to-text/>

# Language understanding

-A machine learning-based service to build natural language understanding into apps, bots, and IoT devices

Let's try:

<https://azure.microsoft.com/en-us/services/cognitive-services/language-understanding-intelligent-service/>




turn the table light off

OR pick one of ours:

- turn the right light on
- switch floor lamp to green
- turn the table light off
- switch all lights to green
- all lights off
- turn on the left light

Smart light application in action



LUIS application response

```
{
  "query": "turn the table light off",
  "topScoringIntent": {
    "intent": "TurnOff",
    "score": 0.937922138
  },
  "entities": [
    {
      "entity": "table",
      "type": "light",
      "startIndex": 9,
      "endIndex": 13,
      "resolution": null,
      "score": 0.883946
    }
  ]
}
```

# AI

## 機器學習體驗：限時塗鴉

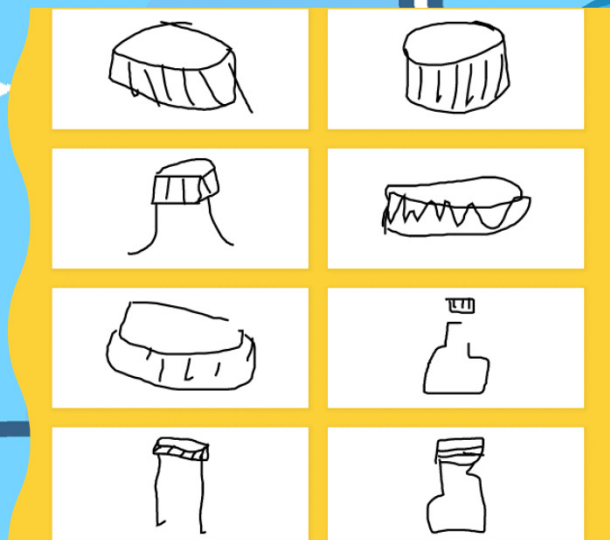
<https://quickdraw.withgoogle.com/>



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：

正確的比例結果 瓶蓋	第 2 接近的答案 瓶子	第 3 接近的答案 鋼琴
---------------	-----------------	-----------------

71

# AI

## 機器學習體驗 : AutoDraw

### 手繪圖自動變靚靚

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

The screenshot shows the AutoDraw website interface. At the top, it says "AutoDraw" and "May 2017 | By Google Creative Lab". Below that, it says "Fast drawing for everyone." and has a "LAUNCH EXPERIMENT" button. On the right, there are "COLLECTIONS:" with "AI Experiments" and "Chrome Experiments" buttons. The main content area shows a collage of simple line drawings: a green bus, the Eiffel Tower, a birthday cake, a dog, a cat, and a slice of pizza. A video player icon is also visible. In the foreground, a drawing tool interface is shown with a toolbar on the left and a canvas on the right. The canvas displays a blue line drawing of a crown or dome structure.



# AI

## 訓練模型 : Teachable Machine

The screenshot shows the Teachable Machine website. At the top right, there are links for 'About', 'FAQ', and a 'Get Started' button. The main heading is 'Teachable Machine' in large blue font. Below it, the text reads: 'Train a computer to recognize your own images, sounds, & poses.' This is followed by a sub-headline: 'A fast, easy way to create machine learning models for your sites, apps, and more – no expertise or coding required.' A blue 'Get Started' button is positioned below the text. At the bottom left, there are logos for TensorFlow.js (ml5.js), p5.js, Coral, Node.js, and TensorFlow. On the right side of the page, there is a video player showing a person in a white shirt and blue jeans striking a pose. A blue skeleton overlay is visible on the person. Below the video, a small white box displays two labels: 'Tree' with a 100% progress bar and 'Wings' with a 0% progress bar.

Get Started

ml5.js p5.js Coral node TensorFlow

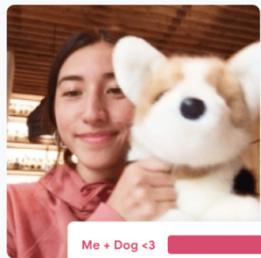


Tree 100%  
Wings



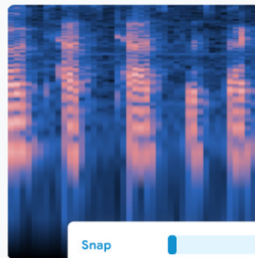
## 訓練模型 : Teachable Machine

- 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



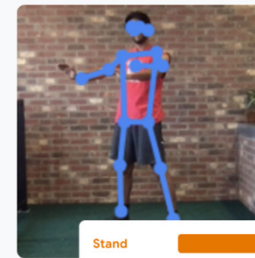
### Images

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/>



# 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 web interface. On the left, there are three classes of training data:

- Class 1:** 87 Image Samples (labeled 'plant').
- Class 2:** 125 Image Samples (labeled '\$20').
- Class 3:** 45 Image Samples (labeled 'Me').

