



# Reactor

Azure 認知服務動手實驗



## Download Today's Event Resources

Includes free learning path courses  
& documentation on AI Fundamentals

(Scan QR Code)



<https://aka.ms/AAer0x6>



## Stay Connected with Us!



[youtube.com/microsofthk](https://youtube.com/microsofthk)



@mshktech



@Microsoft HK Dev Community

# 我係



## Kinfey Lo – (盧建暉)

Microsoft Cloud Advocate

前微軟MVP、Xamarin MVP和微軟RD，擁有超過10年的雲原生、人工智能和流動應用開發經驗，為教育、金融和醫療提供應用。在微軟，為技術人員和不同行業宣講技術和相關應用場景。

Love Coding(Python , C# , TypeScript , Swift , Rust , Go )

專注於人工智能，雲原生，流動平台移動開發

**Github :** <https://github.com/kinfey>

**Email :** [kinfeylo@microsoft.com](mailto:kinfeylo@microsoft.com)   **Blog :** <https://dev.to/kinfey>

**Twitter :** @Ljh8304

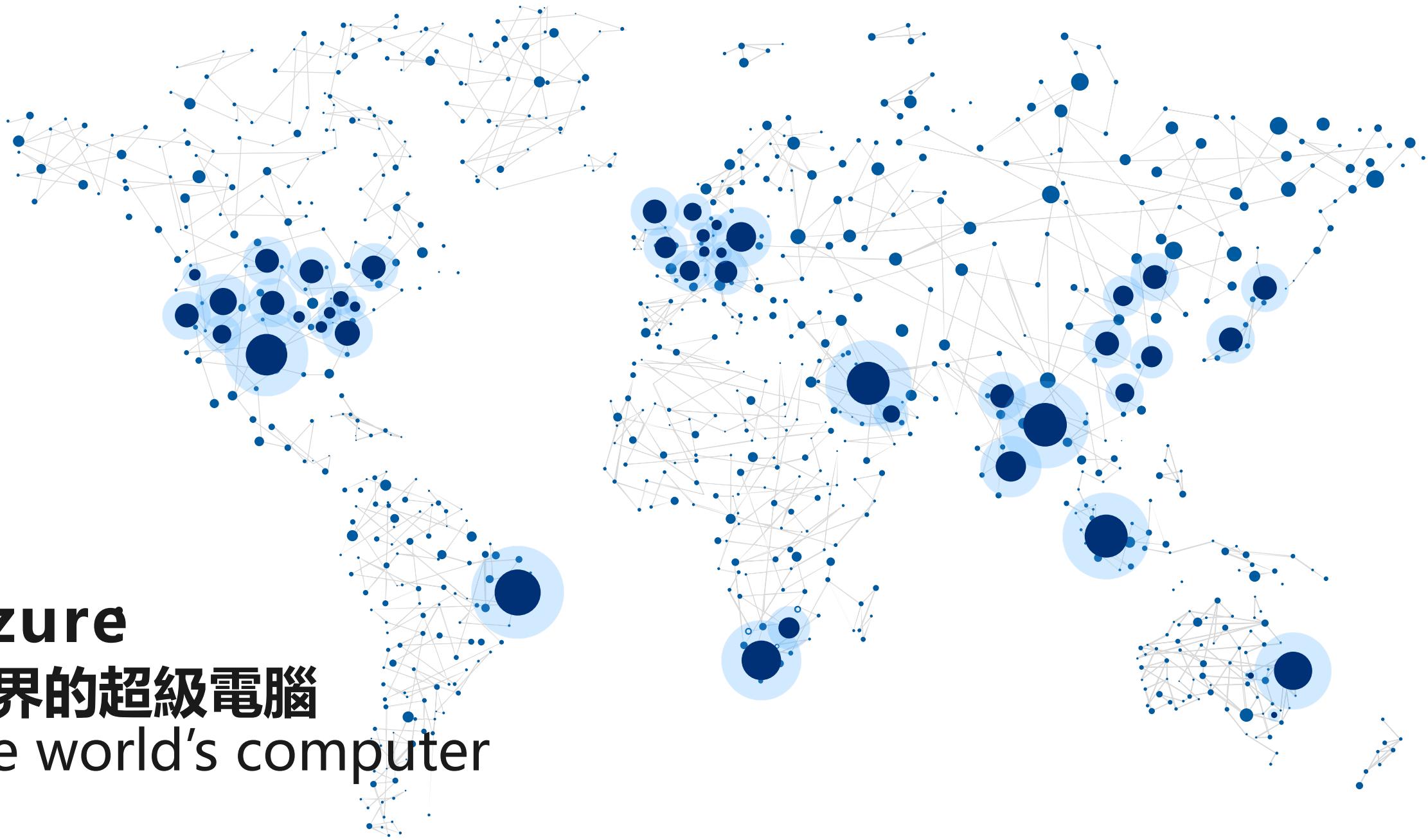




# Microsoft AI 介紹



Azure  
世界的超級電腦  
the world's computer



# 人工智慧的場景

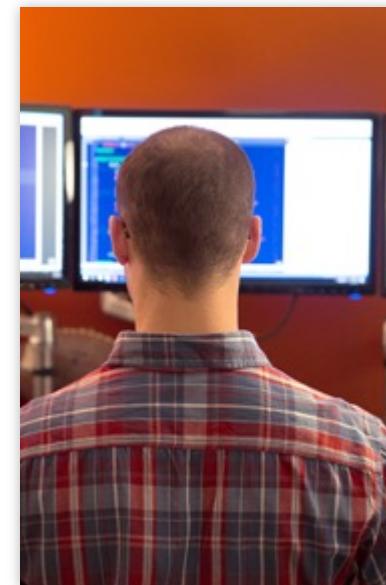
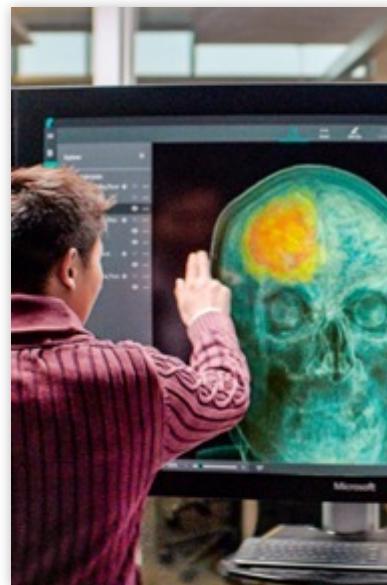
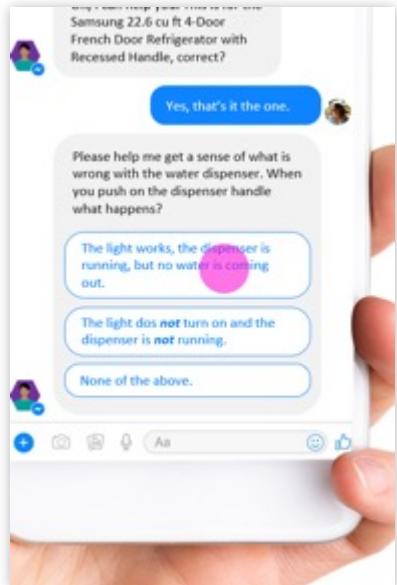
**新一代商務場景**  
B2B, B2C, B2E

**人員、對象  
和活動檢測**  
零售、製造、安全

**人工智慧  
輔助專業人員**  
市場營銷、法律、金融

**知識挖掘**  
文件、視頻

**自動化系統**  
車輛、網路



# Azure AI

符合條件

關鍵任務

負責任

Scenario specific services



Bot Service



Cognitive Search



Form Recognizer



Video Indexer

Customizable AI models

Vision, Speech, Language, Decision



Azure Cognitive Services

Machine Learning service



Azure Machine Learning

# The Microsoft AI platform

*Cloud-powered AI for every developer*

## Services

### CUSTOM AI

Azure Machine Learning

### PRE-BUILT AI

Cognitive Services

### CONVERSATIONAL AI

Bot Framework

## Tools

### CODING & MANAGEMENT TOOLS

VS Tools  
for AI

Azure ML  
Studio

Azure ML  
Workbench

Others (PyCharm, Jupyter Notebooks...)

## Infrastructure

### AI ON DATA

Cosmos  
DB

SQL  
DB

SQL  
DW

Data  
Lake

Spark

DSVM

### AI COMPUTE

Batch  
AI

ACS

Edge

CPU, FPGA, GPU

### DEEP LEARNING FRAMEWORKS

3rd Party

Cognitive  
Toolkit

TensorFlow

Caffe

Others (Scikit-learn, MXNet, Keras,  
Chainer, Gluon...)

