

領航 AI 創造精彩

Intel® DevCup × OpenVINO™ Toolkit

競賽報名



報名  
截止日 2021.10.31

指導單位



主辦單位



執行單位



## 評選重點及實作組AI開發套件

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平台研發經理, Intel IoTG



# 評選重點

	概念組/注重創新構想	實作組/注重開發實作
評審重點	<ul style="list-style-type: none"><li>• 概念創意性/<b>Creativity (30%)</b></li><li>• 商轉可行性/Market value (30%)</li><li>• 市場發展性/Feasibility (20%)</li><li>• 作品完整性/Completeness (20%)</li></ul>	<ul style="list-style-type: none"><li>• 方案獨特性/<b>Uniqueness (30%)</b></li><li>• Market value (30%)</li><li>• Feasibility (20%)</li><li>• Completeness (20%)</li></ul>

# 實作組AI開發套件



# 實作組AI開發套件



## UP Xtreme i11 Edge Compute Enabling Kit

### 》技術規格

- UP Xtreme i11 Edge Compute Enabling Kit with the latest Intel® 11th Gen Core SoC, up to 4.4GHz
- Intel® UHD Graphics (Core™ i3) / Intel® Iris XE (Core™ i5 & i7)
- 12V Power Supply
- 1x US power cord + 1x EU power cord
- Ubuntu 20.04 LTS and 5.8 Kernel
- Intel® Distribution of OpenVINO™ toolkit 2021.4
- Intel® Media SDK
- Intel® Distribution for Python\*
- MRAA and UPM I/O and sensor libraries for C++, Python\*, Java\*, and JavaScript\*
- Docker-CE
- k3s Kubernetes
- ONNX
- AWS Greengrass

### 》產品介紹

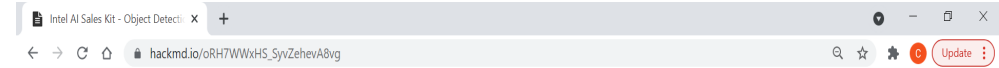
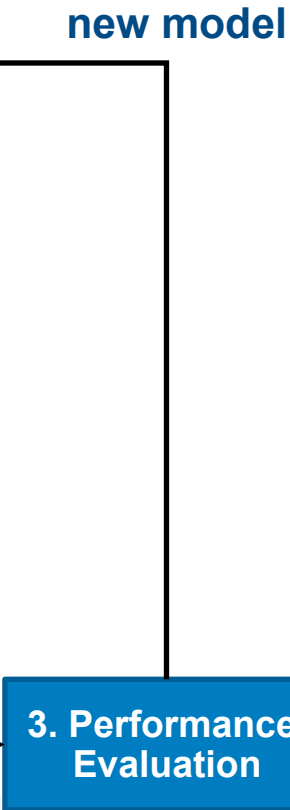
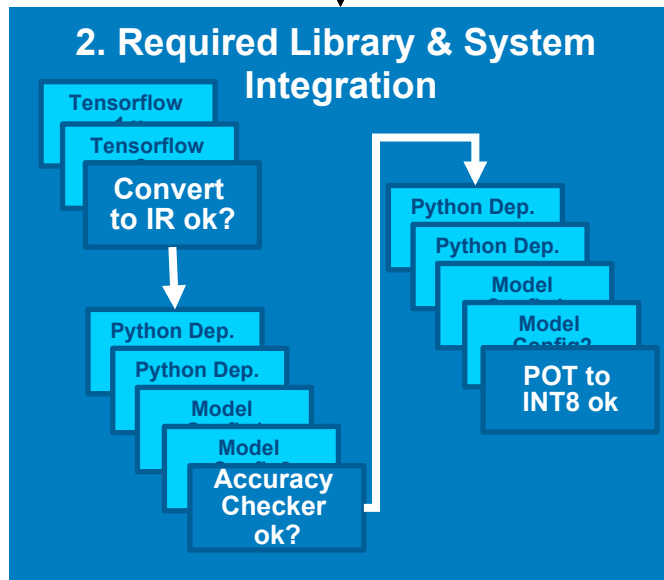
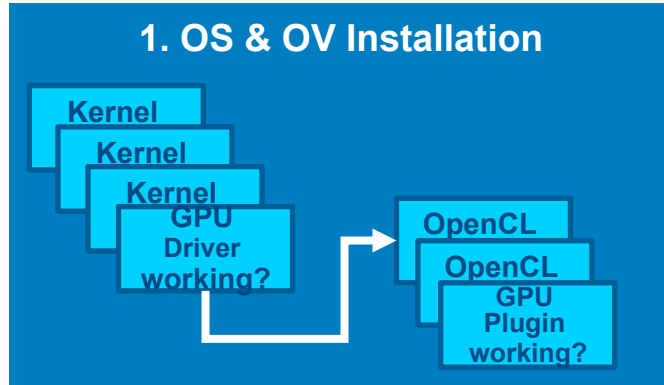
[產品官網完整介紹](#)