The central 'Training' panel shows 'Model Trained' and 'Advanced' options. The 'Preview' window on the right shows a live webcam feed of a person holding a sign with the handwritten digit '2'. The output shows classification results:

Class	Label	Confidence
1	plant	10%
2	\$20	90%
3	Me	99%

At the bottom right, there is a small inset showing a person's face, with the following output:

Class	Label	Confidence
1	plant	10%
2	\$20	99%
3	Me	99%

At the bottom of the interface, it shows 'English (U.S.)' and 'release-2-2-2 - 2.2.2#062770 - 83'.



# Voice Kit

Do-it-yourself intelligent speaker. Experiment with voice recognition and the Google Assistant.

- <https://aiyprojects.withgoogle.com/voice/>

The AIY Voice Kit from Google lets you build your own natural language processor and connect it to the Google Assistant or Cloud Speech-to-Text service, allowing you to ask questions and issue voice commands to your programs. All of this fits in a handy little cardboard cube, powered by a Raspberry Pi.

# Voice Kit 應用



聲控水機



AI 分類回收機



以科技解決社  
會上的問題

野豬滋擾問  
題

流浪牛問題

# 以科技解決社會上的問題

MACHINE LEARNING



Google

野豬滋擾問題



全部 新聞 圖片 影片 地圖 更多

設定 工具

約 125,000 項搜尋結果 (0.31 秒)



「豬」出沒注意！香港點「人性化」解決野豬滋擾問題？ - 思考HK

[www.thinkhk.com/article/2019-02/13/32916.html](http://www.thinkhk.com/article/2019-02/13/32916.html)

2019年2月13日 - 近年來，野豬在香港大量繁殖，對公眾造成滋擾，已構成嚴重的社區衛生問題，野豬出沒或造成滋擾的投訴個案持續上升。

漁農自然護理署野豬滋擾

[https://www.afcd.gov.hk/tc\\_chi/conservation/con.../con\\_fau\\_nui\\_pig.html](https://www.afcd.gov.hk/tc_chi/conservation/con.../con_fau_nui_pig.html)

野豬(學名為Sus scrofa)是本地體型最大的陸棲哺乳動物，成豬體重可達200公斤及體長達2米。牠們長有厚而粗糙的短毛，毛色為灰棕至黑。幼豬初出生時毛色呈...

立法會十題：野豬造成的滋擾 - Gov HK

## 【來論】香港要如何解決野豬問題？



2019-01-14 09:39



圖：資料圖

文：寒柏

近日，又有人被野豬所傷。去年首十個月，漁護署接獲679宗野豬滋擾報告，還有5宗野豬傷人事件。儘管有關野豬傷人的宗數上並不算多，似乎問題並不嚴重，但近年

### 「豬」出沒注意！香港點「人性化」解決野豬滋擾問題？

2019-02-13



今年是農曆豬年，「豚鮮惹人愛」的豬仔博得無數市民喜愛，但同樣是豬，不時出沒在田間街頭的野豬就不那麼受歡迎。近年來，野豬在香港大量繁殖，對公眾造成滋擾，已構成嚴重的社區衛生問題，野豬出沒造成滋擾的投訴個案持續上升。數據顯示，從2011年及2015年有關野豬的投訴，2013年有264宗，2015年則增至376宗。香港政府