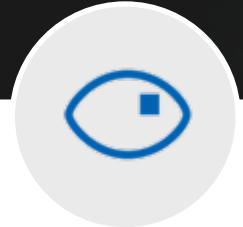
# Azure 認知服務

## Azure Cognitive Services



# Azure Cognitive Services

賦予您的應用人性化的一面



## Vision

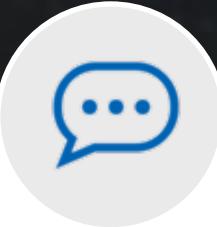
Computer Vision

Face

Form Recognizer

Ink Recognizer

Video Indexer



## Speech

Speech To Text

Text To Speech

Speech Translation

Speaker Recognition



## Language

Immersive Reader

QnA Maker

Text Analytics

Translator



## Decision

Anomaly Detector

Content Moderator

Personalizer

## CUSTOMIZATION

Custom Vision  
Service

Custom Speech  
Service

Language  
Understanding

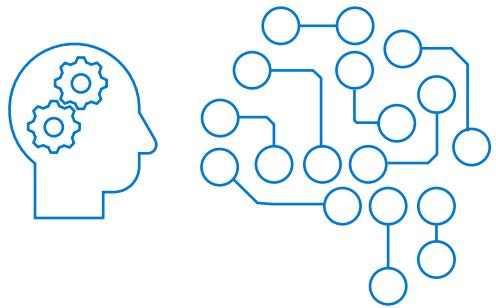
Custom Decision  
Service



# Azure Cognitive Services

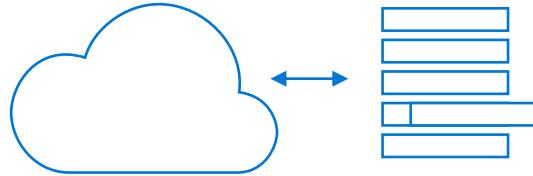
## 核心差異化

### 突破性研究



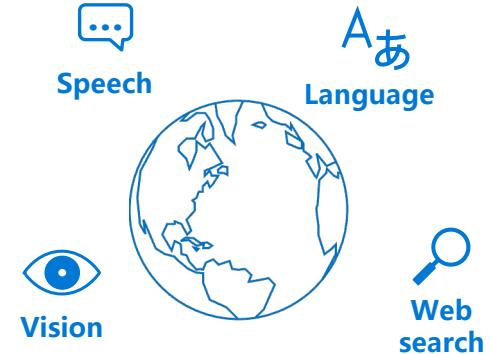
率先實現超越人類

### 可執行在任意終端



邊緣設備的容器支持

### 全面可靠

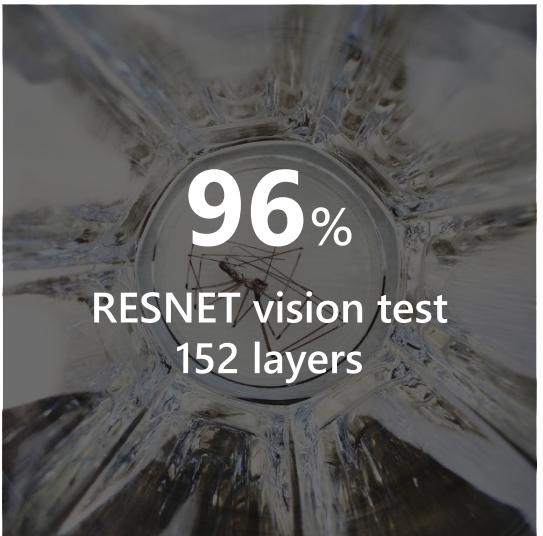


14 個GA服務  
在 25 個 Azure 區域  
30 多項合規認證

# 微軟人工智能爆點

## Microsoft AI breakthroughs

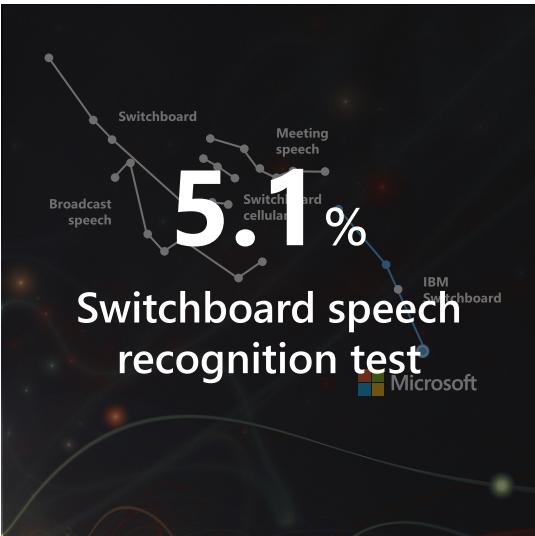
### 視覺 Vision



2016

Object recognition  
Human parity

### 語音 Speech



2017

Speech recognition  
Human parity

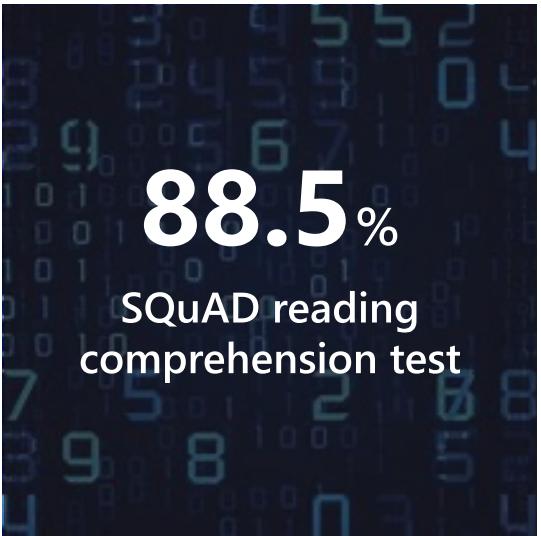
### 語言 Language



March 2018

Machine translation  
Human parity

### 語言 Language



January 2018

Machine reading comprehension  
Human parity



# Microsoft Cognitive Service 產業應用介紹

# 從工業 4.0 談起



## 製造業中的人工智慧



吸引客戶



賦能員工



優化運營



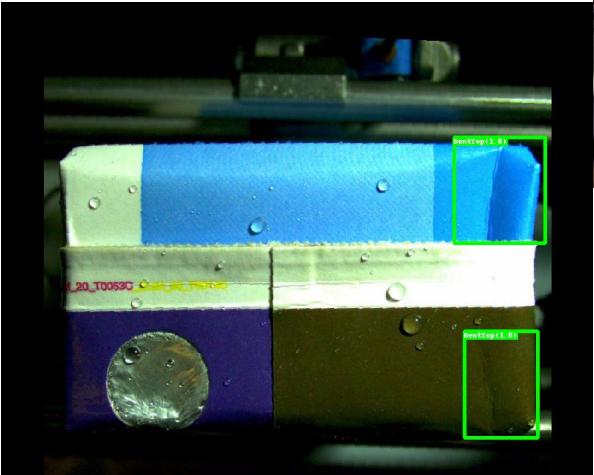
改造產品

# 製作業中的案例

質量方案



視覺

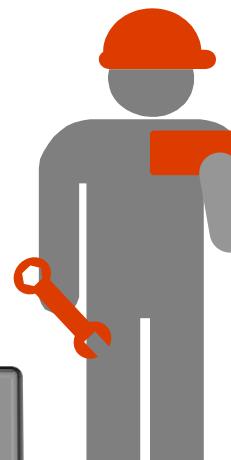


視頻監控



認知情景

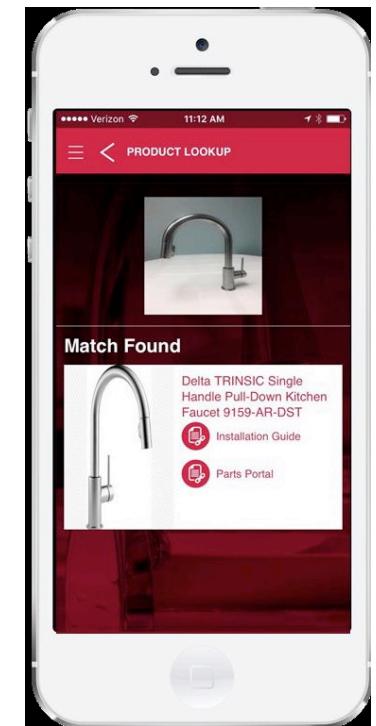
安全



語音



知識庫

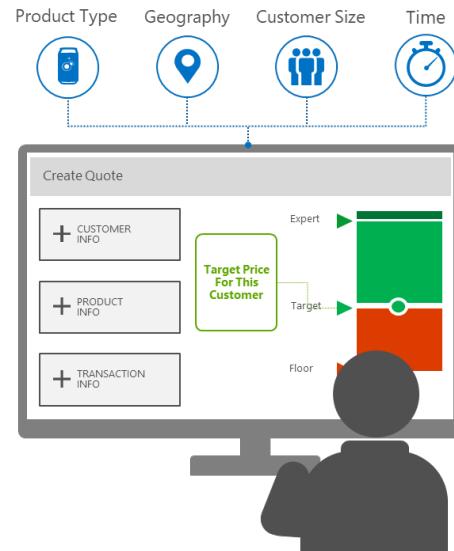


# 合作夥伴啟用方案

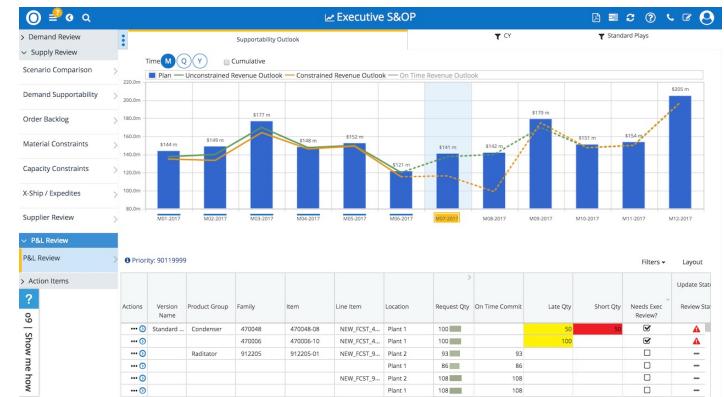
AI based Contract Management



AI Based Dynamic Pricing



AI Based Integrated Planning & Ops



Powering Modern Commerce  
with Dynamic Pricing Science

9  
09

1

# 案例一

# 認知服務案例學習 – 匹拉摩玻璃

Piramal Glass 擁有 60 條生產線，每天生產 1,375 噸玻璃單元，所有這些生產線都是 24/7 全天候運行。玻璃製造涉及多個階段，例如批量製備、熔爐中的原材料熔化、瓶子成型、處理、各種質量檢查和包裝。在一天之內，Piramal Glass 在其生產線上生產了數十種瓶子。

玻璃容器是在一個非常複雜的連續製造過程中生產的，因為有許多參數會影響質量。如果生產批次在質量控製過程中出現較高的廢品率，通常會在下一批中進行糾正，從而導致生產損失。

此外，每個批次的數據都是手動收集的。工廠人員將在紙質日誌中捕獲數據，事實證明這些日誌難以分析，並且無法提供及時的見解來改進生產。因此，Piramal Glass 計劃提高生產效率並最大限度地減少缺陷，以利用技術改變其製造流程。

“我們的願景是成為一個洞察力驅動的組織，每個員工都可以在我們製造的每一瓶酒中結合手工藝和科學。最終，我們預計數字技術的使用將成為我們邁向工業 4.0 的基礎，”Piramal Glass 首席數字官 Poorav Sheth 說。



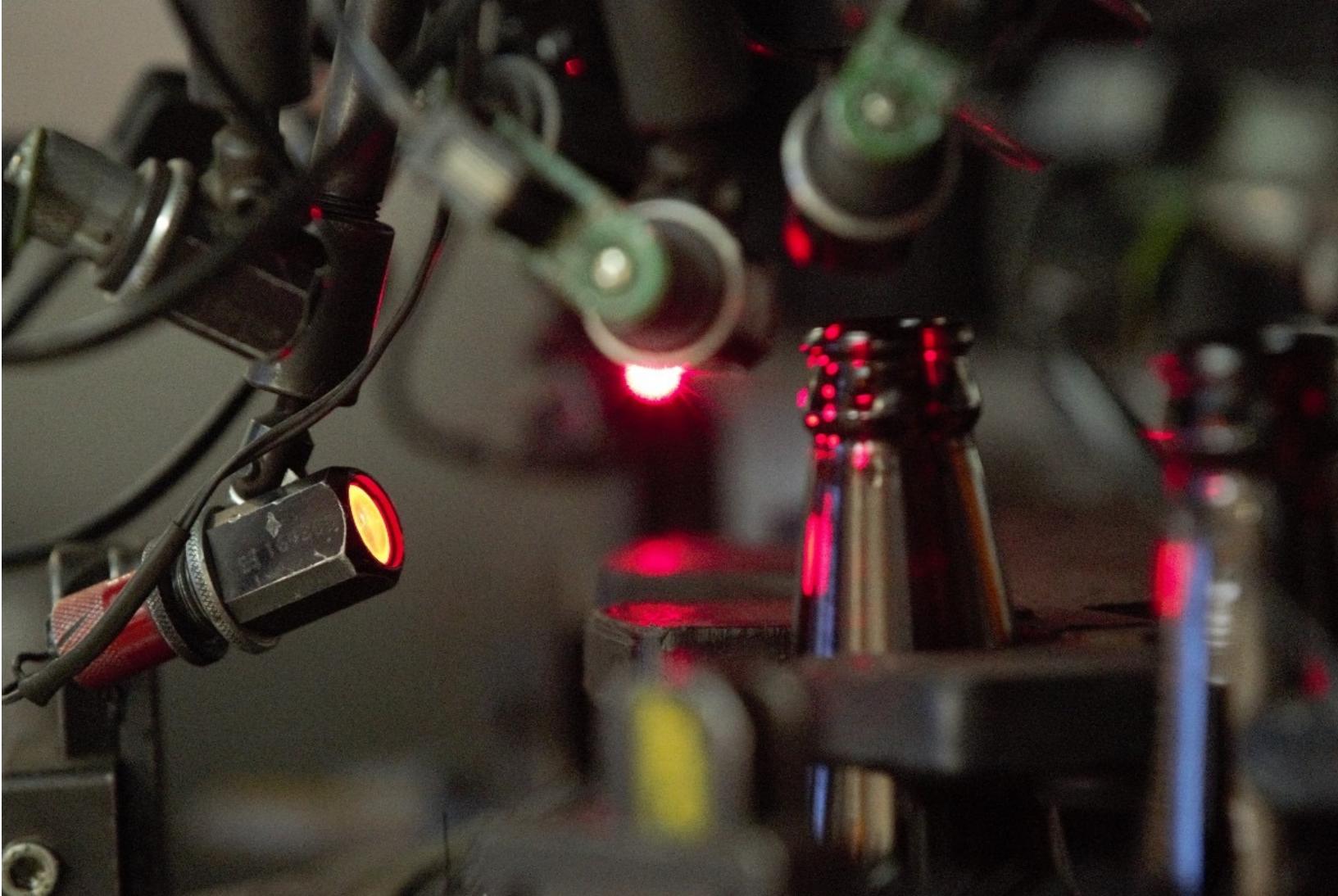
# 認知服務案例學習 – 匹拉摩玻璃



Piramal Glass 正在使用 Microsoft 認知服務平台AI 和機器學習模型，以解決每個生產批次的異常檢測、生產效率、缺陷因果關係和產品質量問題。該公司正在創建其所有設備和流程的統一視圖，以創建製造工廠的數字雙胞胎。



