



Dual Transformation through Edge AI



ELAN Microelectronics Corporation

Agenda

AI x 無人機

AI x ADAS

AI x ITS 智慧交通系統
(Intelligent Transportation System)

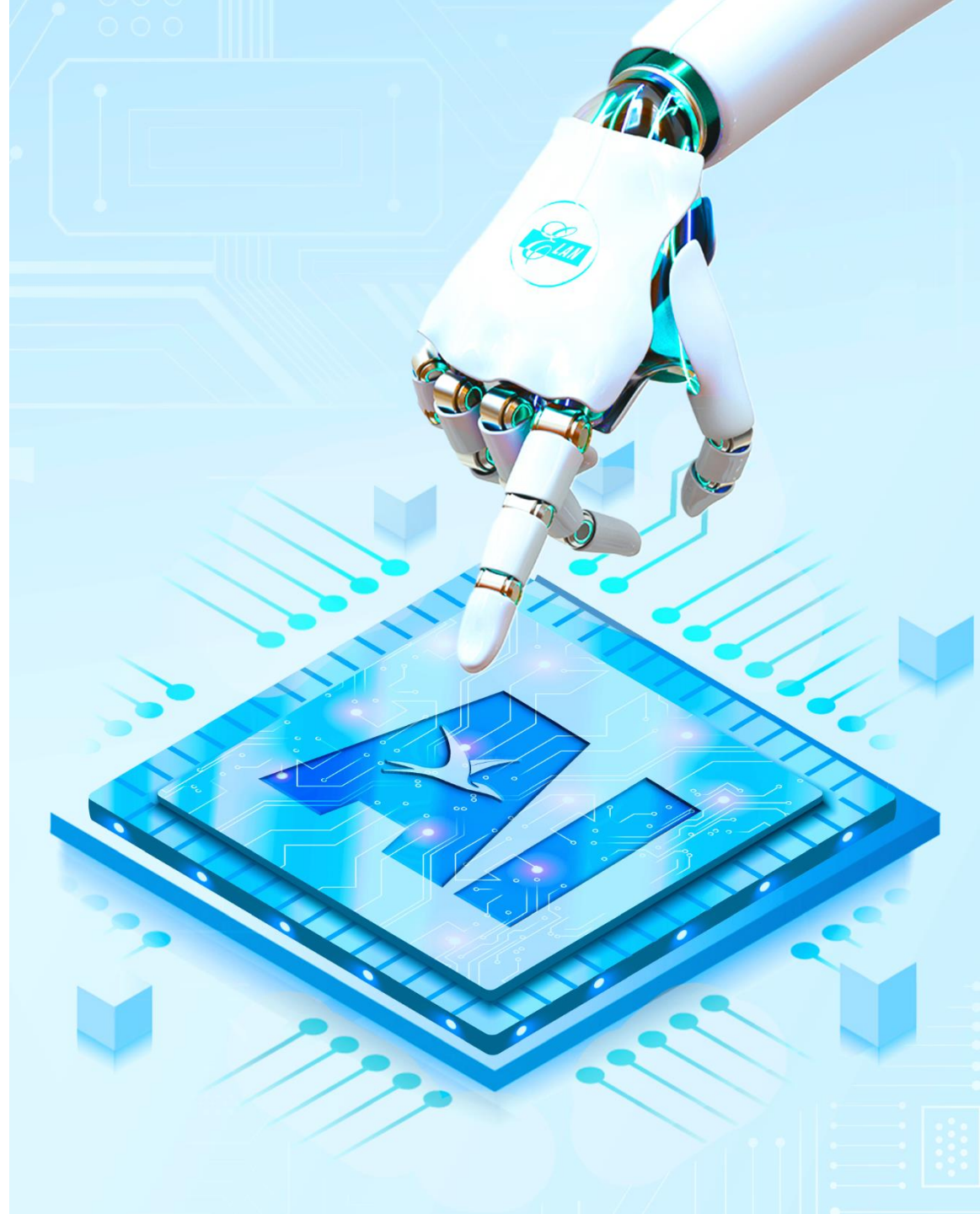
AI x 人機介面

Q & A





AI x 無人機



義隆Mini LED Local Dimming及智慧觸控在控制台之應用

High Brightness Contrast & Power Efficiency for Drones in Outdoor Light

Mini-LED Local Dimming



>1000nits
High Brightness



>20000:1
High Contrast



>600
HDR



Power Saving
Extended Battery Life

ELAN AI × Touchscreen



Glove Touch
Cotton / Thick Glove ✓



Waterproof
Rain / Seawater / Outdoor ✓



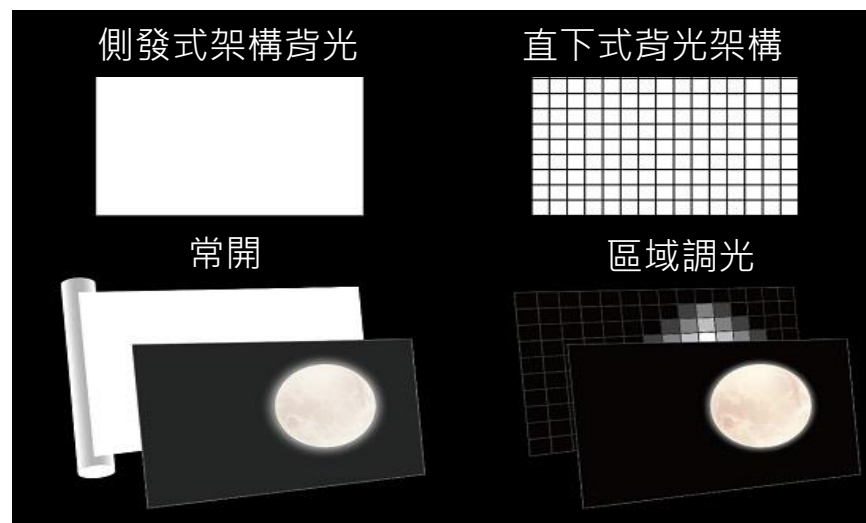
Frozen Touch
Extreme Weather / Frost ✓



ELAN Mini-LED Local Dimming



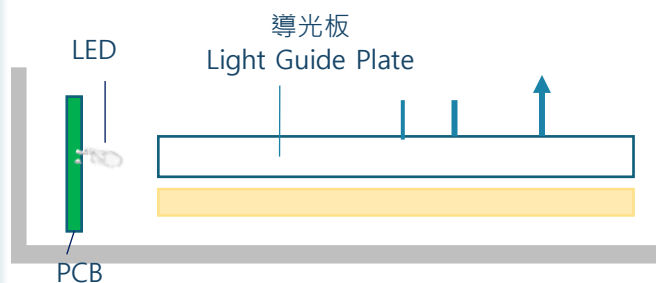
義隆Mini LED Local Dimming在無人機顯示器之應用



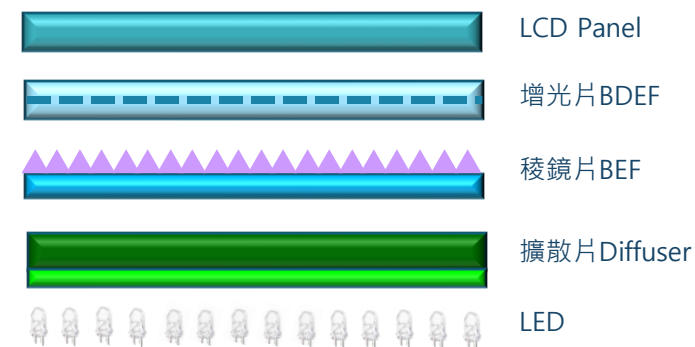