### 》安裝指南

[安裝指南文件下載](#)



# Object Detection Demo and Benchmark with YOLO v3



## Download and Install Ubuntu 20.04.2.0 LTS

URL to download Ubuntu 20.04.2.0 LTS ISO image:

<https://ubuntu.com/download/desktop/thank-you?version=20.04.2.0&architecture=amd64>

## Install Ubuntu 20.04

<https://phoenixnap.com/kb/install-ubuntu-20-04>

## Install Docker Utility

```
sudo apt update
sudo apt-get remove docker docker-engine docker.io containerd runc
sudo apt install curl

curl -fsSL https://get.docker.com -o get-docker.sh
sudo sh get-docker.sh

sudo usermod -aG docker $USER

## Need to logout or reboot to run docker as non-root user

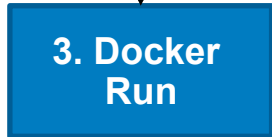
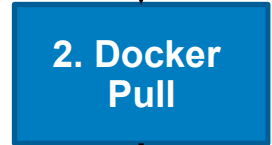
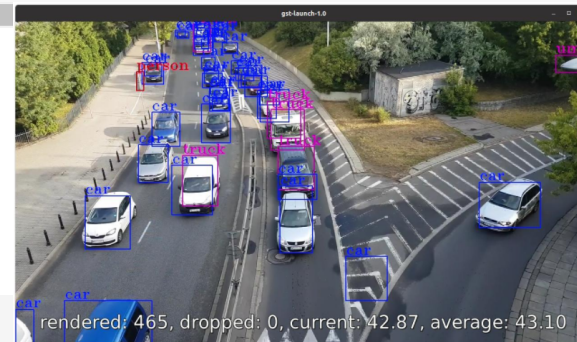
docker run hello-world
```