# 認知服務案例學習 – 匹拉摩玻璃



2

## 案例二

# Jabil 通過預測功能最 大限度地減少停機時 間

“我們已經看到至少 80% 的準確率可以預測機器流程將減慢或失敗，從而節省 17% 的廢品和返工。”：“

— Clint Belinsky, Vice President, Global Quality  
Jabil



▷ Watch



# Jabil 預測分析

## 提高質量

- 在上游過程中預測下游缺陷產品發生之前
- 用於預警檢測的高級統計

## 設備優化

- 用於自主設備調整的機器學習算法
- 無需操作員干預的 M2M

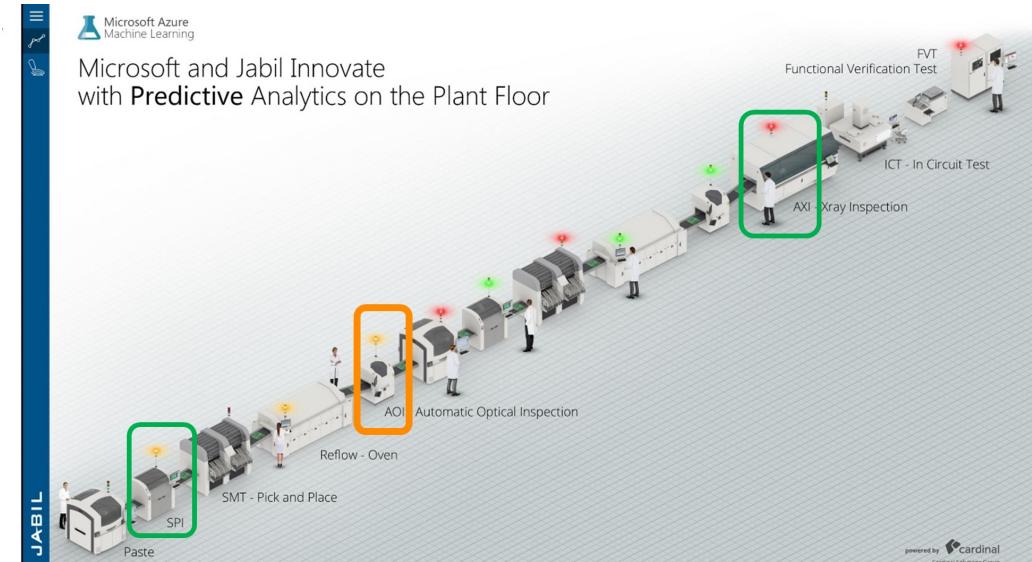
## 增加設備正常運行時間

- 通過預測未來的設備故障避免計劃外停機
- 優化維護計劃並降低成本

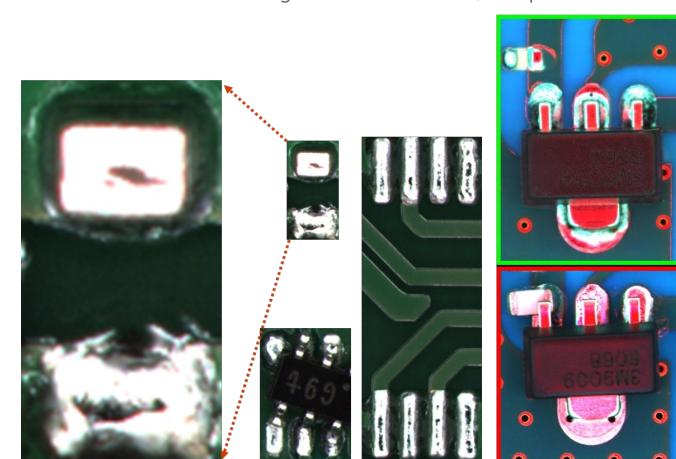
## 解決方法

使用具有 50 個隱藏層的捲積神經網絡 (CNN) 的圖像分類系統，在通用公共數據 (ImageNet) 上進行了預訓練。

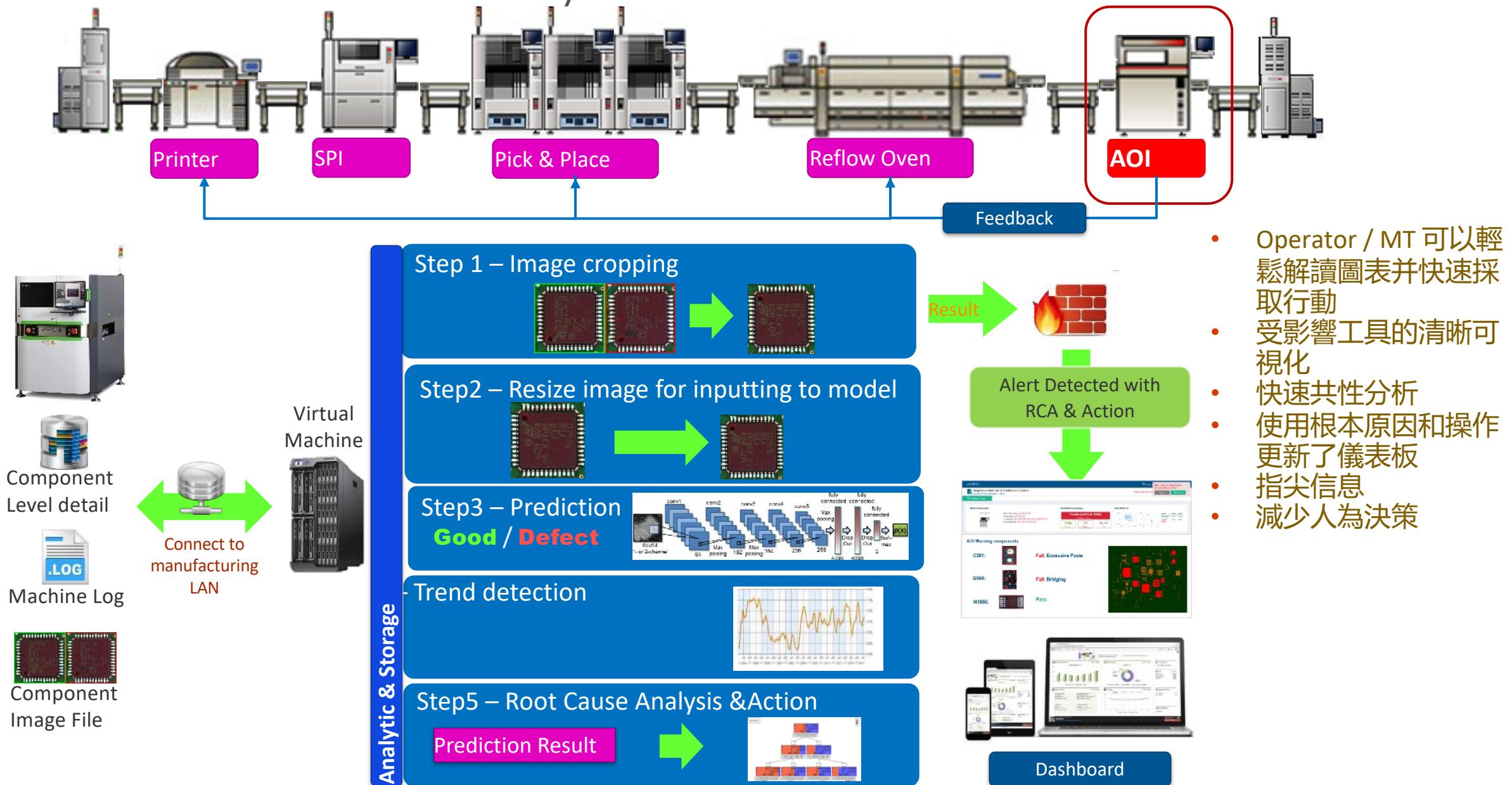
- 分類性能結果良好（基於時間的交叉驗證概率  $>0.9$ ），這表明該解決方案適用於大幅減少組裝電路板中電子元件故障檢測的人為乾預。