### 【野豬襲黃大仙】野豬滋擾投訴倍增 漁署拒透露避孕試驗計劃進度

#### 野豬避孕試驗計劃變 X file

邊區有做到？  
初步成效點？

漁護拒答  
議員：點監察！

突發  
原文 劉曉晴 2018-10-11 00:00 最後更新日期 2018-10-11 11:12

漁護署：野豬「天敵」係獅子、老虎 引入風險太高

野豬為患，有建議引入「天敵」真解決問題，惟漁護署暫不考慮。

# Experiments with Google (AI)

- <https://experiments.withgoogle.com/collection/ai>





## 活動 1: 體驗圖像辨識

- 以 Safari 瀏覽網頁

- <https://emojiscavengerhunt.withgoogle.com>

- 需要按「允許」

- Safari 使用相機功能



## 活動 2: QuickDraw(限時塗鴉)

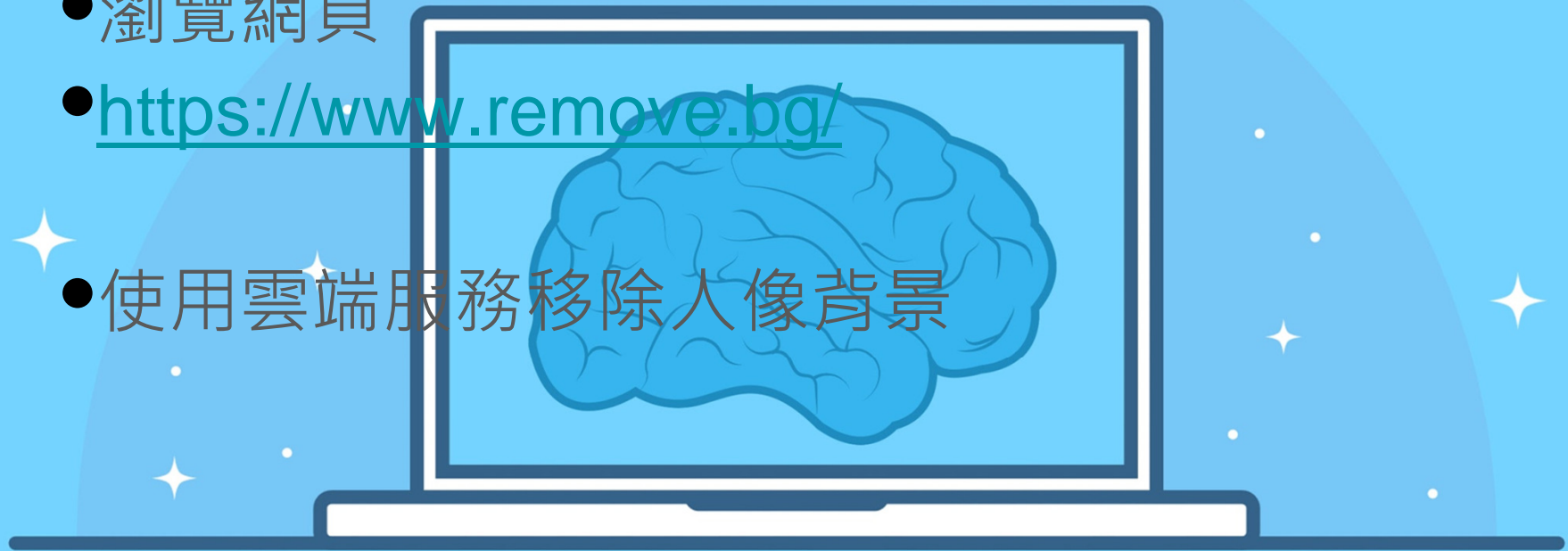
- 以 Safari 瀏覽網頁
- <https://quickdraw.withgoogle.com>

- 體驗圖像辨識



## 活動 3: 移除背景

- 瀏覽網頁
- <https://www.remove.bg/>
- 使用雲端服務移除人像背景



## 活動 4: 體驗圖像辨識+翻譯

- 以 Safari 瀏覽網頁

- <https://thing-translator.appspot.com/>

- 需要按「允許」

- Safari 使用相機功能



## 活動 5: 語音辨識

- Windows:
  - <https://dictation.io/>
- iOS App:
  - Dictate - Speech to text
- 嘗試對比一個字 或 一段文字進行語音辨識

