Microsoft Tech Summit 2017

微软技术暨生态大会

Microsoft

Microsoft Tech Summit 2017

微软技术暨生态大会

利用电脑视觉与人工智能创造更多物联网价值

IOT 302

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资深软体开发协理
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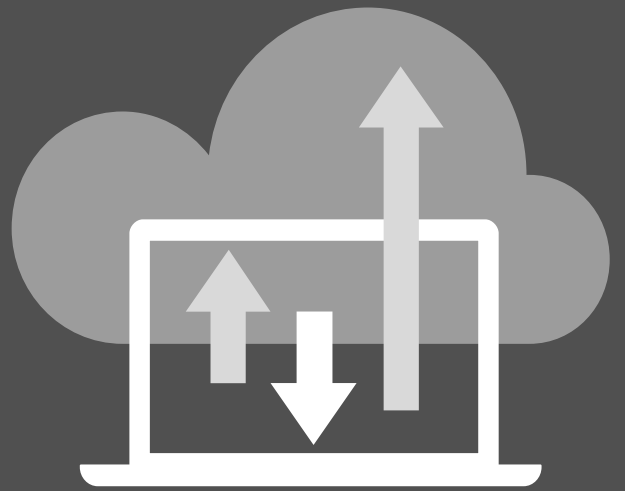
Microsoft