Failure images: Real relative sizes, except the blowout

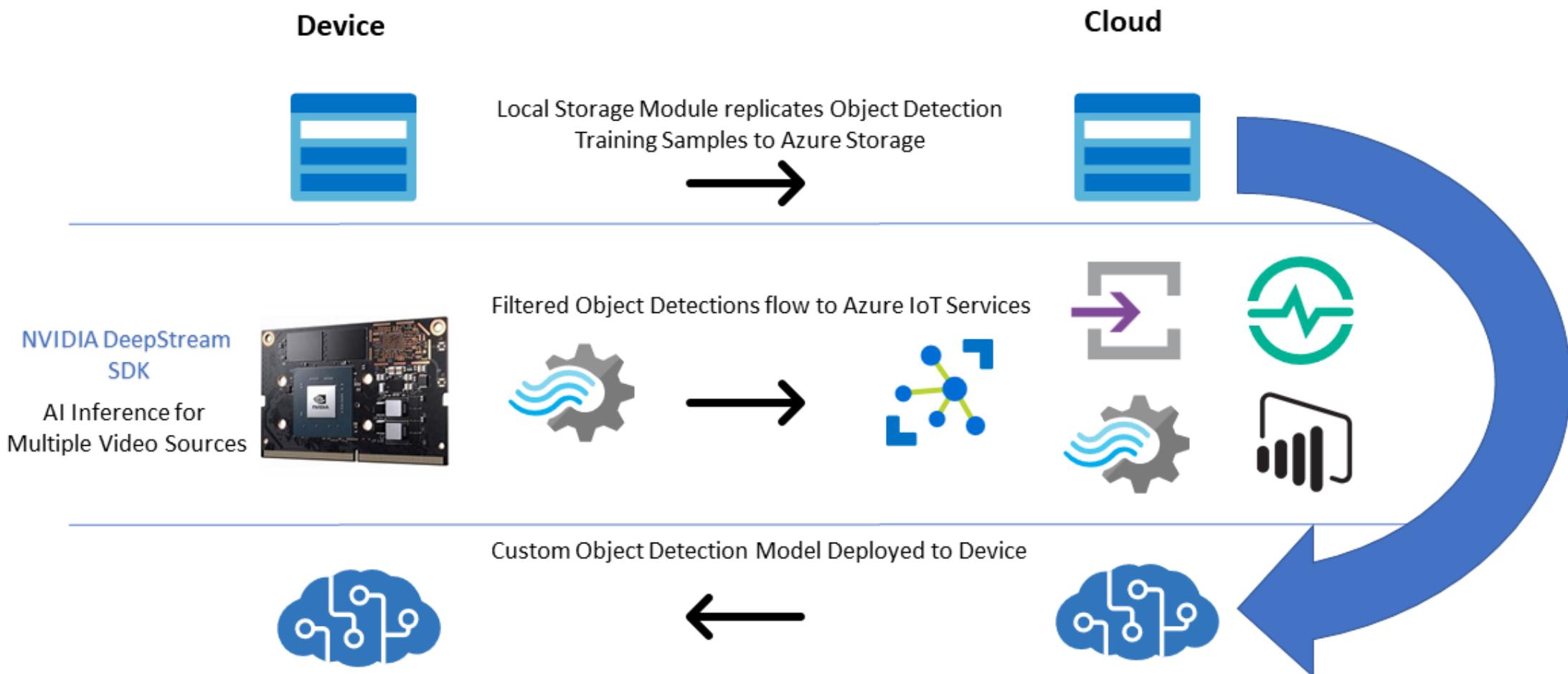


# AOI Predictive Analysis



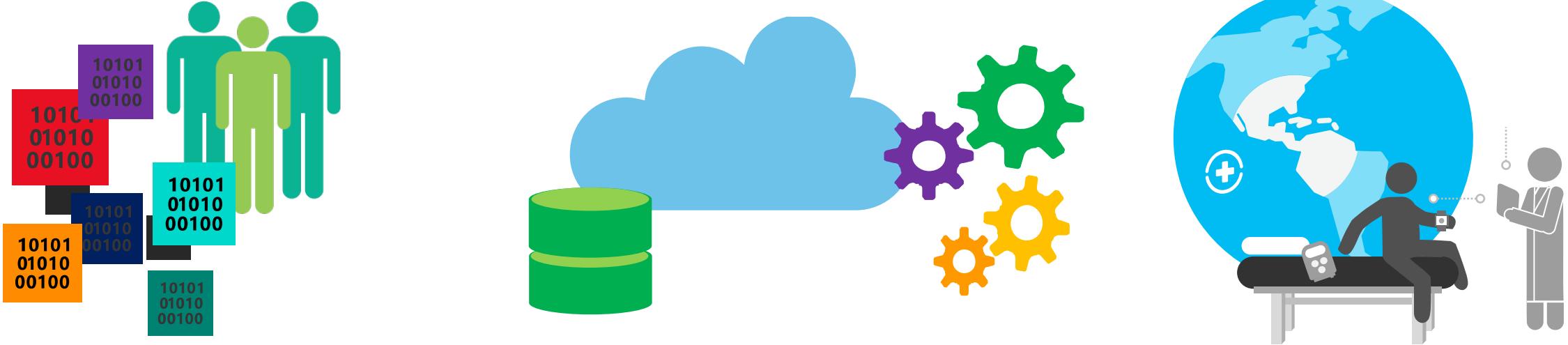
# 技術實踐

# 電腦視覺應用場景架構圖



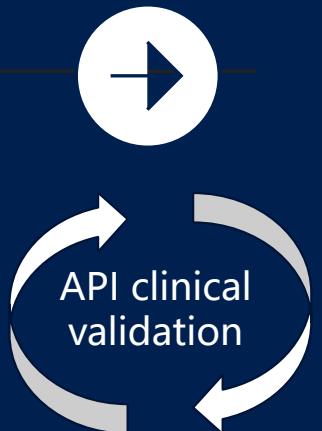
# 醫療保健

# 用於醫療保健的 Microsoft AI 體系



數據聯盟

世界一流  
健康提供者  
(*Data, Knowledge,  
Validation*)



智慧平臺

Microsoft Azure  
& AI Platform



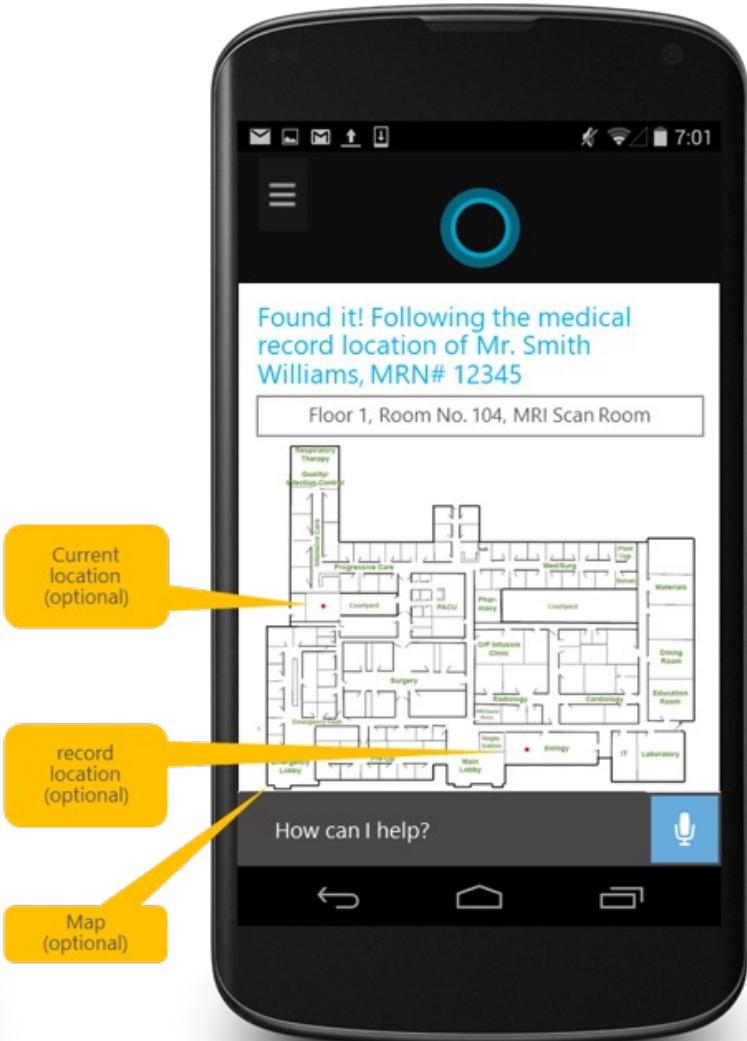
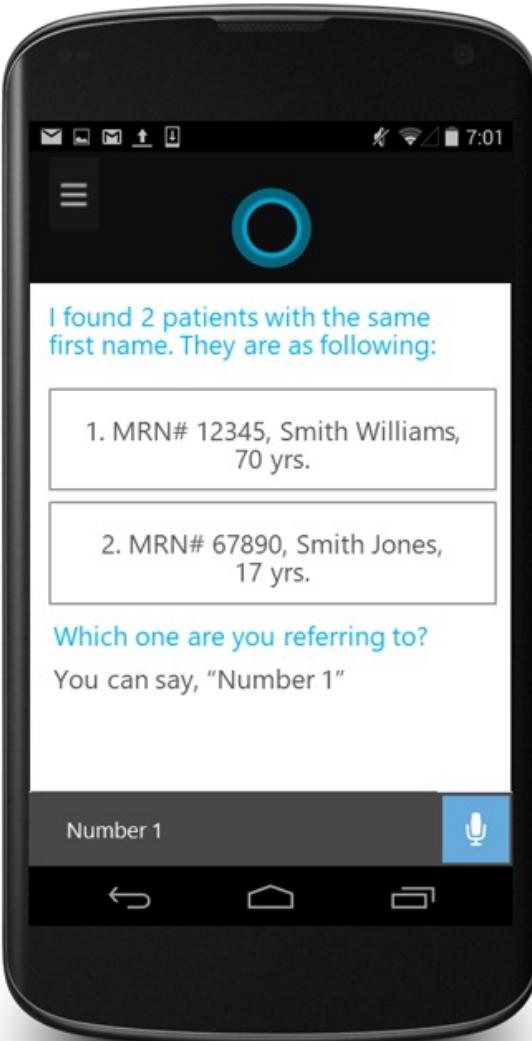
全球分佈

隨時隨地訪問值得信賴  
的 API  
(*Screening Programs, EMRs,  
Devices*)