## Download Docker Image

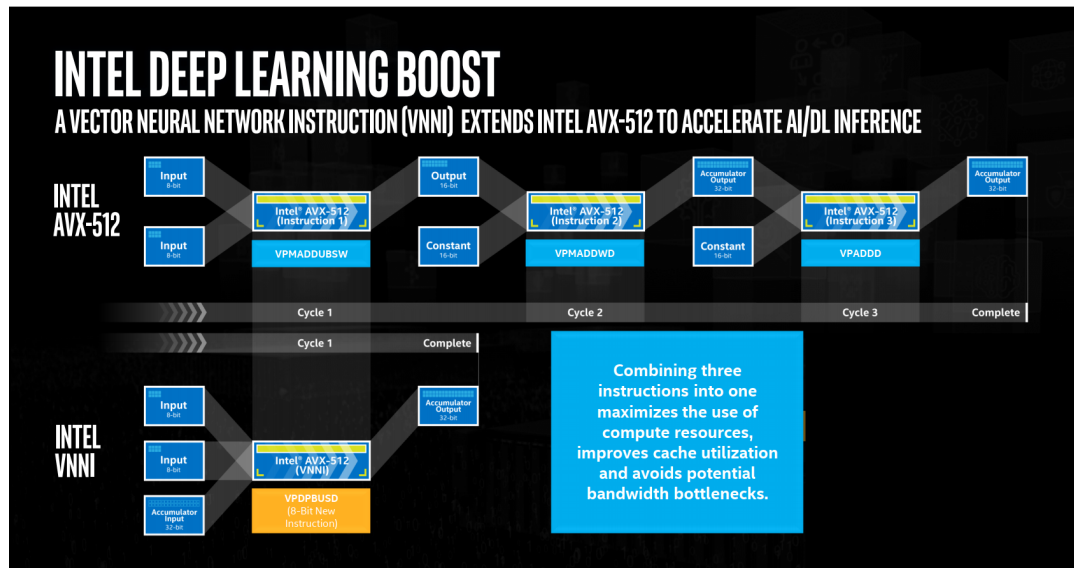
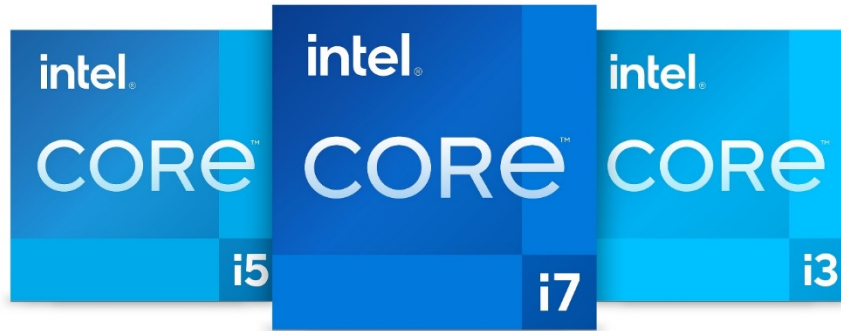
```
docker pull your_dockerhub_id/openvino:2021.3_developer_models
```

## Run Object Detection Demo

```
docker run -it -v /tmp/.X11-unix:/tmp/.X11-unix -e DISPLAY=$DISPLAY -v ~/Downloads:/mnt --d
```



# Tiger Lake UP3 : 11th Gen Intel® Core™ Processors



## Low Power, High Performance Intel® Iris® Xe Graphics

- New X<sup>e</sup>-LP microarchitecture**  
Up to 96 EUs  
Up to 1.35 GHz
- New high-efficiency thread control**  
with software score boarding
- New 8-wide vector units** with support for Intel® DL Boost: DP4a
- New L1 data cache**  
Up to 3.8 MB L3