LED Board

Tradition LCD vs Mini LED

Traditional Edge-lit LED Backlight Structure



Direct-lit Mini LED Backlight Display Structure



邊緣AI – 無人機影像辨識技術

中研院 × 義隆電子聯手研發



YOLO v4 v7 v9 AI-Generated Augmented Training Data



- Simulates Weather
- Simulates Military Scenarios
- Smarter Model Training

Target Detection & Tracking



- Accurate Target Lock
- Higher Mission Efficiency

360° Obstacle Avoidance



- Intelligent Navigation
- Autonomous Route Planning

多旋翼無人機 Skydio X10 避障/雲台與 ELAN的比較

Skydio X10

NVIDIA Jetson Orin (275 TOPS)

Obstacle Avoidance



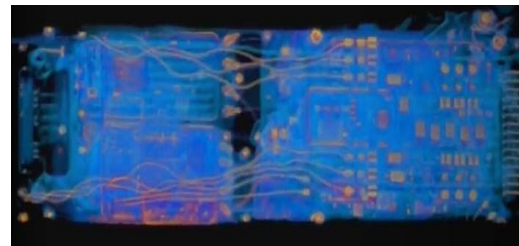
6 Cameras

Qualcomm QRB5165 (15 TOPS)

Gimbal



3 Cameras



PCB Size –

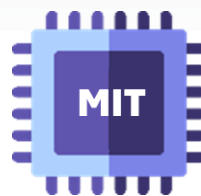
3505 x 1651 x 1194 mm

Obstacle Avoidance (8 TOPS)