1

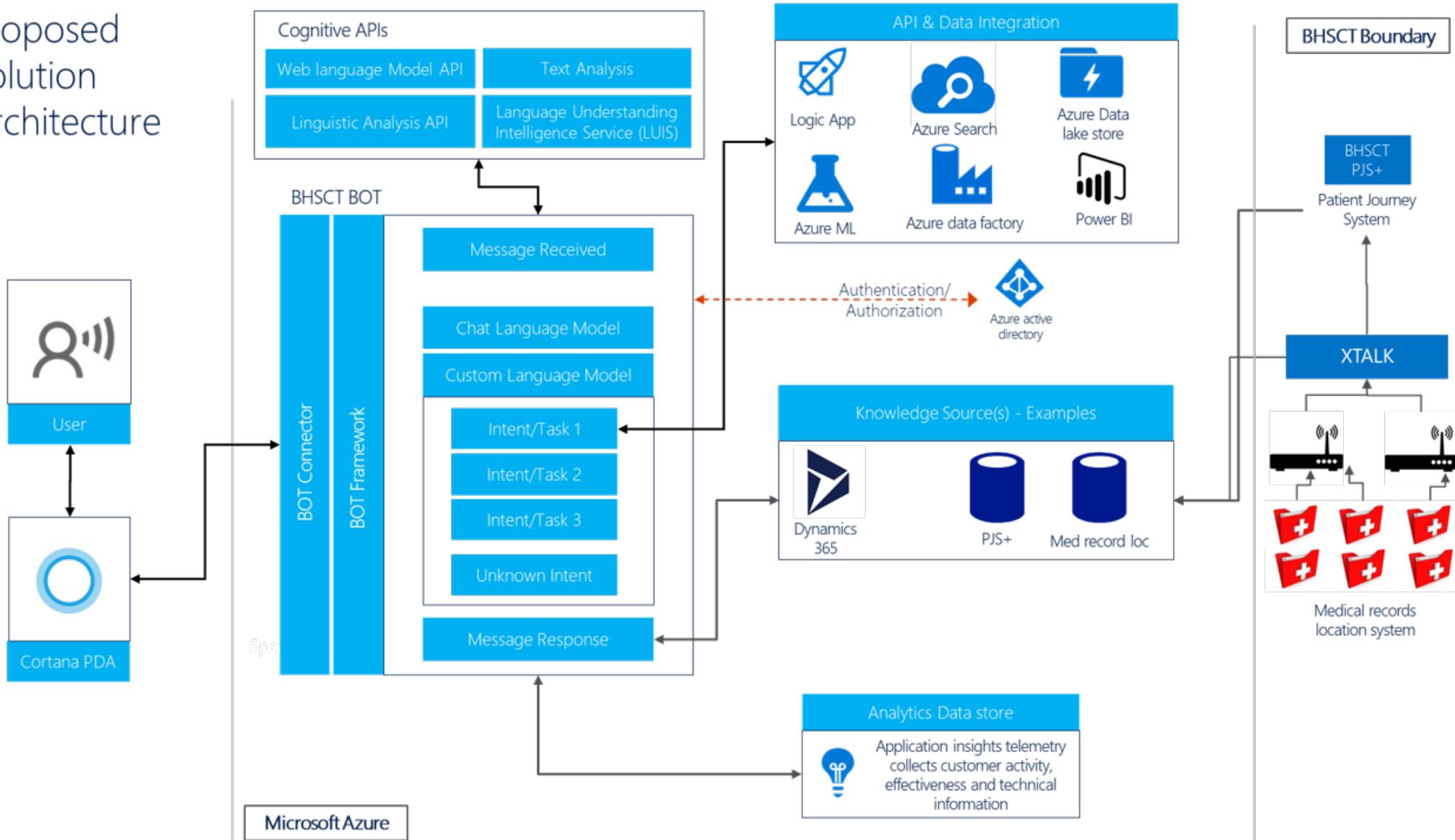
# 案例一

# 智慧護士助理



# 智慧護士助理

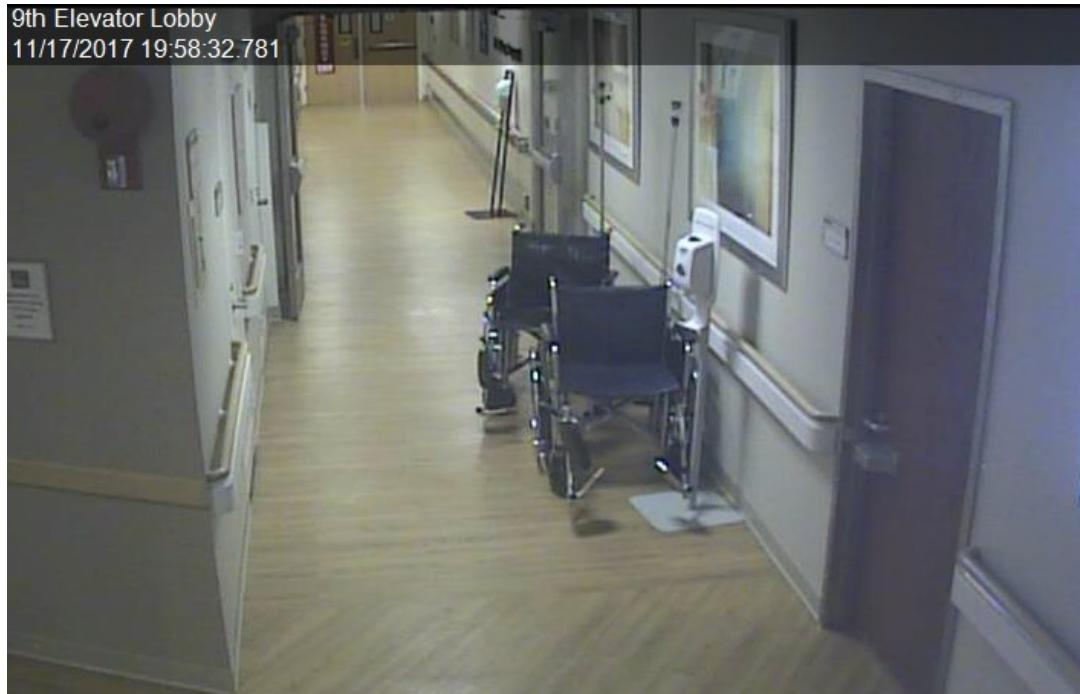
## Proposed Solution Architecture



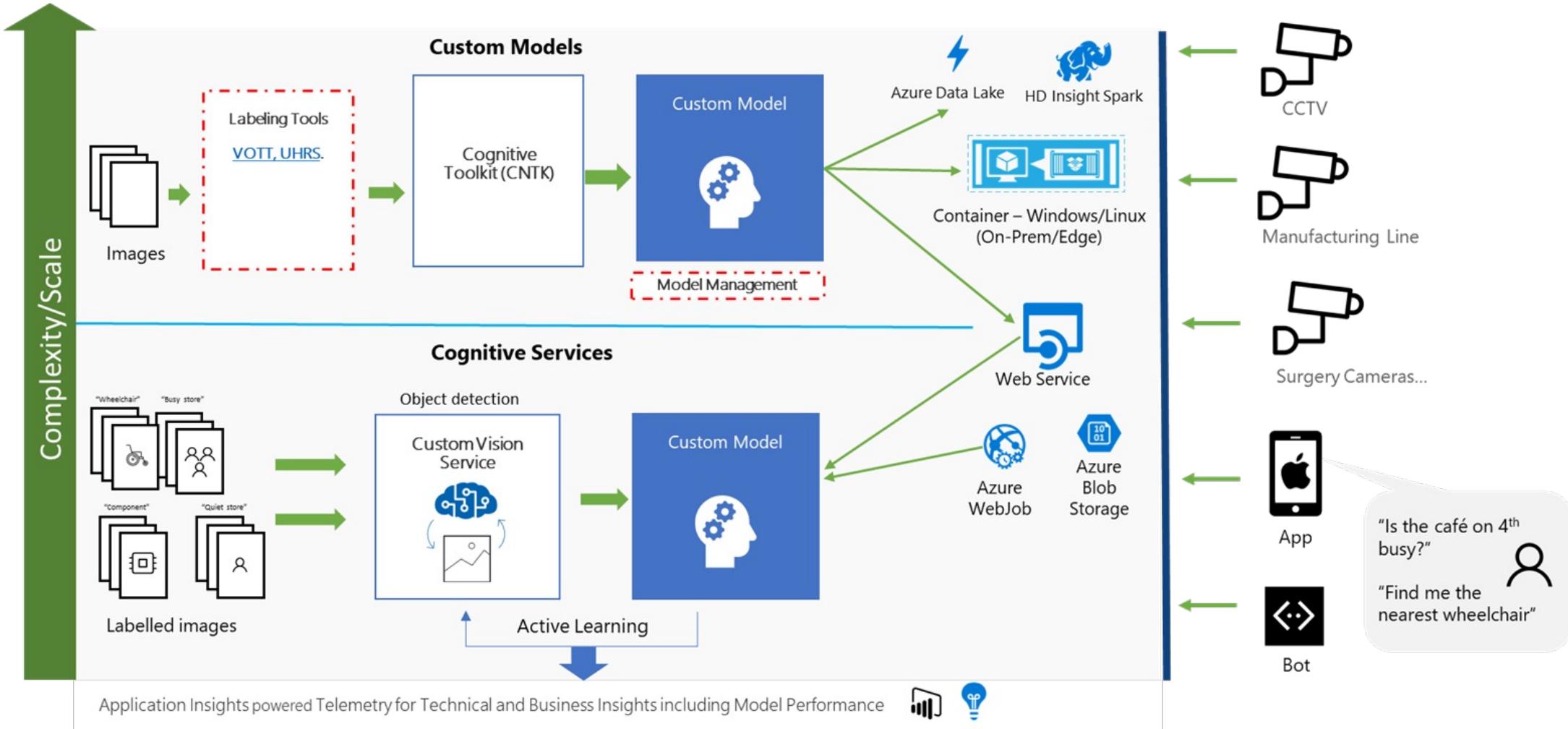
2

## 案例二

# 醫院管理



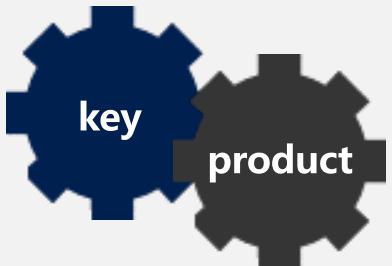
# 醫院管理



# 選擇認知服務理由



簡單



柔性



支援性強





# Microsoft Cognitive Service 場景應用

# 疫情下 人工智慧能做什麼



1

# 實戰一

通過文件分析，來分析 Covid 19 論文集

# CORD Papers Dataset

The screenshot shows a research article abstract from THE LANCET Oncology. At the top, there's an advertisement for 'THE LANCET Conference Alerts' with a 'SIGN UP' button. Below it, the THE LANCET Oncology logo is visible, along with a 'Log in' link and a search icon. The main content starts with a 'Background' section, which states: 'Addition of trastuzumab to first-line chemotherapy improves overall survival in patients with HER2-positive metastatic gastric cancer. We assessed the safety and activity of pembrolizumab in combination with trastuzumab and chemotherapy in first-line HER2-positive metastatic oesophagogastric (gastric, oesophageal, or gastroesophageal junction) cancer.' Following this is a 'Methods' section, which describes the study as an investigator-initiated, open-label, non-randomised, single-arm, single centre, phase 2 trial. The study included patients aged 18 years or older with HER2-positive metastatic oesophagogastric cancer. Patients received an initial induction cycle of 200 mg flat dose of intravenous pembrolizumab and 8 mg/kg loading dose of intravenous trastuzumab. Subsequent cycles involved 130 mg/m<sup>2</sup> of intravenous oxaliplatin or 80 mg/m<sup>2</sup> of cisplatin on day 1, 850 mg/m<sup>2</sup> of oral capecitabine.

## CORD-19 Dataset

包含超過 800,000 篇關於 COVID-19 和冠狀病毒家族的學術文章，供全球研究界使用

400,000+ 篇文章全文

### Data Source

<https://allenai.org/data/cord-19>

<https://www.kaggle.com/allen-institute-for-ai/CORD-19-research-challenge>



# 問題

## 每月出現大約 30,000 篇與 COVID 相關的科學論文

# Cognitive Language Services

## Text Analytics



預建功能，包括命名實體提取、情感分析、PII 提取、語言檢測、摘要等。

## Language Understanding (LUIS)



為會話應用程序構建自定義 NLU 模型以對意圖進行分類並提取實體。

[www.luis.ai](http://www.luis.ai)