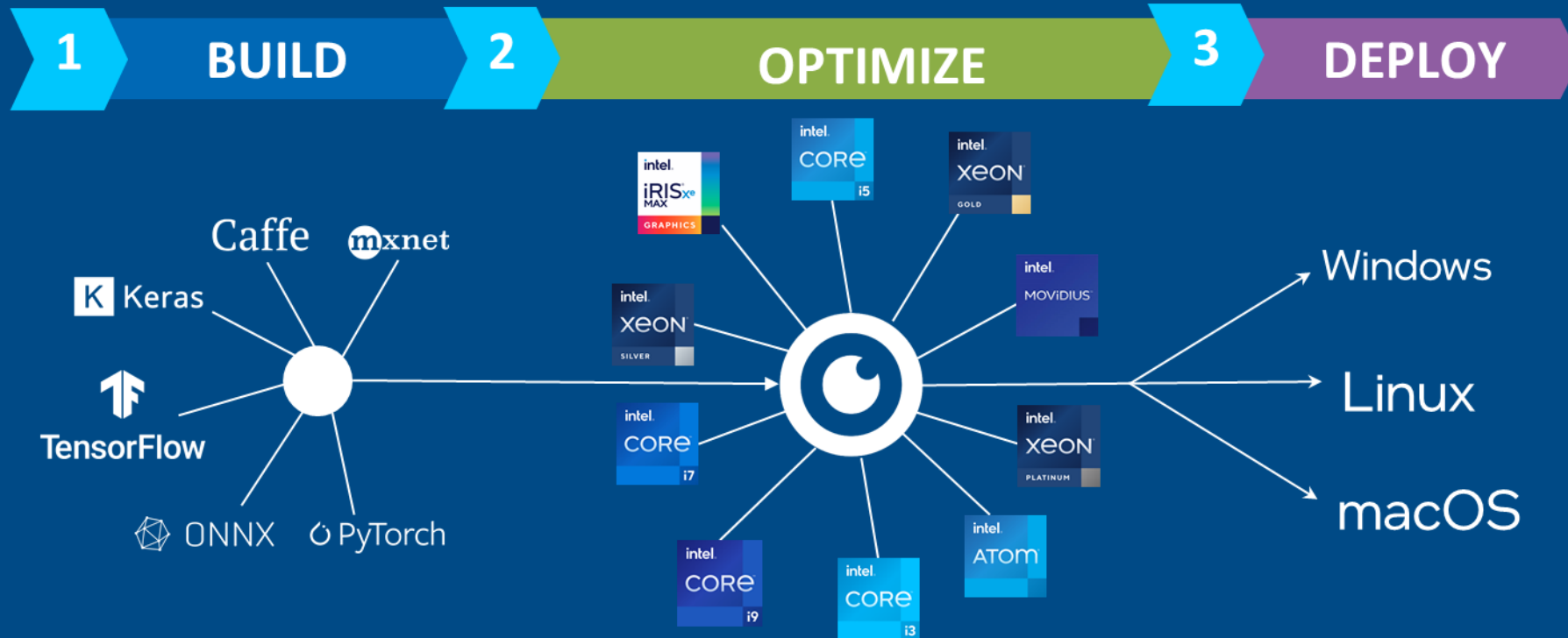
The diagram shows the Xe Slice microarchitecture. It is divided into 'SHARED FUNCTIONS', 'COPY ENGINE', and 'MEDIA ENGINE'. The 'MEDIA ENGINE' is further divided into 'GEOMETRY', 'RASTER', and 'PIXEL DISPATCH'. Each of these has a grid of 'EU' (Execution Units) and 'L1 CACHE'. Below the 'PIXEL DISPATCH' are three 'PIXEL BACKEND' blocks. At the bottom are 'L3 CACHE' and 'GAM' (Global Address Mosaics) blocks.

- 2X bandwidth to the memory fabric
- Up to 48 texels/clock  
Up to 24 pixels/clock
- End-to-End Compression
- Variable Rate Shading

# Why Intel® Distribution of OpenVINO™ toolkit

Fast, accurate real-world results with high-performance, deep learning inference

Convert and optimize models, deploy across a mix Intel hardware and environments, on-premise and on-device, in the browser or in the cloud