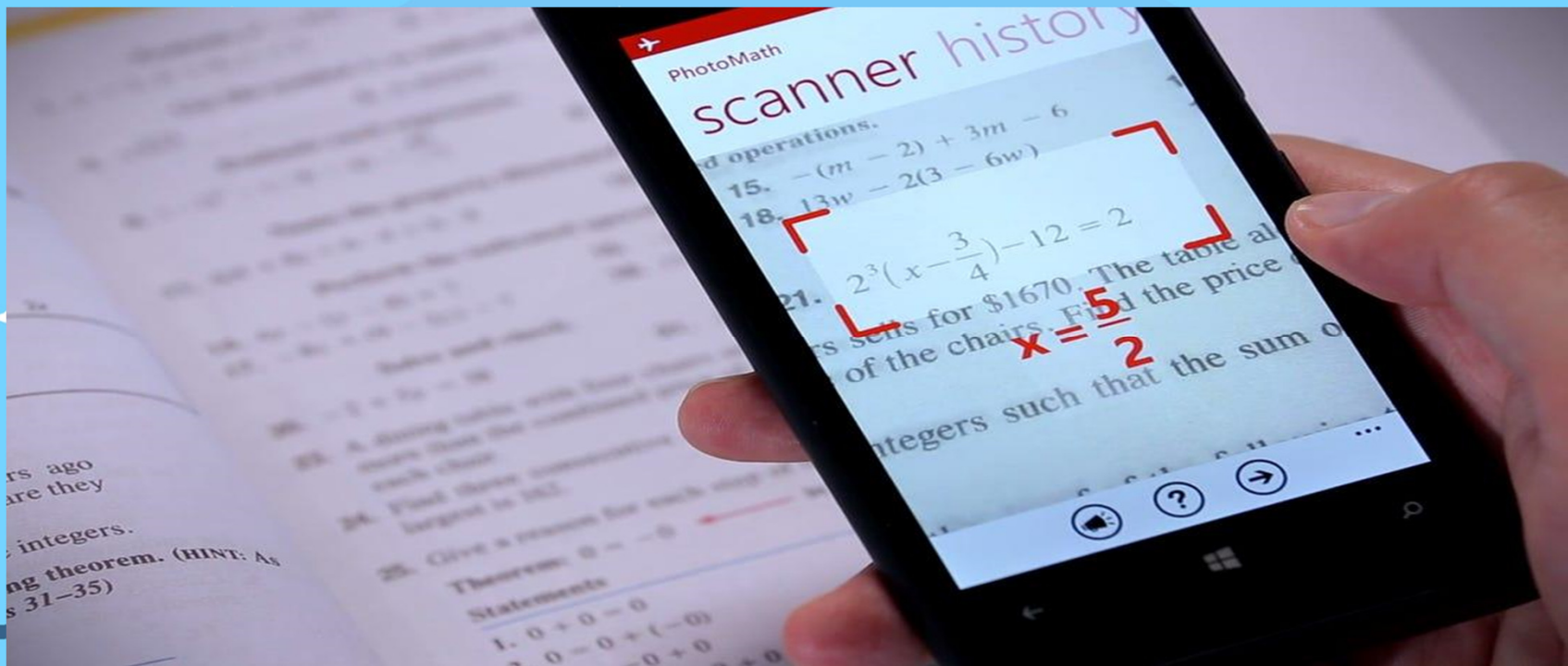


## 活動 6:自然語言理解 (問書)

- 以 Safari 瀏覽網頁
- <https://books.google.com/talktobooks/>

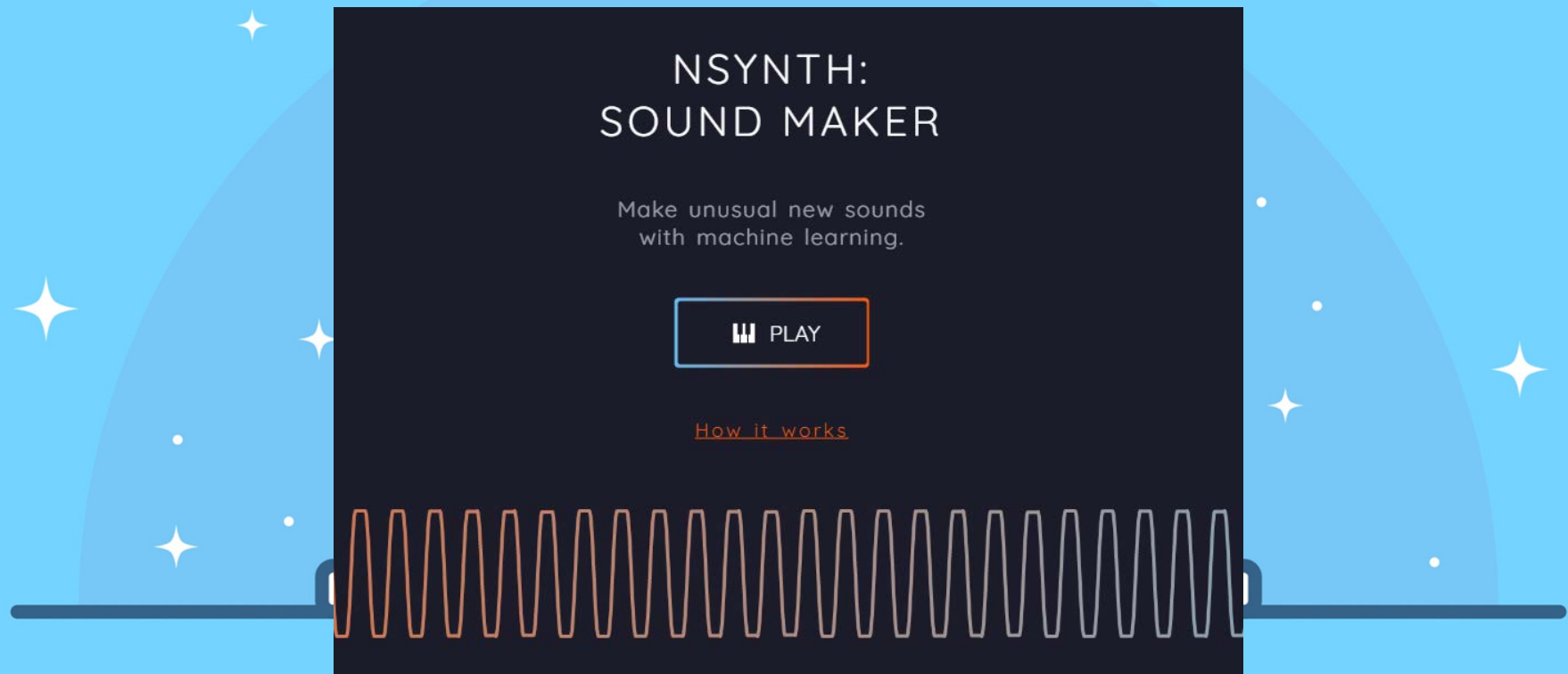


## 活動 7: PhotoMath



- <https://experiments.withgoogle.com/ai/sound-maker/view/>