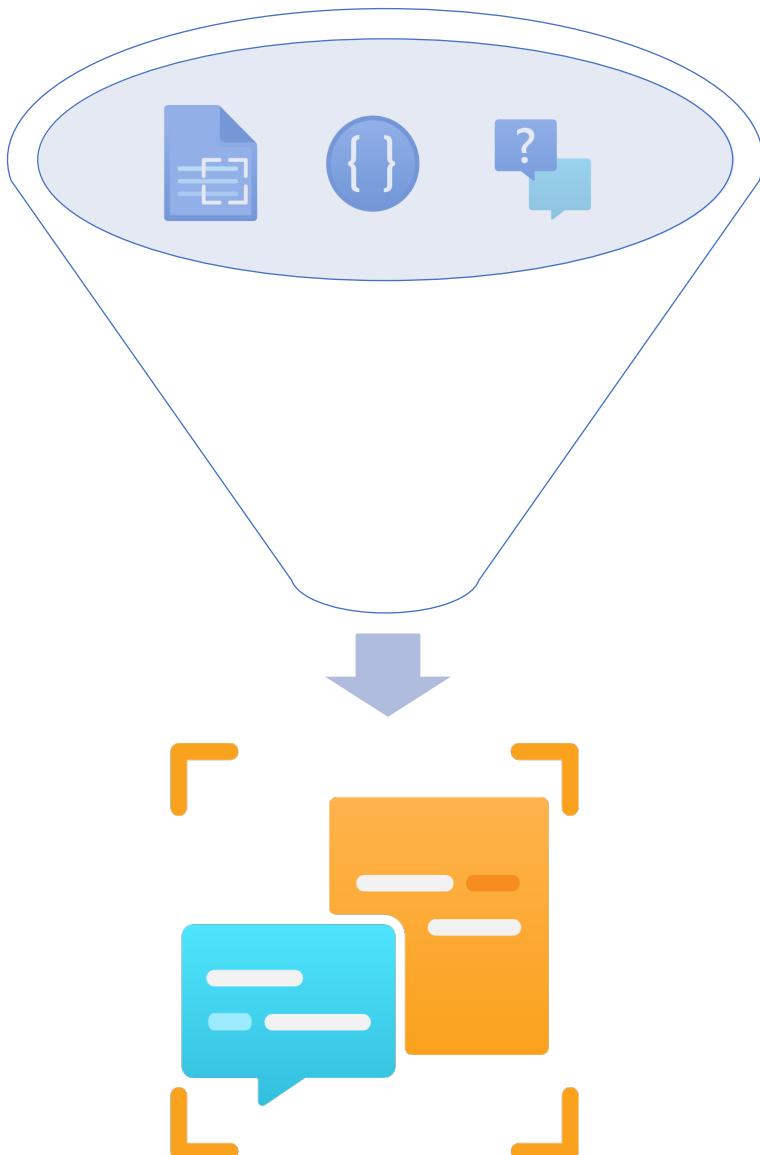
## QnA Maker



構建自定義知識庫並為來自非結構化文本的問題提供答案。

[www.qnamaker.ai](http://www.qnamaker.ai)

# 進化後的 Cognitive Service for Language



- 以前的單獨服務合併為一個功能組下
- **服務大一統**
  - 一個 Azure 資源
  - 一種用戶體驗
  - 一個 SDK
  - 一組 API
- **一個有凝聚力、更簡單、功能強大的產品**
  - 最先進的
  - 多種語言
  - 新的和改進的

# The Language Studio

<https://language.cognitive.azure.com>

Cognitive Services | Language Studio

Language Studio >

What would you like to do?

Extract information | Classify text | Understand conversational language | Extract health information | Answer questions

[Extract information](#)

Use Natural Language Understanding (NLU) to extract information from unstructured text. Use these tools in order to do things like identify key phrases or Personally Identifiable Information (PII), summarize text, recognize and categorize named entities, or customize an entity extraction model on top of your domain set. [Learn more about text extraction](#)

[Back to top](#)



**Extract PII** (GA)

Identify sensitive entities in text that are associated with an individual

[Try it out](#)



**Extract key phrases** (GA)

Identify the most important points in a piece of text

[Try it out](#)



**Find linked entities** (GA)

Identify and disambiguate the identity of an entity found in text

[Try it out](#)



**Extract named entities** (GA)

Identify different entities in text and categorize them into pre-defined types

[Try it out](#)



**Custom named entity recognition** (Preview)

Train an extraction model to identify your domain categories using your own data.

[Open custom named entity recognition](#)

[Back to top](#)

**Classify text**

Use Natural Language Understanding (NLU) to detect the language or classify the sentiment of any piece of text you have. You can also classify your text documents by customizing a classification model over your dataset. [Learn more about custom text classification](#)



**Analyze sentiment and mine opinions** (GA)

Detect positive, negative and neutral sentiment in text. Get more insights by mining opinions.

[Try it out](#)



**Detect language** (GA)

Evaluate text and detect a wide range of languages, and variant, dialects.

[Try it out](#)



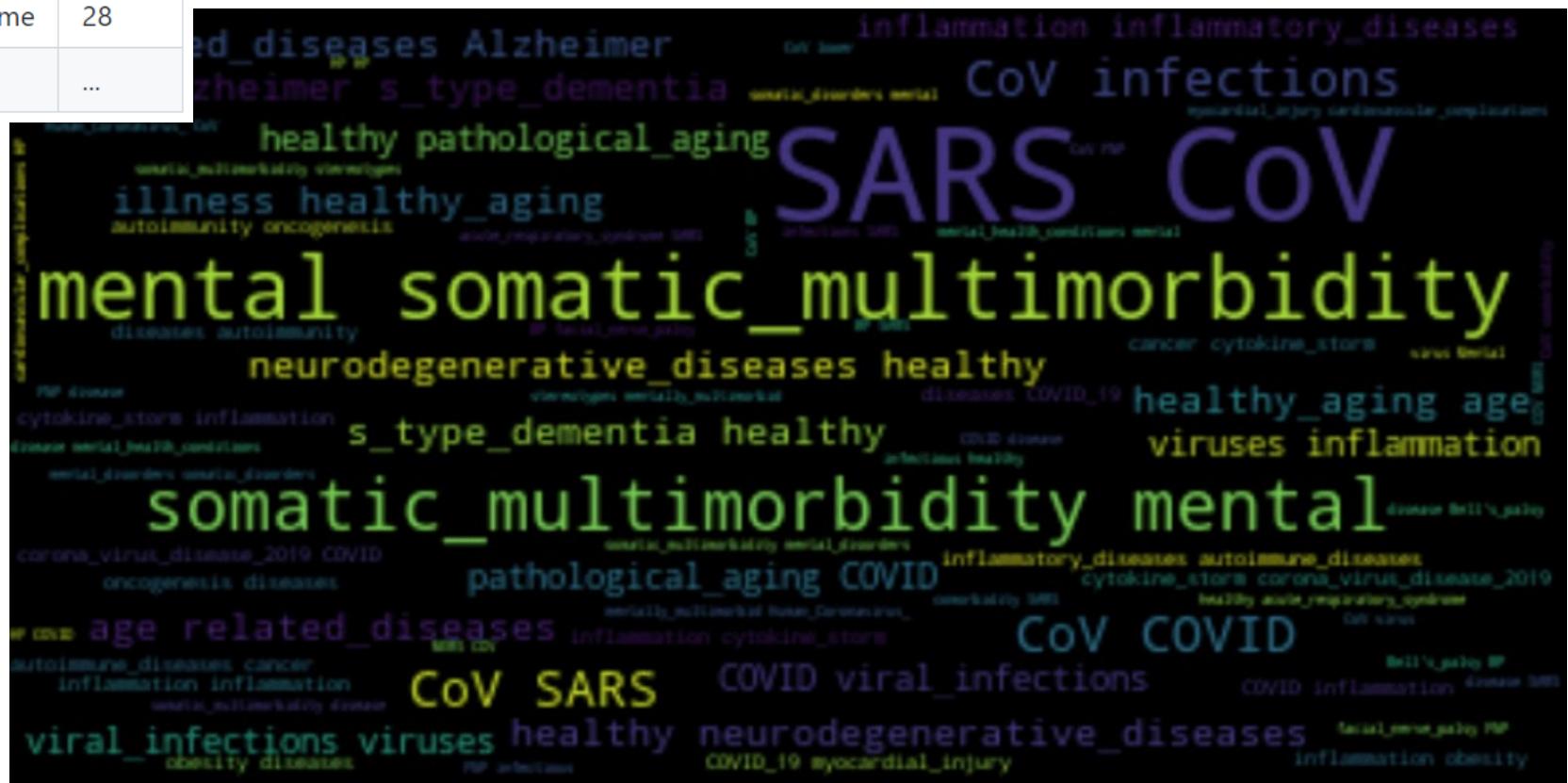
**Custom text classification** (Preview)

Train a classification model to classify text using your own data.

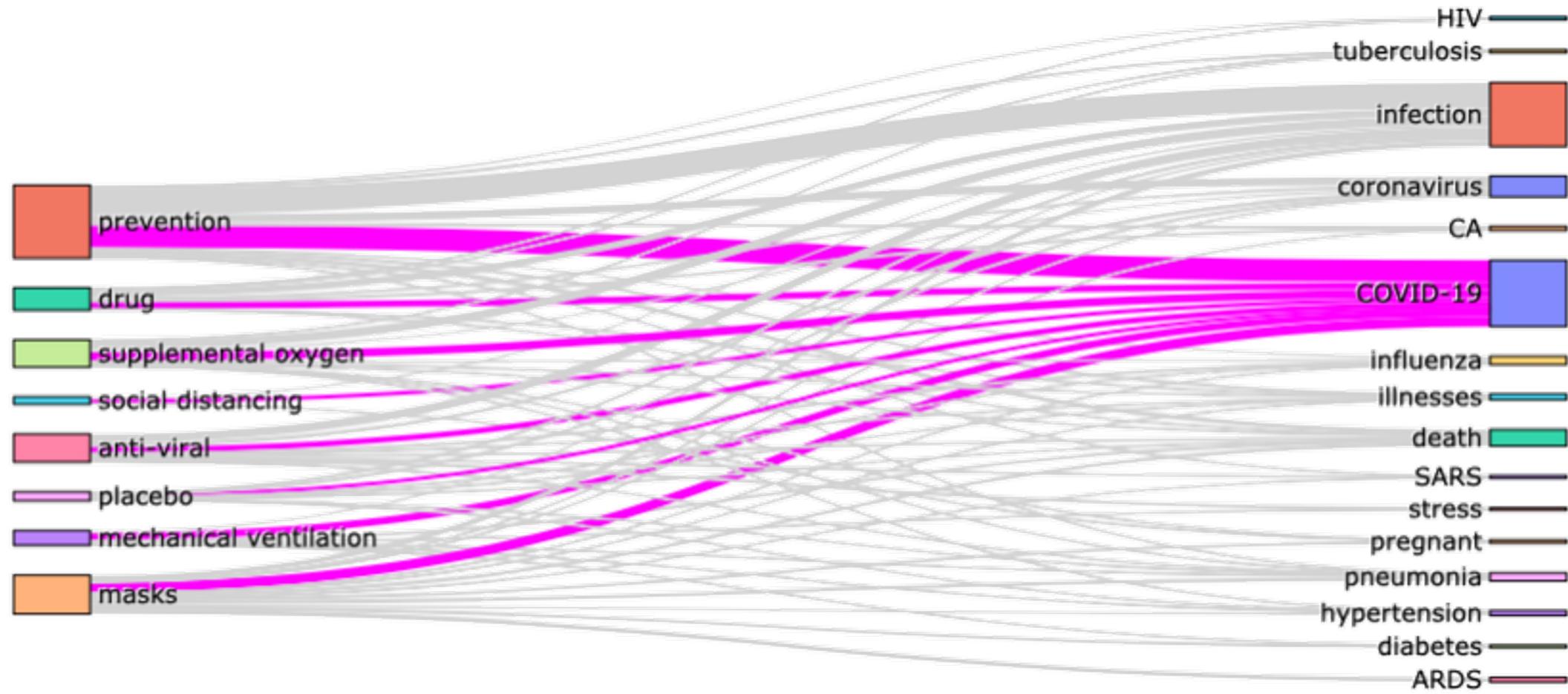
[Open custom text classification](#)

# 獲取頂級實體（藥物、診斷、..）

UMLS ID	Name	Category	Count
C0020336	hydroxychloroquine	MedicationName	99
C0008269	chloroquine	MedicationName	43
C0939237	lopinavir + ritonavir	MedicationName	28
...	...	...	...