Microsoft Tech Summit 2017
微软技术暨生态大会

物联网架构



物联网解决方案现况

依赖传感器侦测环境状态

传感器误差影响判断结果

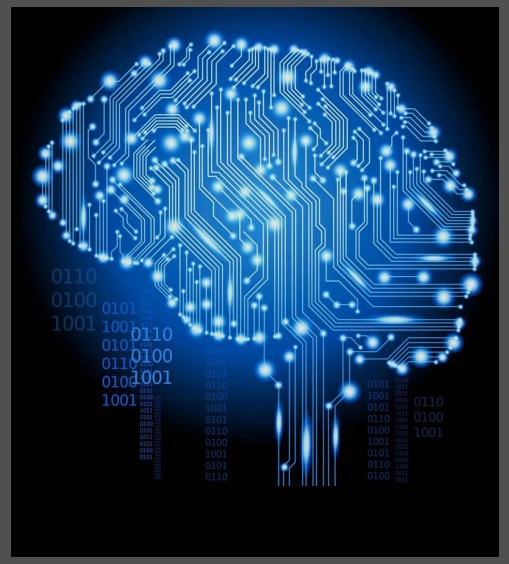
必须依赖大量传感器

不易处理复杂的情境

需要整合不同传感器判断

需要大量投资在非本业项目

理想的物联网解决方案：
主动了解环境状态并做出反应



人脑

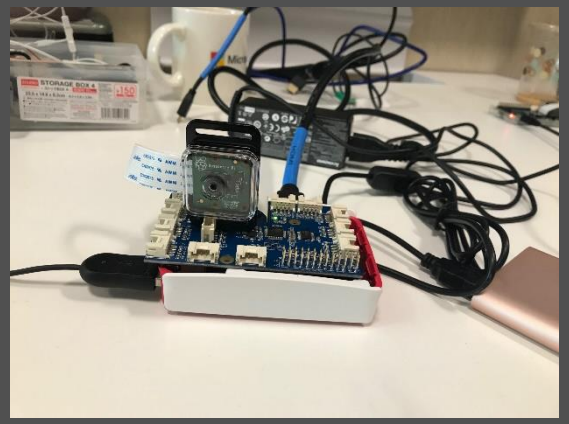
视觉

听觉

触觉/嗅觉/味觉

说话/动作

理想的物联网解决方案：
主动了解环境状态并做出反应



摄像头

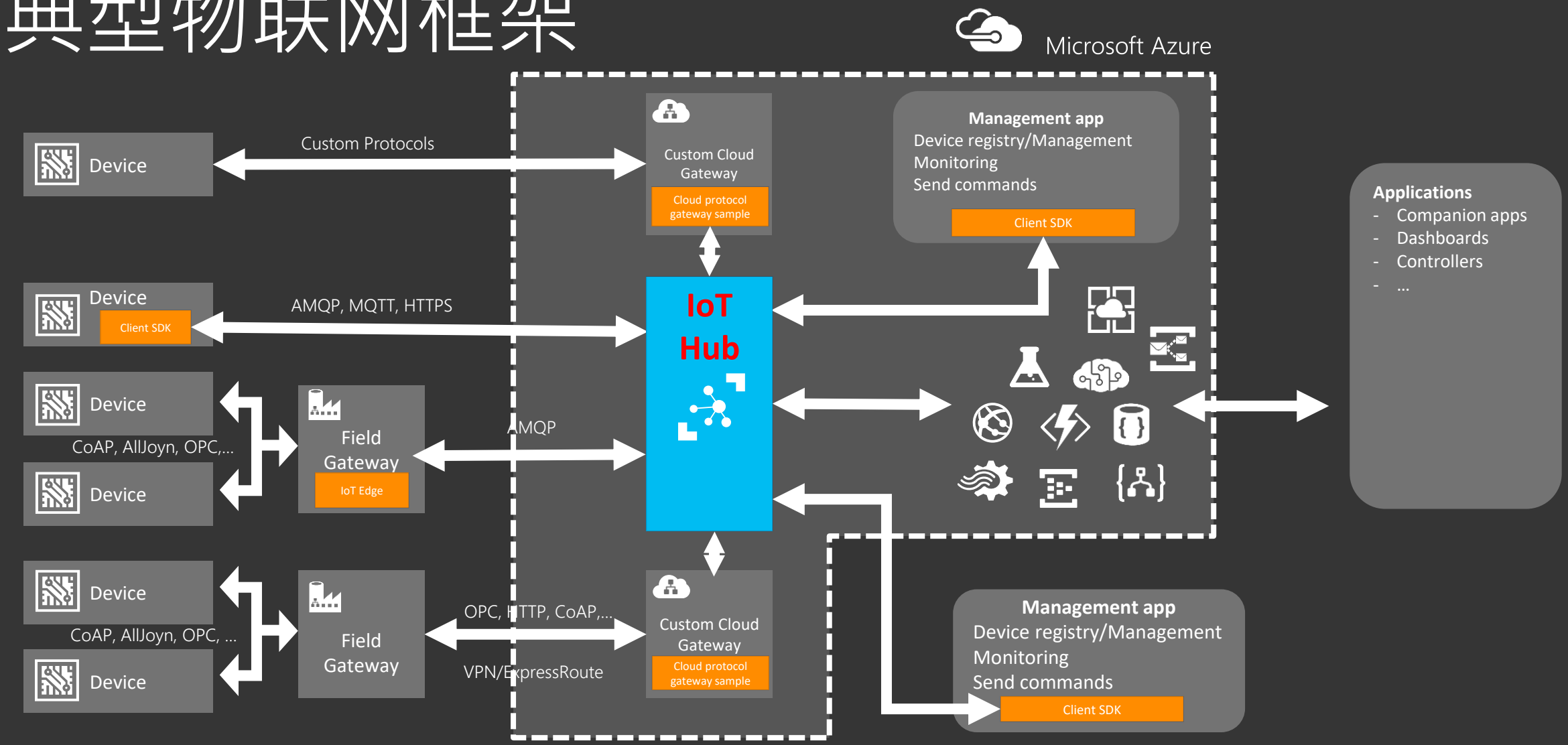
麦克风

传感器

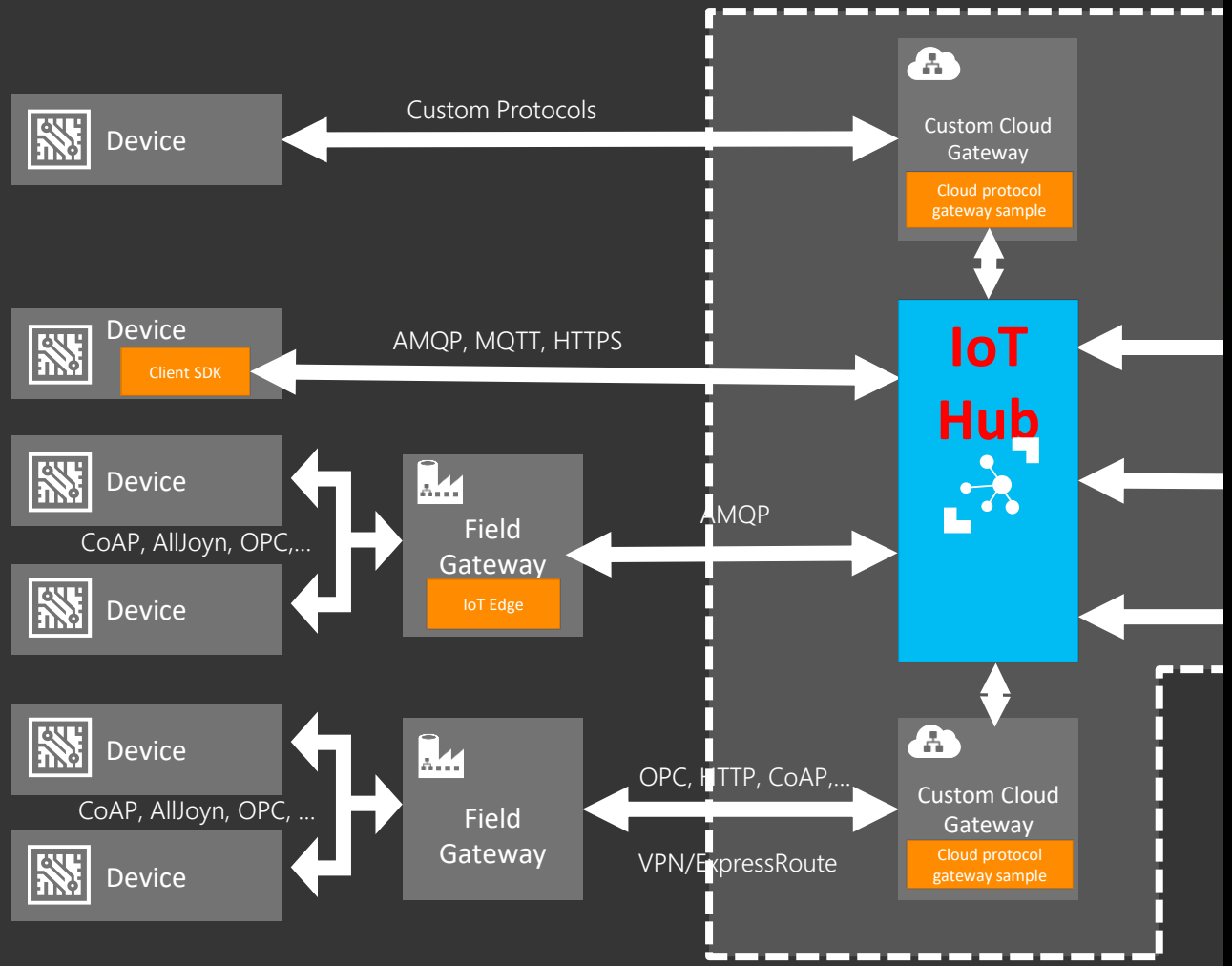
物联网装置

说话/动作

典型物联网框架


Microsoft Azure
Device
Custom Protocols
Custom Cloud Gateway
Cloud protocol gateway sample
Management app
Device registry/Management
Monitoring
Send commands