## 活動 8: Sound Maker





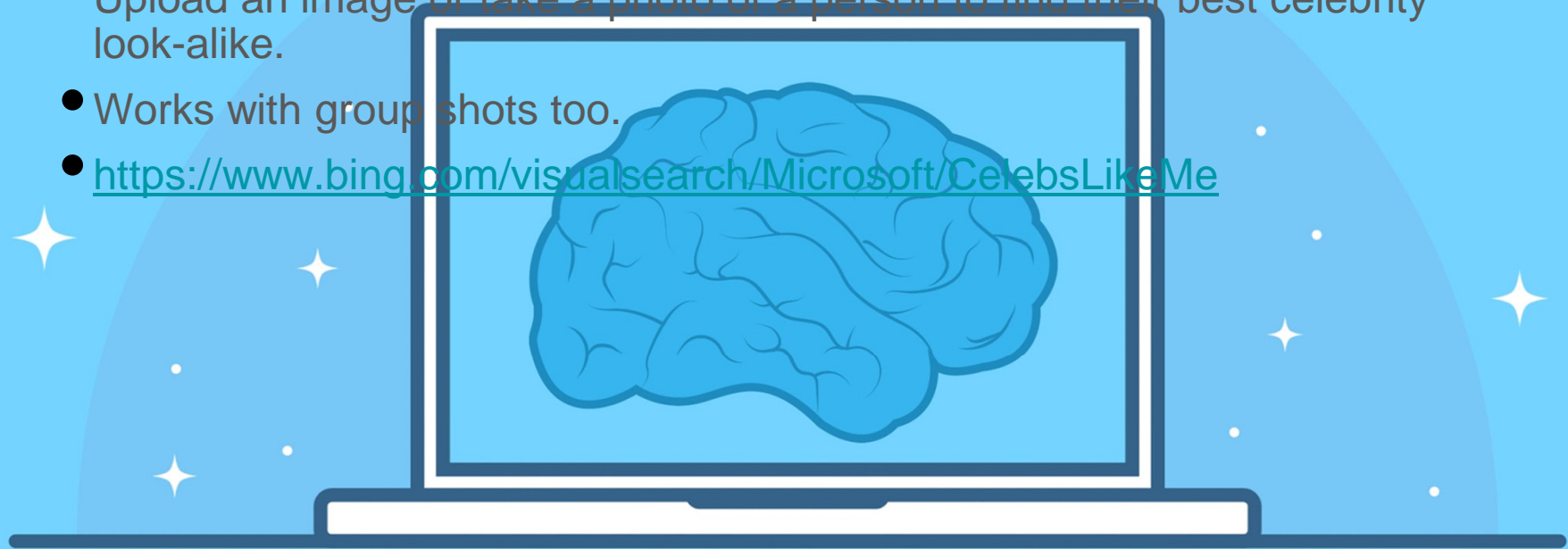
# Microsoft AI Lab: Sketch2Code

- Transform any hands-drawn design into a HTML code with AI.
- Use a sample from gallery or upload your own design
- <https://sketch2code.azurewebsites.net/>