# 術語關係



2

## 實戰二

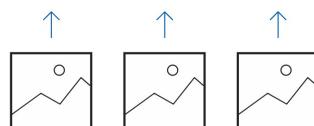
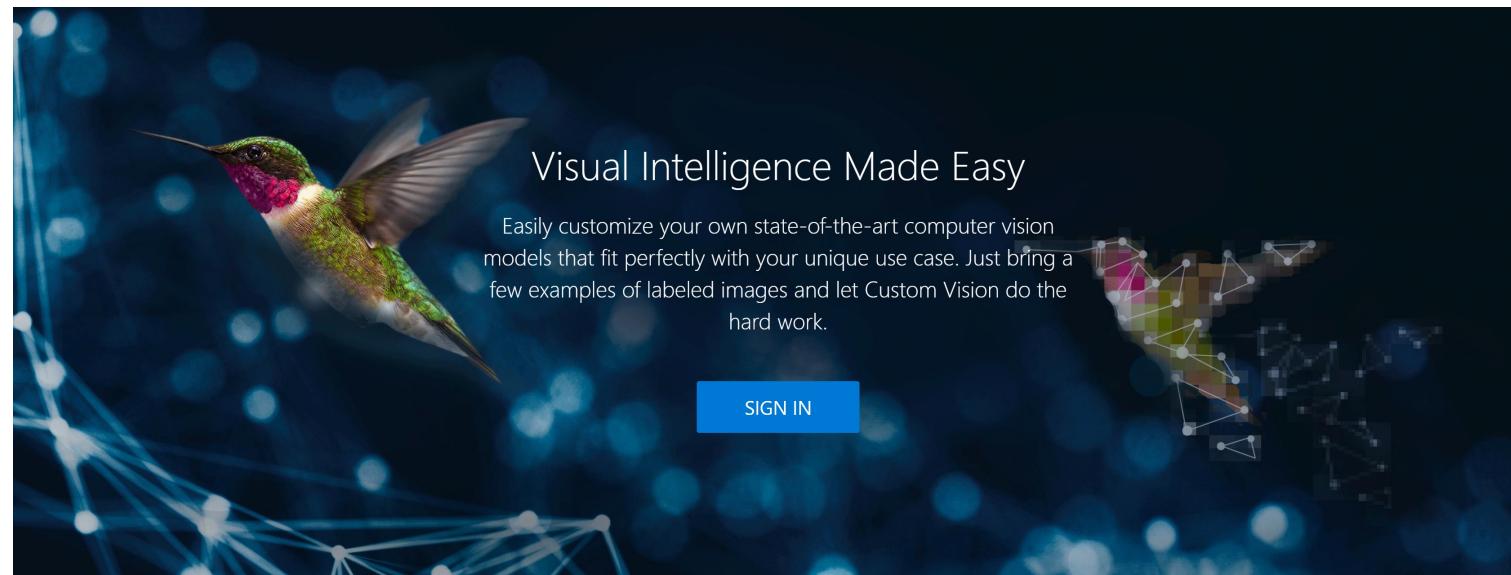
Custom Vision 口罩識別

# Custom Vision

微軟的認知服務接口，讓你可以在零機器學習的知識下，用不同編程語言完成相關的機器學習工作

CustomVision就更進一步，讓你在沒有編程技術下，完成圖像識別和物體識別的工作，他是一個零代碼解決方案，你只需要一堆圖片集就可以完成工作了，對比起認知服務，你還可以直接導出訓練模型，直接部署到不同的場景上

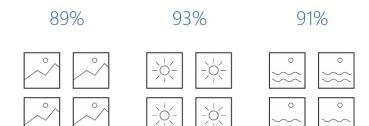
<https://www.customvision.ai/>



Upload Images



Train



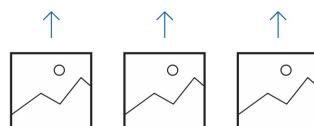
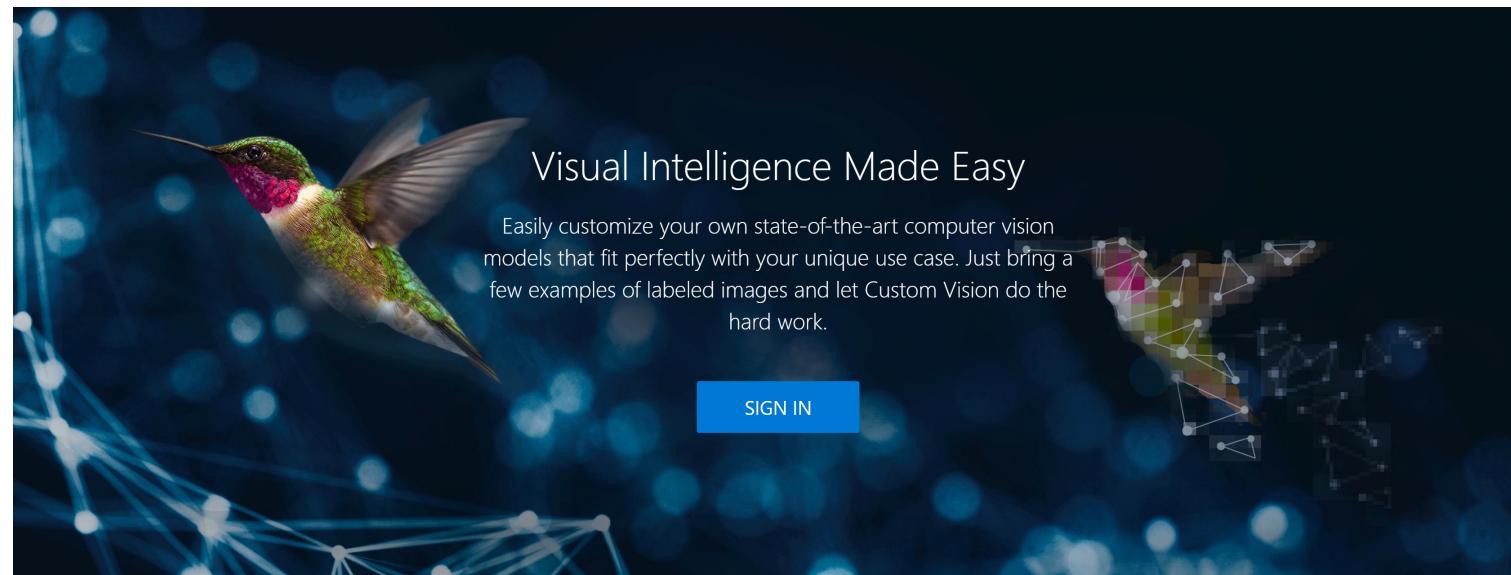
Evaluate

# Custom Vision

微軟的認知服務接口，讓你可以在零機器學習的知識下，用不同編程語言完成相關的機器學習工作

CustomVision就更進一步，讓你在沒有編程技術下，完成圖像識別和物體識別的工作，他是一個零代碼解決方案，你只需要一堆圖片集就可以完成工作了，對比起認知服務，你還可以直接導出訓練模型，直接部署到不同的場景上

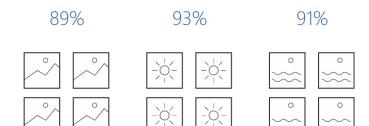
<https://www.customvision.ai/>



Upload Images



Train



Evaluate

# Custom Vision

Filter

Add images

Delete

Select all

< 1 2 >

Iteration

Workspace

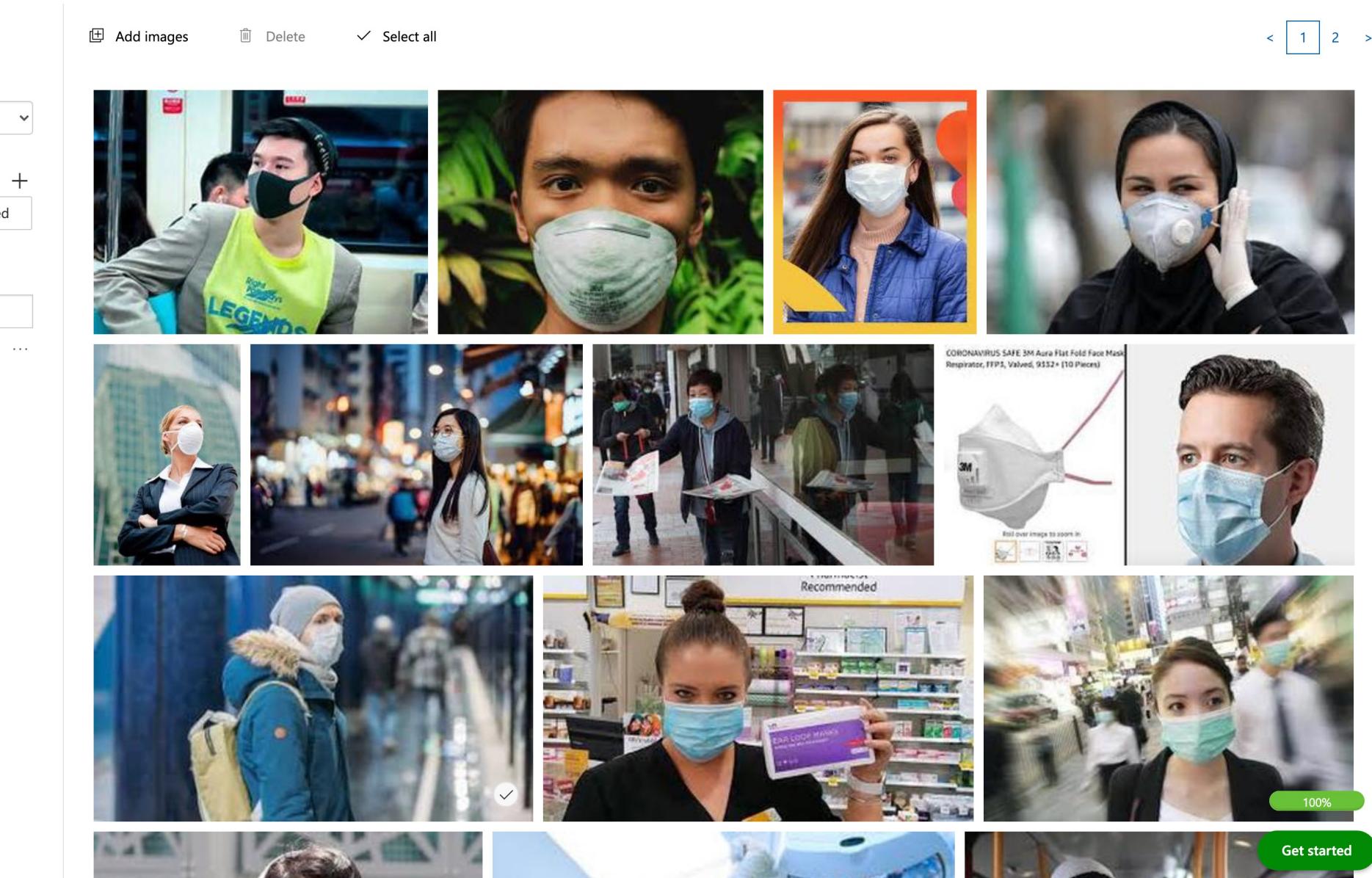
Tags

Tagged Untagged

Showing: all tagged images

Search For Tags:

mask 91



# Custom Vision 神兵利器讓你零代碼做口罩識別

EXPLORER

DEV [SSH: 192.168.3.182]