PCB Size - 180 x 150 x 2 mm

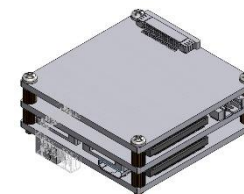
ELAN Solution



Gimbal (2 TOPS)

G1

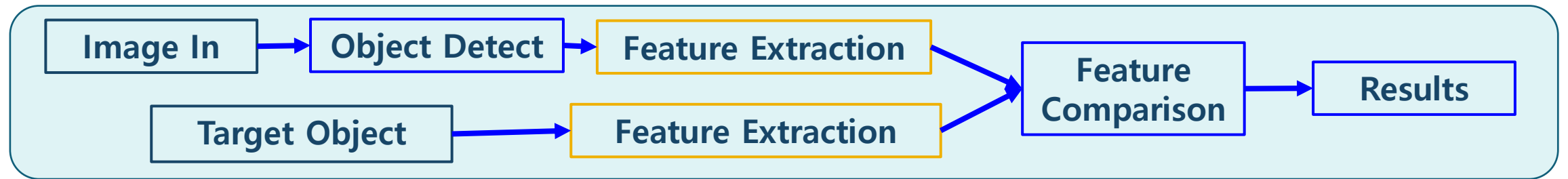
G2



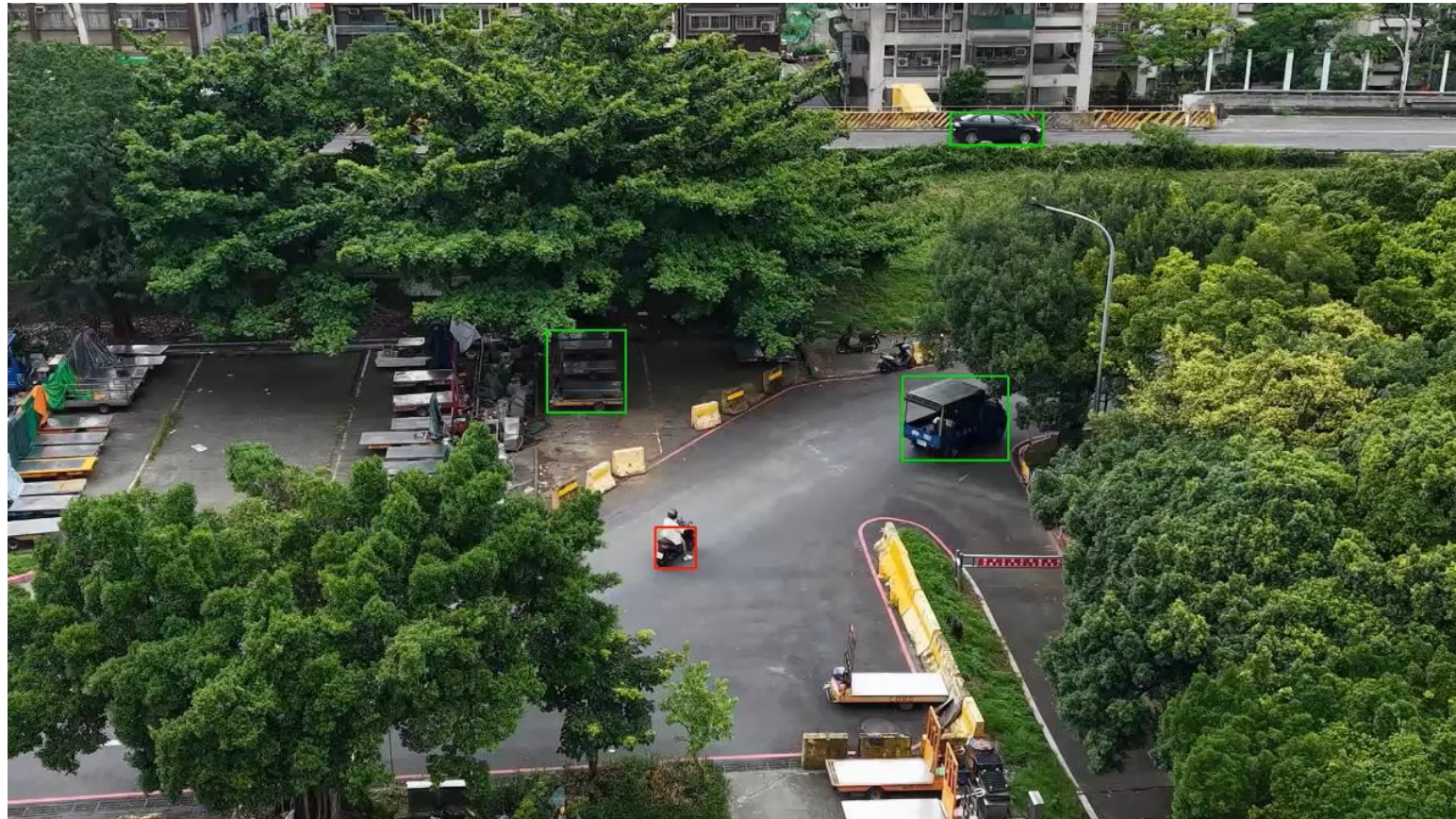
PCB Size - 130x100 mm (G1)