Client SDK
Applications
- Companion apps
- Dashboards
- Controllers
- ...
Device
Client SDK
AMQP, MQTT, HTTPS
IoT Hub
Device
CoAP, AllJoyn, OPC,...
Device
Field Gateway
IoT Edge
AMQP
Device
CoAP, AllJoyn, OPC, ...
Device
Field Gateway
OPC, HTTP, CoAP,...
VPN/ExpressRoute
Custom Cloud Gateway
Cloud protocol gateway sample
Management app
Device registry/Management
Monitoring
Send commands
Client SDK

智慧物联网框架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Cloud protocol gateway sample
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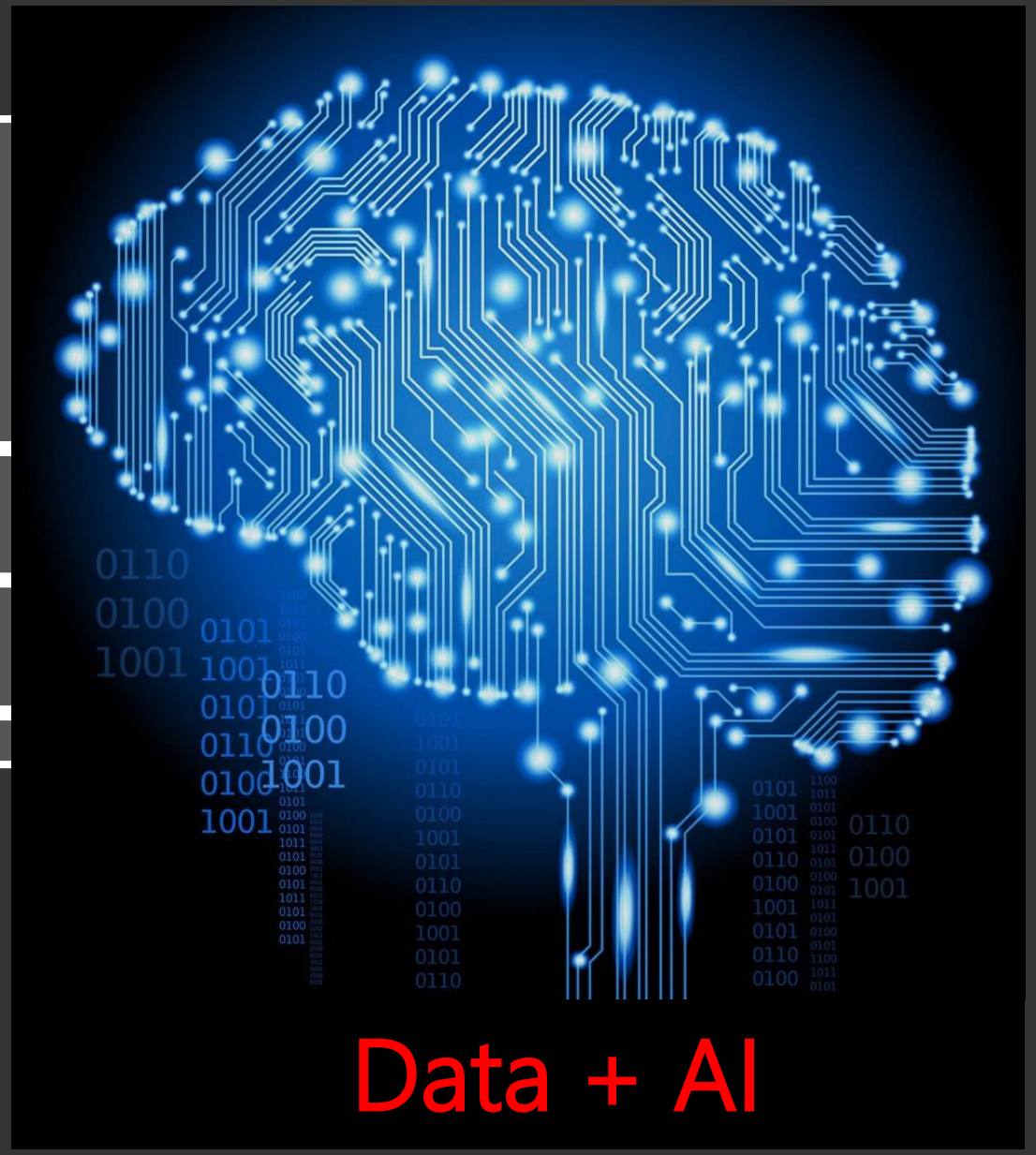