## Microsoft AI Lab 2: Celebs Like Me

- Upload an image or take a photo of a person to find their best celebrity look-alike.
- Works with group shots too.
- <https://www.bing.com/visualsearch/Microsoft/CelebsLikeMe>



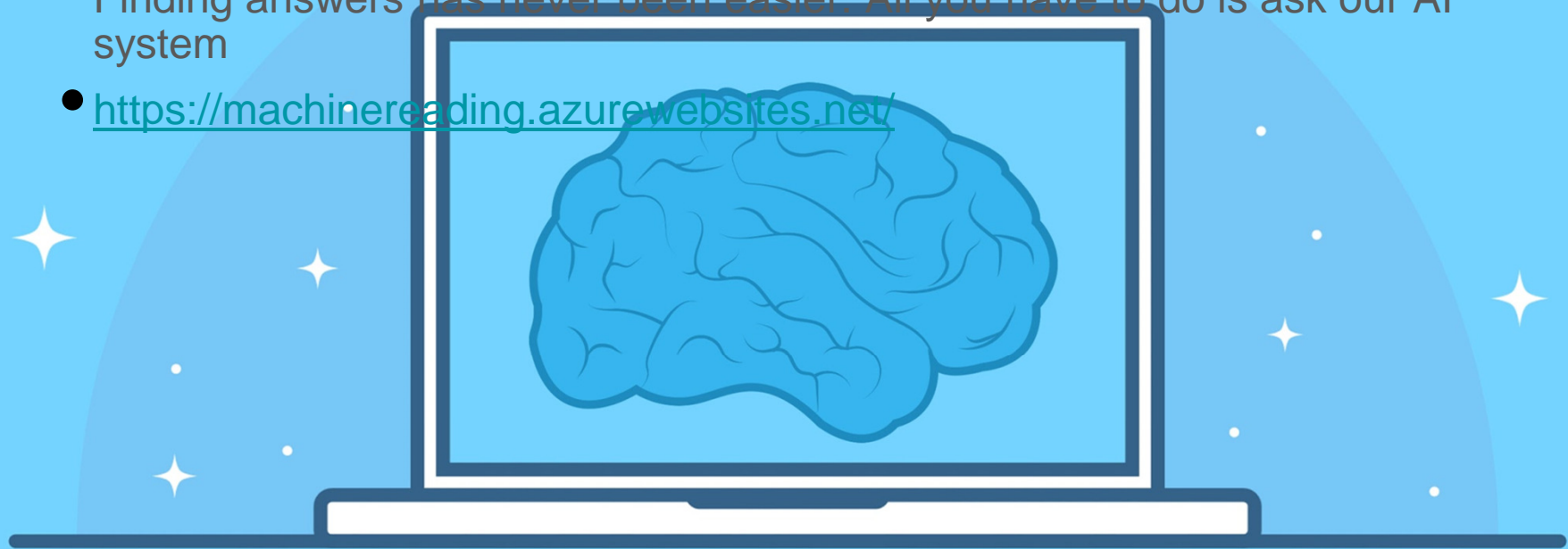
## Microsoft AI Lab 3: Microsoft Math

- Search and find math solutions from a handwritten problem.
- Users snap a photo of the problem, and the app provides a step-by-step explanation, graphs, related examples, and video lectures to better understand the math problem.
- <https://www.microsoft.com/en-us/ai/ai-lab-microsoft-math>



# Microsoft AI Lab 4: Machine Comprehension Tasks

- Finding answers has never been easier. All you have to do is ask our AI system
- <https://machinereading.azurewebsites.net/>