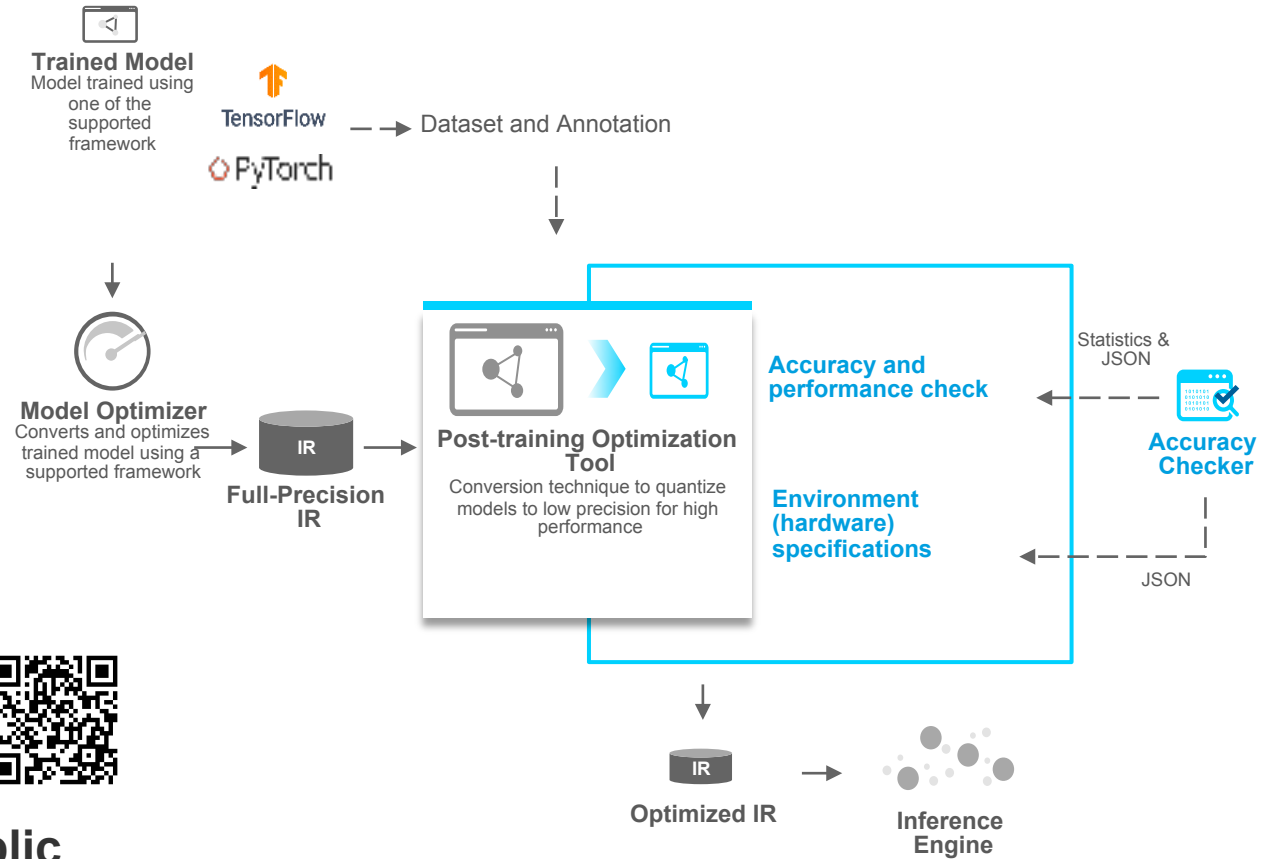


# Post-Training Optimization Tool

Conversion technique that reduces model size into low-precision without re-training

Reduces model size **while also improving latency, with little degradation** in model accuracy and without model re-training.

Different optimization approaches are supported: quantization algorithms, sparsity, etc.