Data + AI

智慧物联网框架

结合摄像头侦测环境状态

降低传感器误判

降低传感器数量

容易处理复杂的情境

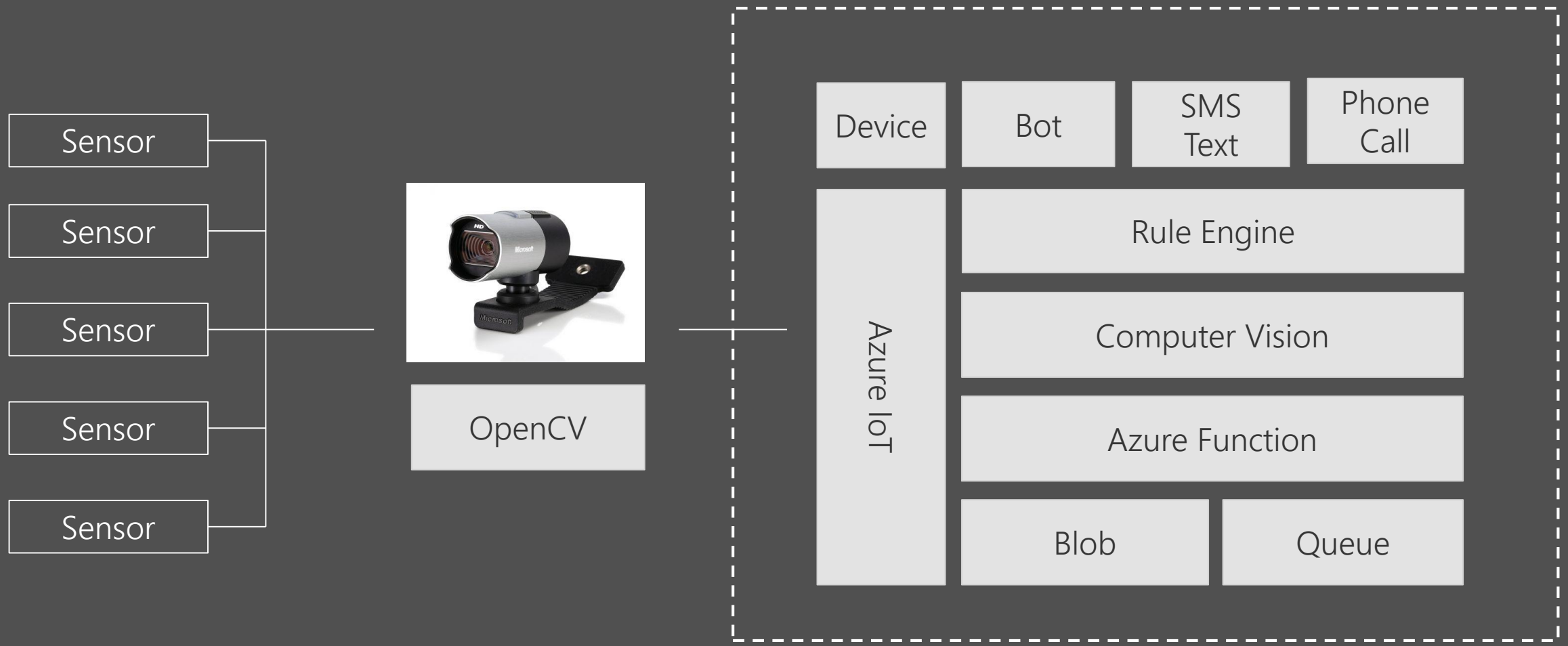
深度学习让影像辨识技术更成熟

OpenCV 可在 IoT Edge 筛选影像

Azure 认知服务支援影像分析

可与 Azure 其他服务结合

智慧物联网框架


Sensor
Sensor
Sensor
Sensor
Sensor
OpenCV
Device
Bot
SMS Text
Phone Call
Azure IoT
Rule Engine
Computer Vision
Azure Function
Blob
Queue