# 小學：人工智能課程框架

體驗

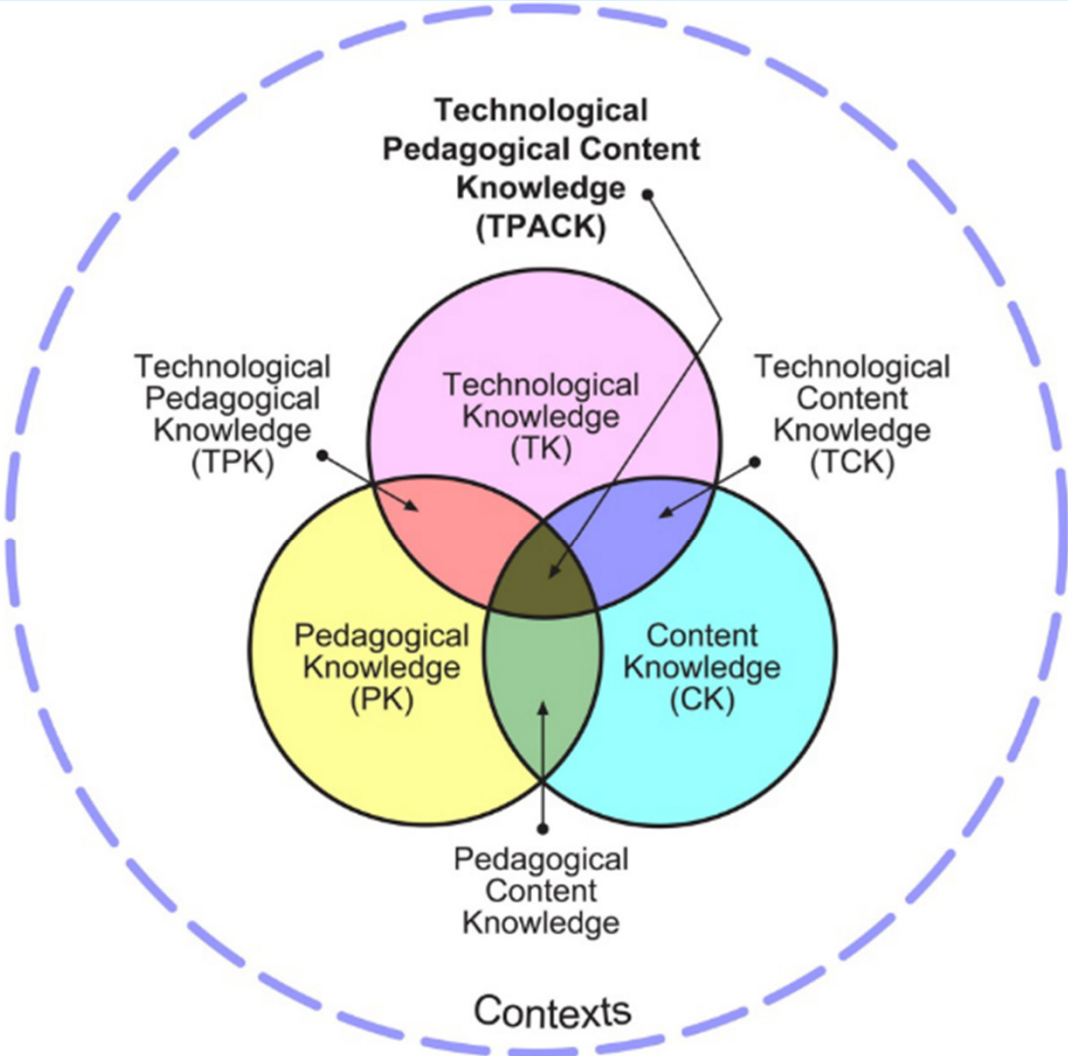
了解

掌控

# 教學法：科技教學學科知識 (TPACK)

範疇	意思
CK	內容知識 (Content Knowledge)
PK	教學知識 (Pedagogical Knowledge)
PCK	教學內容知識 (Pedagogical Content Knowledge)
TK	科技知識 (Technology Knowledge)
TCK	科技內容知識 (Technological Content Knowledge)
TPK	科技教學知識 (Technological Pedagogical Knowledge)
TPACK	科技教學學科知識 (Technological Pedagogical Content Knowledge)

# TPACK Model



# Kittenblock

● 動作  
● 外觀  
● 音效  
● 事件  
● 控制  
● 偵測  
● 運算  
● 變數  
● 函式積木

Face AI

- Detect Face
- When Face Detected
  - Age
  - Gender Male
  - Smile
  - Emotion neutral
  - Beauty
  - Skin Status health
  - Ethnicity ASIAN
- Create Face Class ClassA
- Add Face Tom Class ClassA
- Search Face Class ClassA

TensorFlow

- 讀取 CSV D:\data.csv 到
- 讀取 CSV D:\data.csv 到
- 讀取 圖片 D:\training\ xs
- 數據洗牌 xs ys
- 保存模型 名稱 mnist
- 加載模型 拓撲 D:\mnist.json
- 初始化模型 輸入維度 224x224
- 模型 添加密集層 unit 1
- 模型 添加Conv2D層 核
- 模型 添加Maxpool2D層 尺寸