Use POT to Quantize yolo-v3-tf Public Model

<https://hackmd.io/s5xQ3W9FvJ39wLniQ>



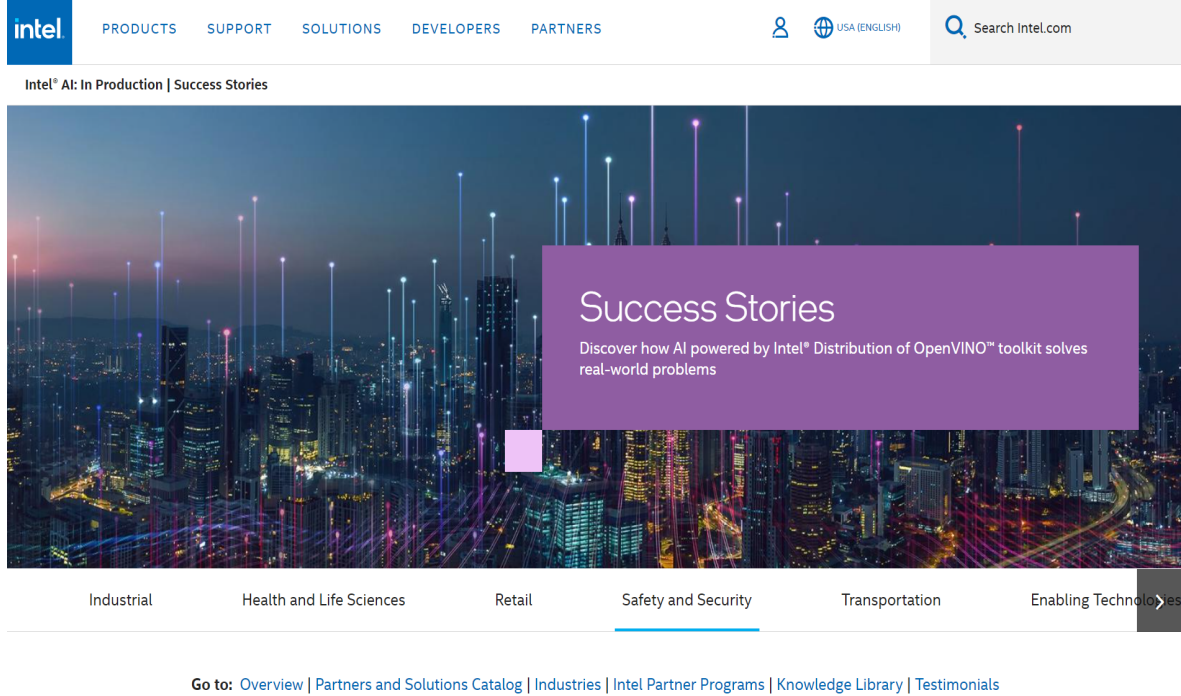
Use POT to Quantize yolo-v4-tf Public Model

<https://hackmd.io/mQHlp8vgTViF9Ao4mnI5rw>





# OpenVINO Use Cases



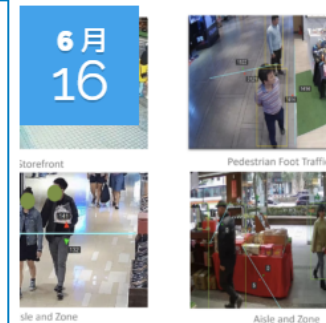
## 【活動報導】AI翻轉教室，提升教學成效!

POSTED BY 王婉文 ON 9月3, 2021 IN EDGE AI, INTEL, OPENVINO, OPENVINO活動報導, 人工智慧, 活動報導



## 【活動報導】AI助攻！機器視覺應用再升級

POSTED BY 謝涵如 ON 7月23, 2021 IN EDGE AI, OPENVINO, OPENVINO專欄, OPENVINO活動報導, 人工智慧, 智慧工廠, 活動報導



## 【活動報導】智慧零售：善用AI掌握商機

POSTED BY 劉書好 ON 6月16, 2021 IN 5G, EDGE AI, INTEL, OPENVINO, OPENVINO活動報導, 影像處理, 智慧零售, 活動報導