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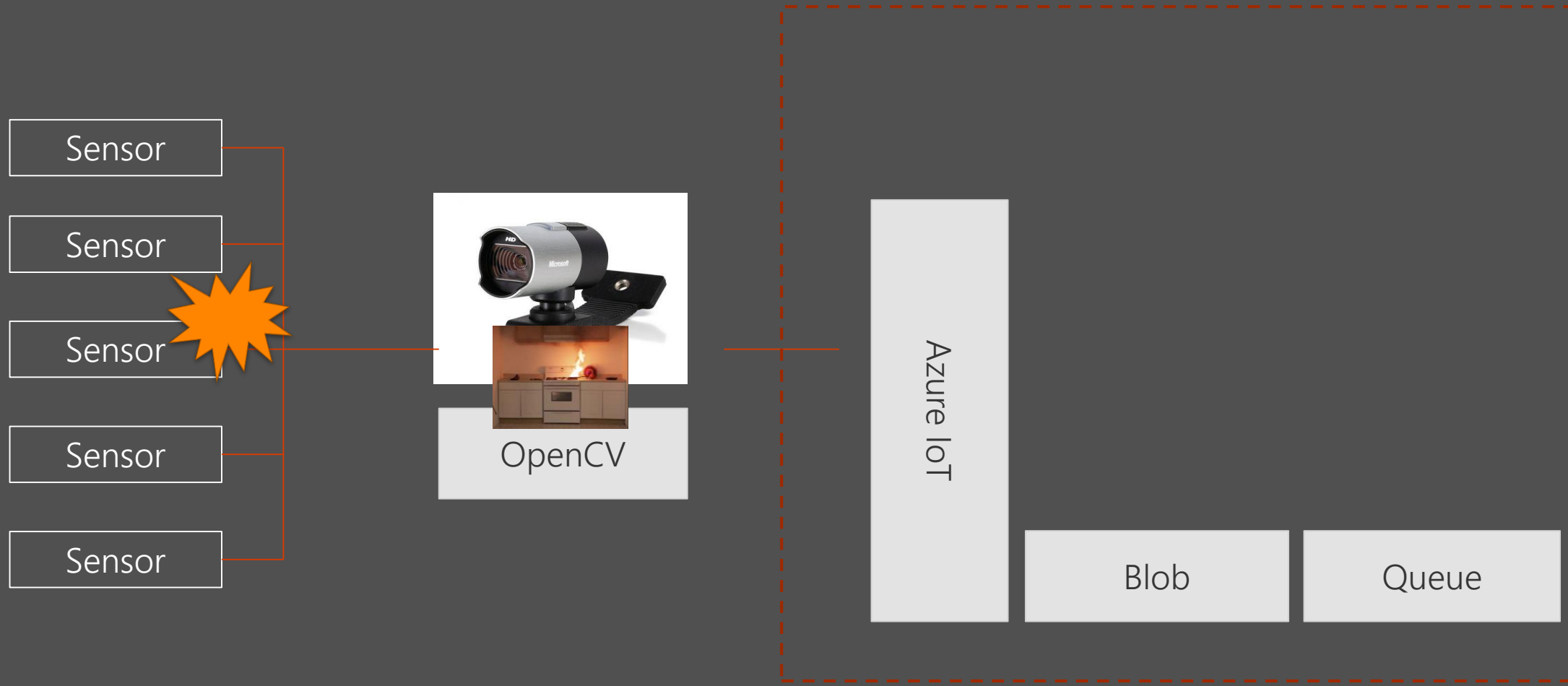
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Azure IoT

失火了!

Computer Vision

Azure Function

Blob

Queue

Sensor

Sensor

Sensor

Sensor

Sensor

OpenCV

Device

Bot

Azure IoT

失火了!

Computer Vision

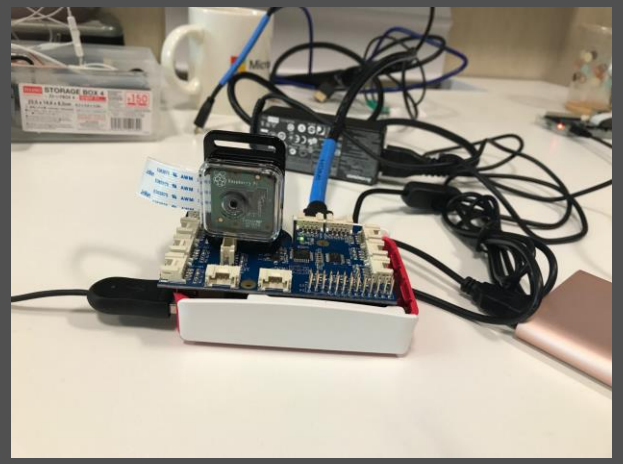
Azure Function

Blob

Queue

Demo

智慧物联网范例



Computer Vision API

Azure Functions

短訊 (Twlio)

Blob Storage

Azure Functions

电脑视觉

From faces to feelings, allow your
apps to understand images and video

Computer Vision | Content Moderator | Emotion | Face |
Video | Video Indexer | Custom Vision Service

分析图片场景与物件

Type of image

Clip Art Type	0 Non-clipart
Line Drawing Type	0 Non-Line Drawing
Black & White Image	False