# mBlock v5 人工智能 (認知服務)

The image displays three distinct code snippets from the mBlock v5 environment, each starting with a '當 被點一下' (When clicked) trigger block. The first snippet initiates a '開始 香港話(繁體) 語音識別, 持續 2 秒' (Start Cantonese (Traditional) voice recognition, duration 2 seconds) block, followed by a '說 語音識別結果' (Say voice recognition result) block. The second snippet features two parallel paths: one with '在 1 秒後辨識人臉年齡' (Recognize face age 1 second later) and '說 年齡識別結果' (Say age recognition result), and another with '在 1 秒後辨識人臉情緒' (Recognize face emotion 1 second later) and '說 高興 的指數' (Say happiness index). The third snippet uses '在 2 秒後辨識英文手寫文字' (Recognize English handwriting 2 seconds later) followed by '說 文字辨識結果' (Say text recognition result).

```
當 被點一下
開始 香港話(繁體) 語音識別, 持續 2 秒
說 語音識別結果

當 被點一下
在 1 秒後辨識人臉年齡
說 年齡識別結果

當 被點一下
在 1 秒後辨識人臉情緒
說 高興 的指數

當 被點一下
在 2 秒後辨識英文手寫文字
說 文字辨識結果
```

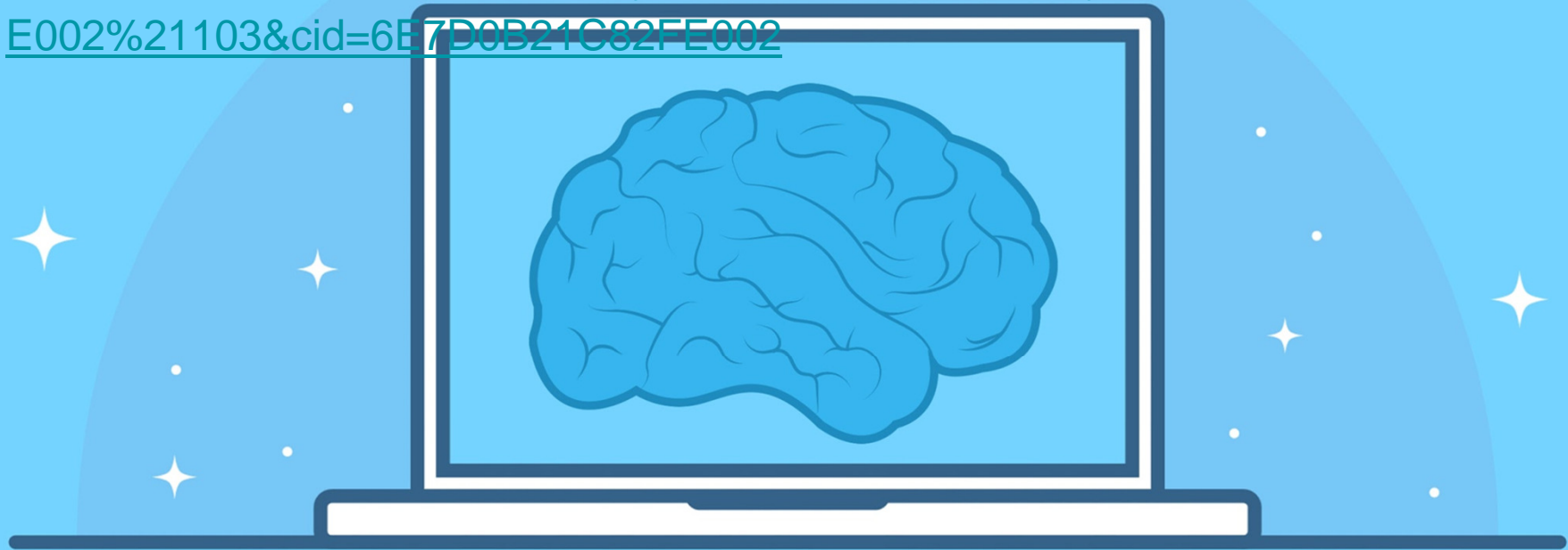
### 3. 習作討論: 如何應用人工智能於教育中

<https://jamboard.google.com/d/1hIEOwzIIPgRX8vqdMxBK3NaBA1PXRn5YE355I7hTjVU/edit?usp=sharing>



# Office365 Setup

<https://onedrive.live.com/?authkey=%21AF8WbTHYheIMy38&id=6E7D0B21C82FE002%21103&cid=6E7D0B21C82FE002>



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