Industrial

Health and Life Science

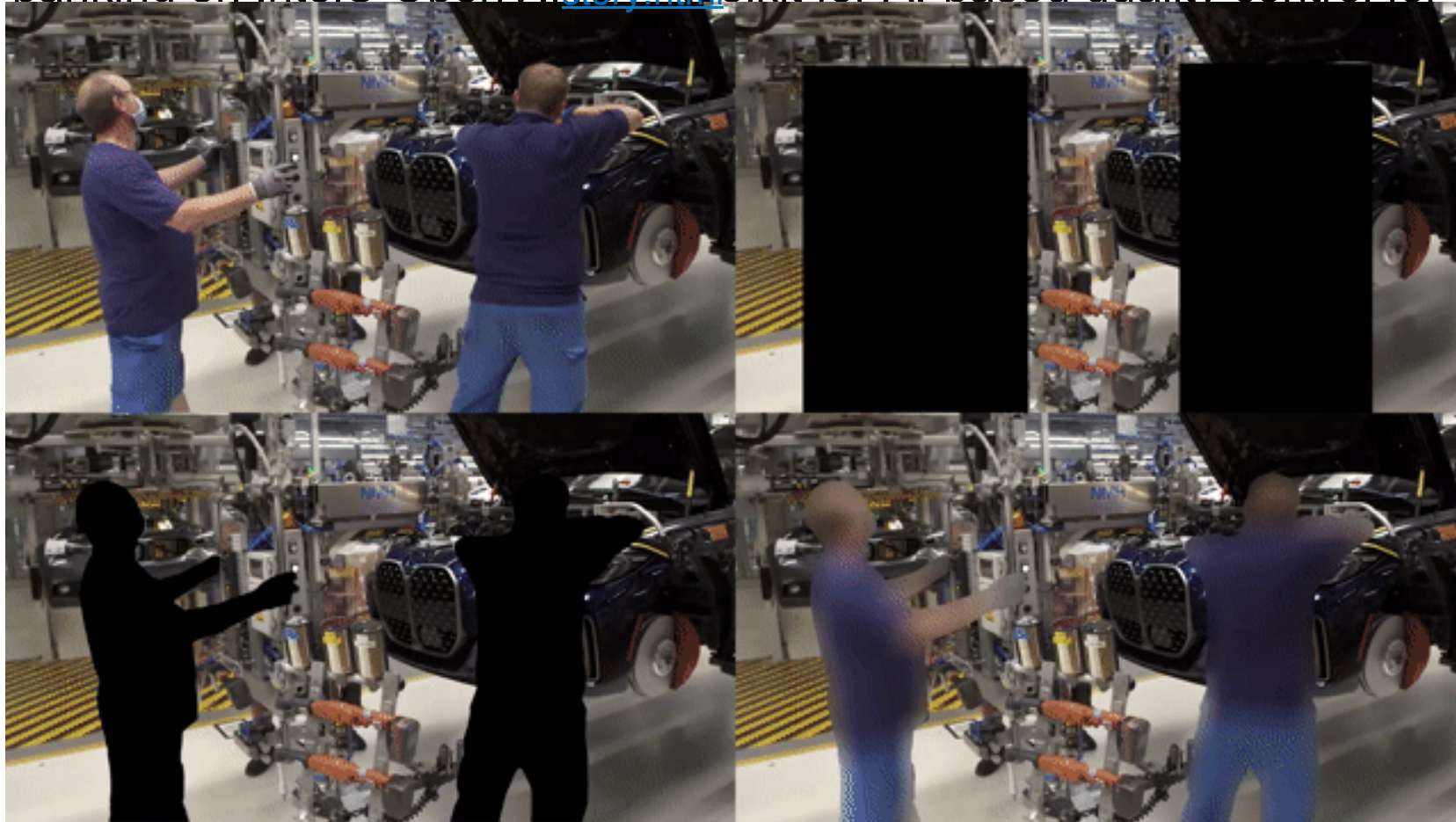
Retail

Safety and Security

Transportation

# BMW Group: Quality Control on Every Employee PC

<https://www.intel.com/content/www/us/en/customer-spotlight/stories/bmw-group-openvino-customer-story.html>  
BMW Group is banking on Intel® OpenVINO™ toolkit for AI-based quality control for every employee.





Object Detection  
Demo  
and Benchmark



實作組AI開發套件



AI in Production  
Success Stories



MAKERPRO  
Edge AI MeetUp