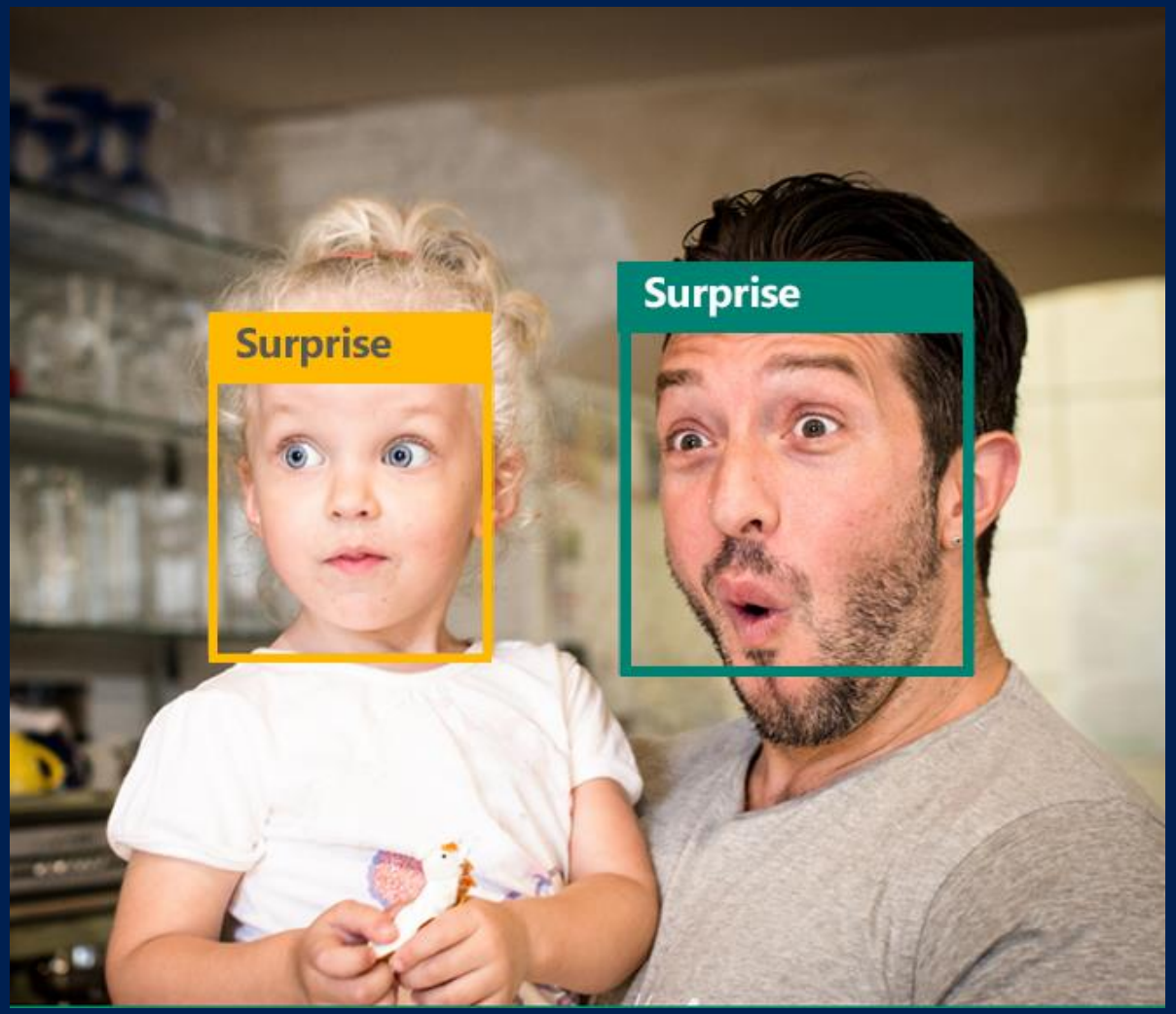
Content of image

Categories	[{ “name”: “people_swimming”, “score”: 0.099609375 }]
Adult Content	False
Adult Score	0.18533889949321747
Faces	[{ “age”: 27, “gender”: “Male”, “faceRectangle”: {“left”: 472, “top”: 258, “width”: 199, “height”: 199}}]

Image colors

Dominant Color Background	White
Dominant Color Foreground	Grey
Dominant Colors	White
Accent Color	

分析情感



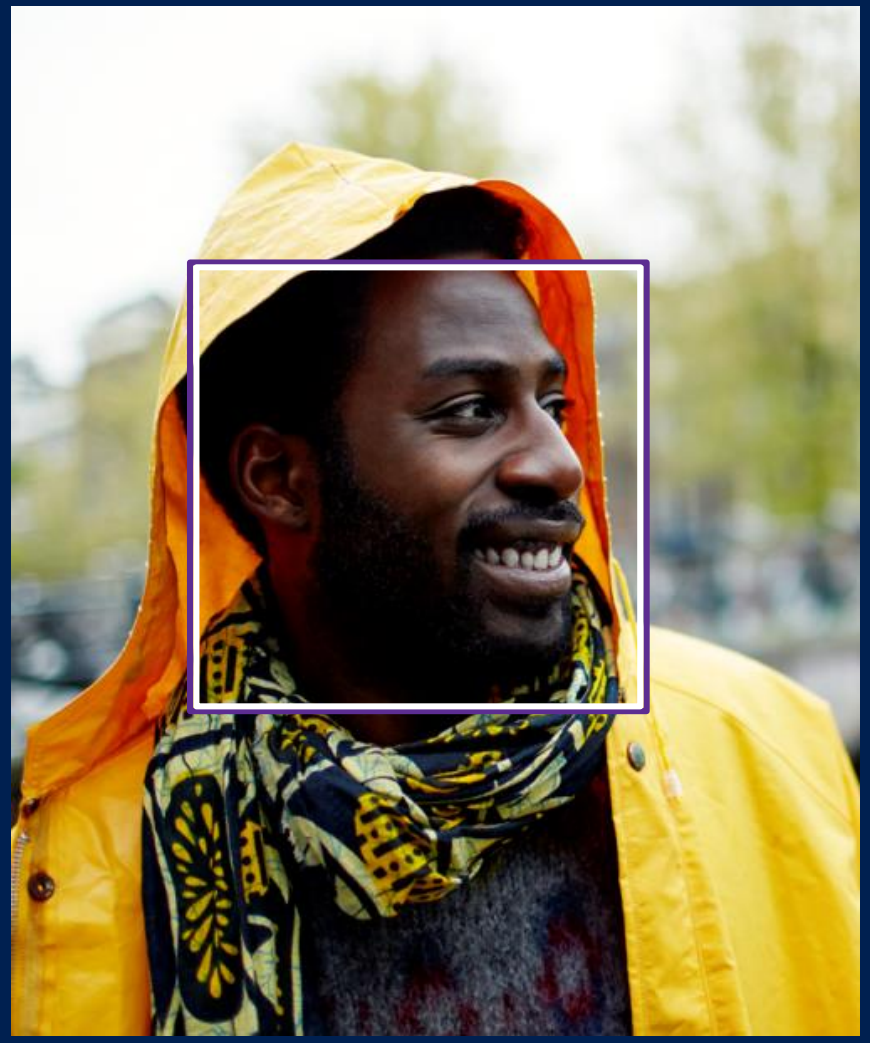
Face detection

```
"faceRectangle": {"width": 193,
                  "height": 193,
                  "left": 326,
                  "top": 204} …
```