- > CSI-Camera-master
- > Face-Mask-Detector-main
- IoTHOL
- > \_pycache\_
- 03.DeployToJetsonNanoDocker
- > app
- Dockerfile
- LICENSE
- README.txt
- > img
- 01.SearchMaskImage.ipynb
- 02.OnnxModel.ipynb
- demo.jpg
- labels.txt
- model.onnx
- object\_detection.py
- > maskdemo
- FaceMaskDetection-main.zip

Dockerfile 02.OnnxModel.ipynb face\_detect.py simple\_camera.py camera.py demo\_mask.py

IoTHOL > 02.OnnxModel.ipynb > ! pip3 install onnx

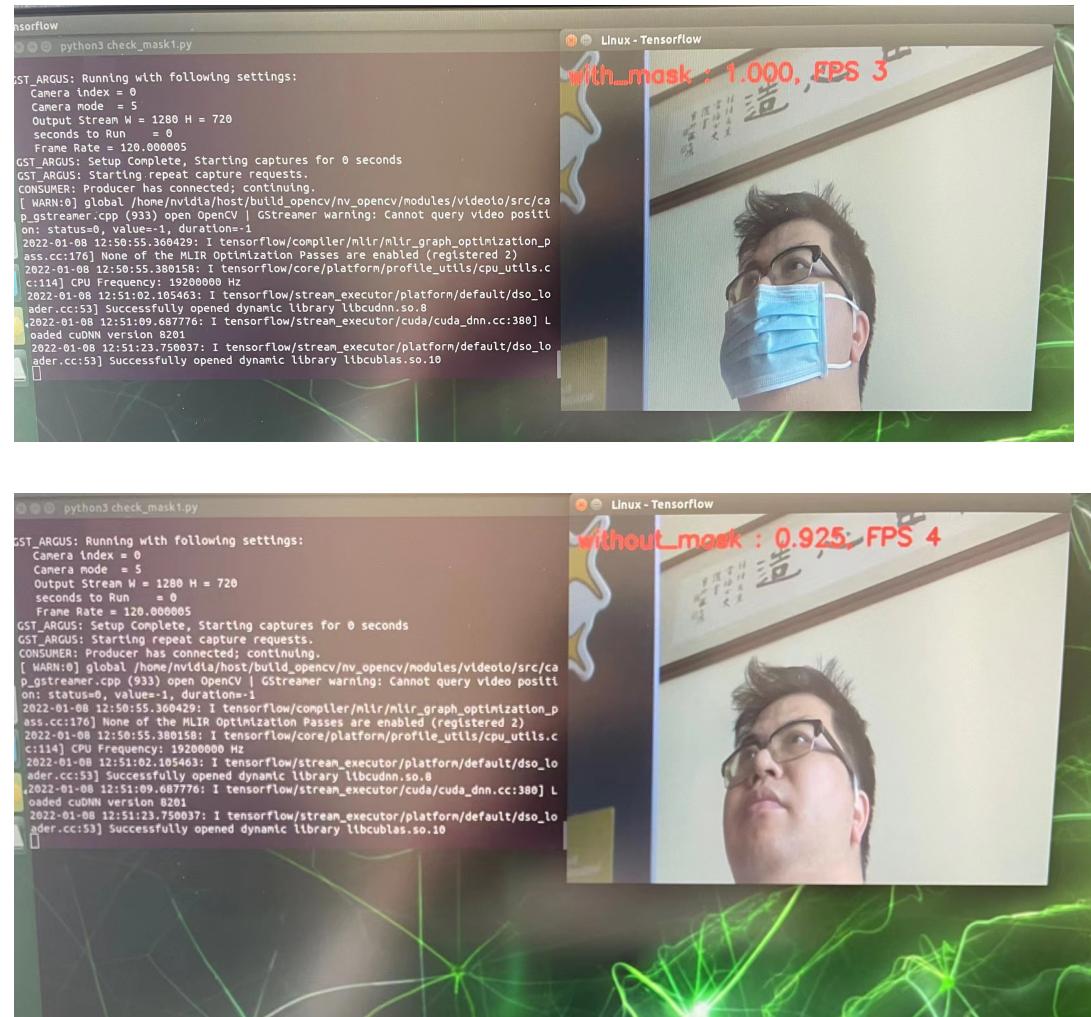
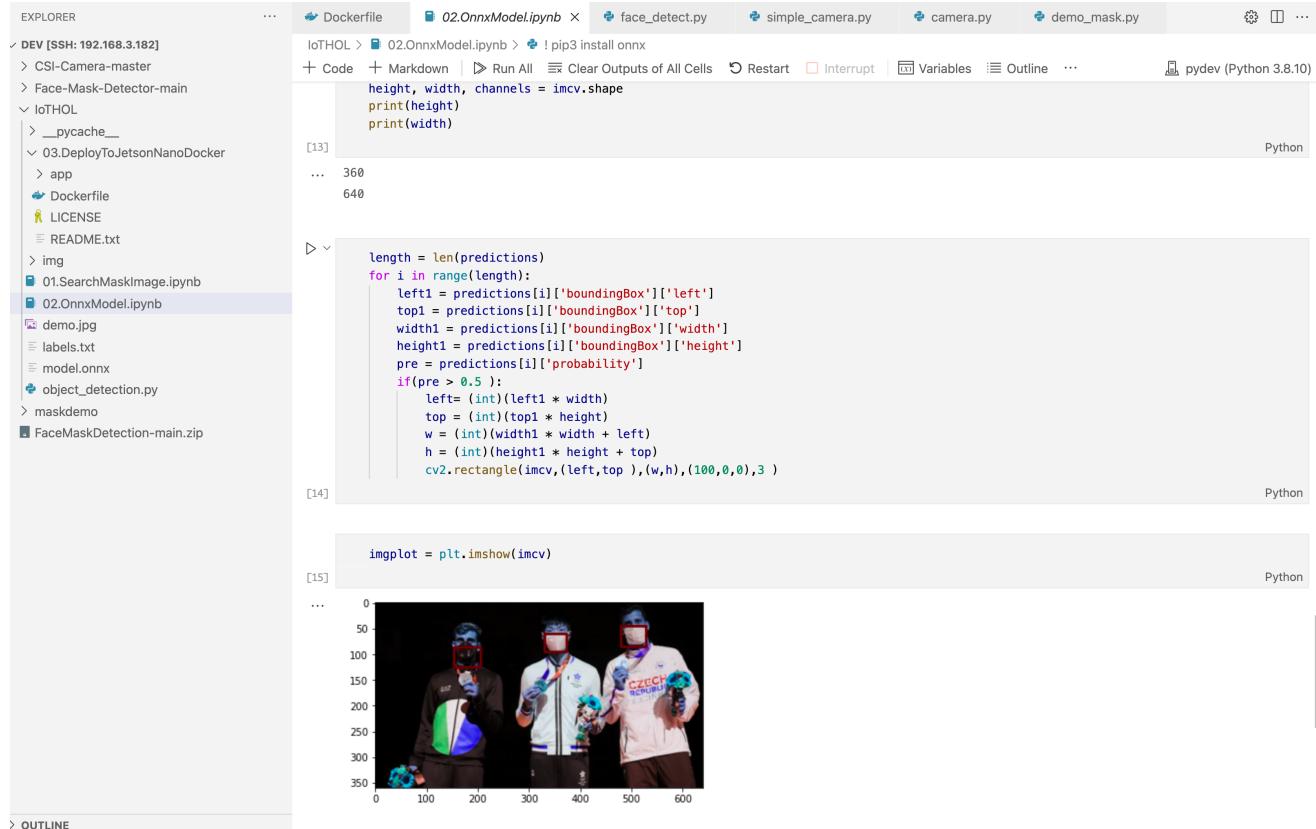
Code + Markdown | Run All Clear Outputs of All Cells Restart Interrupt Variables Outline ... pydev (Python 3.8.10)

```
[13] height, width, channels = imcv.shape
print(height)
print(width)

[14] length = len(predictions)
for i in range(length):
    left1 = predictions[i]['boundingBox']['left']
    top1 = predictions[i]['boundingBox']['top']
    width1 = predictions[i]['boundingBox']['width']
    height = predictions[i]['boundingBox']['height']
    pre = predictions[i]['probability']
    if(pre > 0.5):
        left= (int)(left1 * width)
        top = (int)(top1 * height)
        w = (int)(width1 * width + left)
        h = (int)(height * height + top)
        cv2.rectangle(imcv,(left,top),(w,h),(100,0,0),3 )

[15] imgplot = plt.imshow(imcv)
```

Python Python Python



# 計算機視覺開始玩起

[https://github.com/kinfey/MSCloudAdvocateHKClassRoom/tree/main/AzureCognitiveServiceHandsOnLabHK\\_202111/AzureComputerVisionHOL/code](https://github.com/kinfey/MSCloudAdvocateHKClassRoom/tree/main/AzureCognitiveServiceHandsOnLabHK_202111/AzureComputerVisionHOL/code)

1. OCR

2. 計算機自定義視覺

3. 專業訓練的計算機視覺



3

## 實戰三

Covid-19 實況查詢

# Covid-19

## Coronavirus disease (COVID-19)

13 May 2021 | Q&A

---

Latest update 13 May 2021 - WHO is continuously monitoring and responding to this pandemic. This Q&A will be updated as more is known about COVID-19, how it spreads and how it is affecting people worldwide. For more information, regularly check the WHO coronavirus pages. <https://www.who.int/covid-19>

---

**What is COVID-19?**



**What are the symptoms of COVID-19?**



**What happens to people who get COVID-19?**



**Who is most at risk of severe illness from COVID-19?**



**Are there long-term effects of COVID-19?**



**How can we protect others and ourselves if we don't know who is infected?**



**When should I get a test for COVID-19?**



**What test should I get to see if I have COVID-19?**



**What about rapid tests?**



<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/coronavirus-disease-covid-19>

# Covid-19

what's covid-19

3 minutes ago

COVID-19 is the disease caused by a new coronavirus called SARS-CoV-2. WHO first learned of this new virus on 31 December 2019, following a report of a cluster of cases of 'viral pneumonia' in Wuhan, People's Republic of China.

3 minutes ago

test covid-19

2 minutes ago

In most situations, a molecular test is used to detect SARS-CoV-2 and confirm infection. Polymerase chain reaction (PCR) is the most commonly used molecular test. Samples are collected from the nose and/or throat with a swab. Molecular tests detect virus in the sample by amplifying viral genetic material to detectable levels. For this reason, a molecular test is used to confirm an active infection, usually within a few days of exposure and around the time that symptoms may begin.

[Learn more about what kind of COVID-19 tests are available](#) ⓘ

2 minutes ago

# Chatbot入門

[https://github.com/kinfey/MSCloudAdvocateHKClassRoom/tree/main/AzureCognitiveServiceHandsOnLabHK\\_202111/AzureChatbotHOL/pdf](https://github.com/kinfey/MSCloudAdvocateHKClassRoom/tree/main/AzureCognitiveServiceHandsOnLabHK_202111/AzureChatbotHOL/pdf)

1. 搭建Chatbot
2. 部署Chatbot到雲端
3. QnA Maker 使用
4. LUIS使用
5. 做一個COVID-19 Chatbot





# Reactor

## Thank You!