Emotion scores

```
“scores": { "anger": 5.182241e-8,
            "contempt": 0.0000242813,
            "disgust": 5.621025e-7,
            "fear": 0.00115027453,
            "happiness": 1.06114619e-8,
            "neutral": 0.003540177,
            "sadness": 9.30888746e-7,
            "surprise": 0.9952837}
```

人脸识别



Detection

```
"faceRectangle": {"width": 193, "height": 193, "left": 326, "top": 204}
                ...
```

Feature attributes

```
"attributes": { "age": 42, "gender": "male",
                "headPose": { "roll": "8.2", "yaw": "-37.8", "pitch": "0.0" }}
```

Grouping

Identification

Jasper Williams

UBER

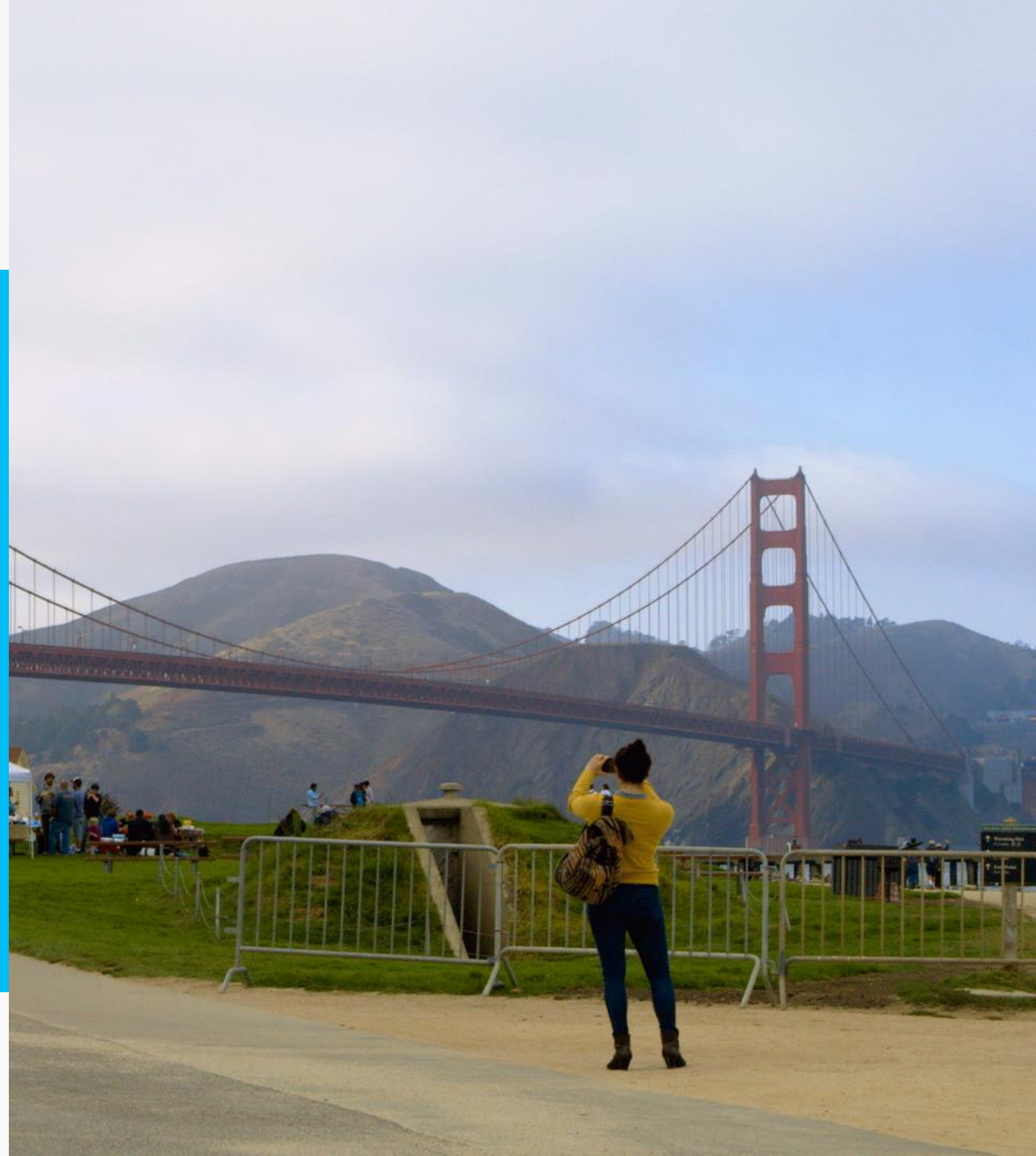
"Thousands of partners sign in to our platform every hour. The response time from the Face API is incredible, enabling us to verify our drivers without slowing them down."

Dima Kovalev, Product Manager, Uber

Face API

Read case study here

See video here



如果需要训练自己的物件
又不熟深度学习

Custom Vision Service

几个步骤建立自己的物件模型

上传照片

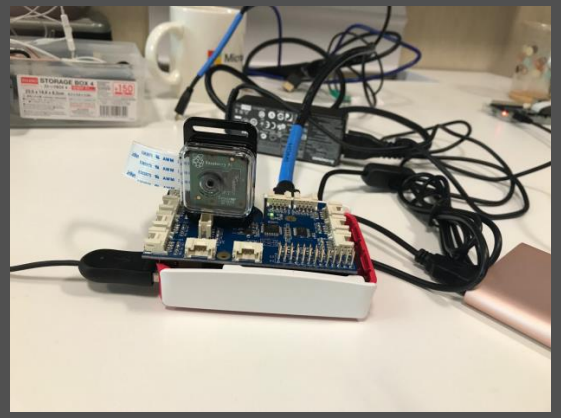
训练

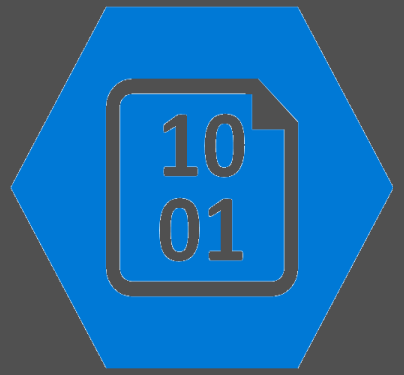
评估

主动学习

Demo

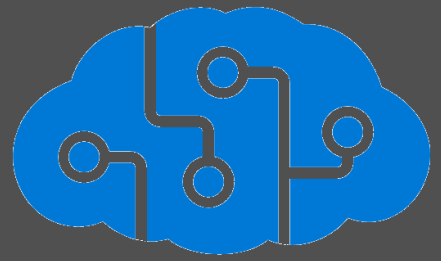
使用 Custom Vision Service 建立智能物联网方案





Blob Storage

Azure Functions

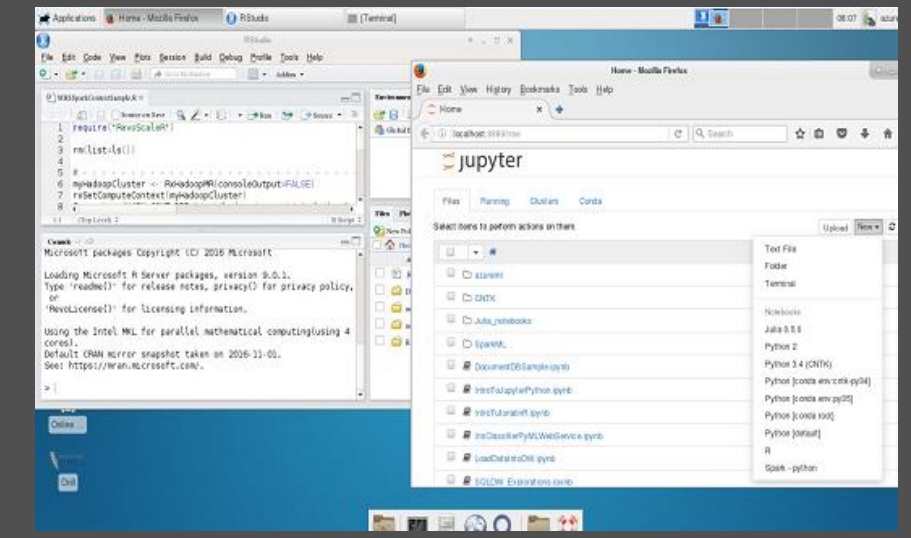


Custom
Vision API

如果熟悉深度学习

Azure Data Science虚拟机器

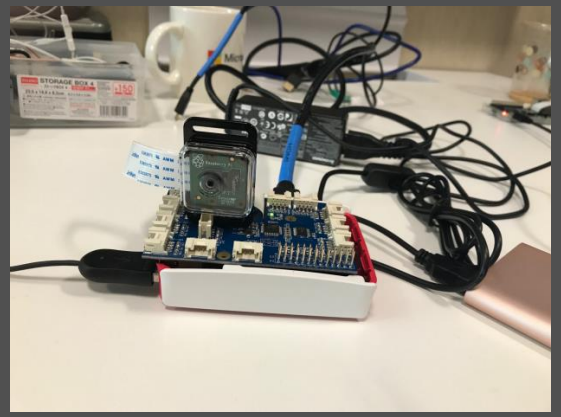
- 有 Windows & Linux 兩種版本
- **CNTK**, **TensorFlow**, **MXNet**, **Caffe**, **Caffe2**, **DIGITS**, **H2O**, **Keras**, **Theano**, and **Torch** are built, installed, and configured so they are ready to run immediately
- NVIDIA driver, CUDA, and cuDNN are also included
- Combine with Edge
  - OpenCV 3.3 supports Caffe, TensorFlow & Torch

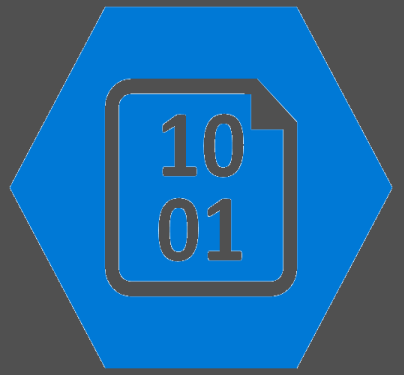


Demo

在物联网装置上使用Azure Data Science 虚拟机器训练的模型辨识物件

Azure 资料科学
虚拟机器





Blob Storage

Azure Functions

謝謝

Email: john.chang@microsoft.com

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讲师的激情因您的鼓励而愈发澎湃，

立即提交反馈即有机会获得精美礼品。

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John.chang@microsoft.com

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