38x38 mm x 3 pcs (G2)

AI目標物件偵測與追蹤



Target Object

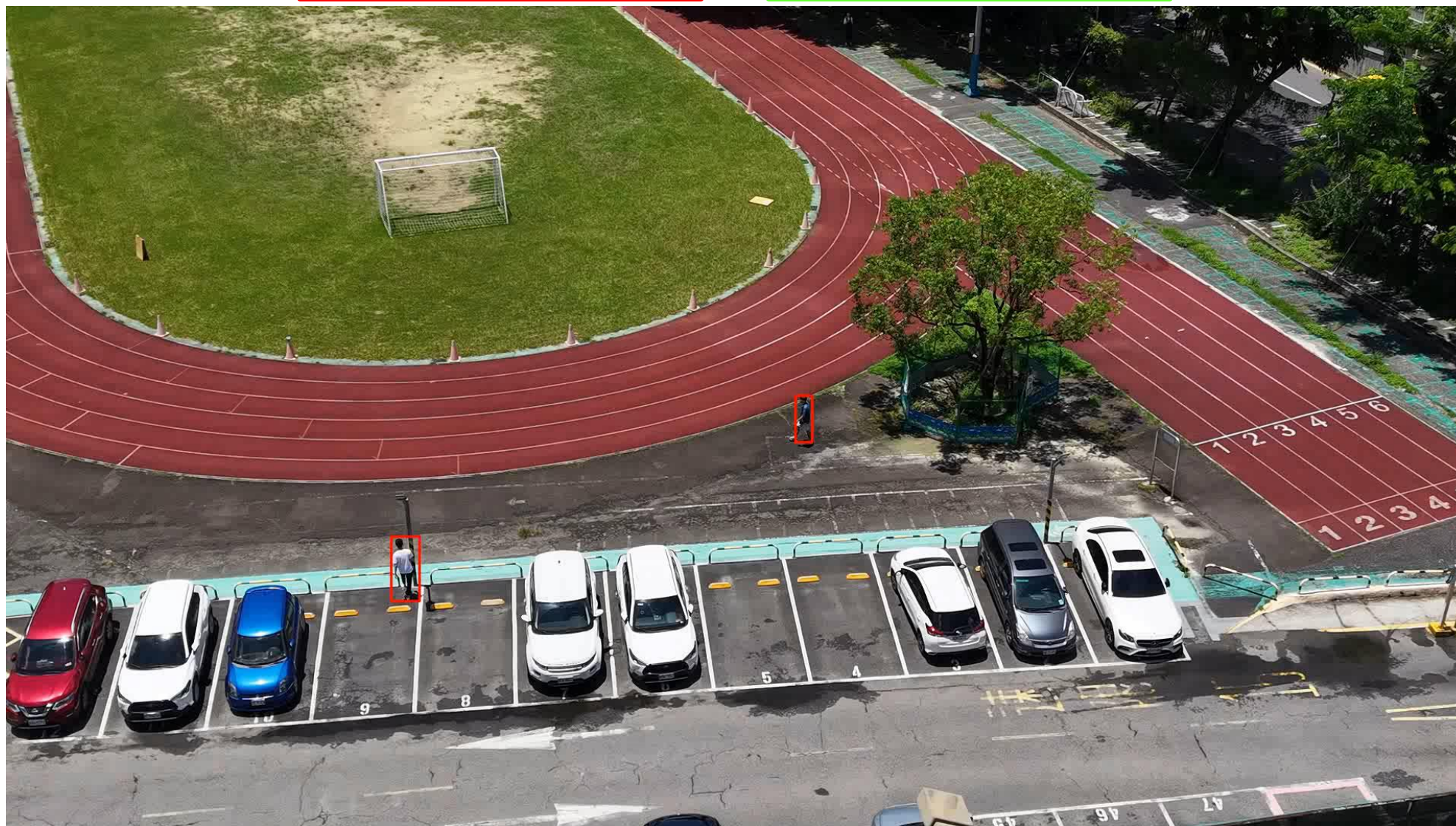


AI目標物件偵測與追蹤

Object Detect

Same Feature Object

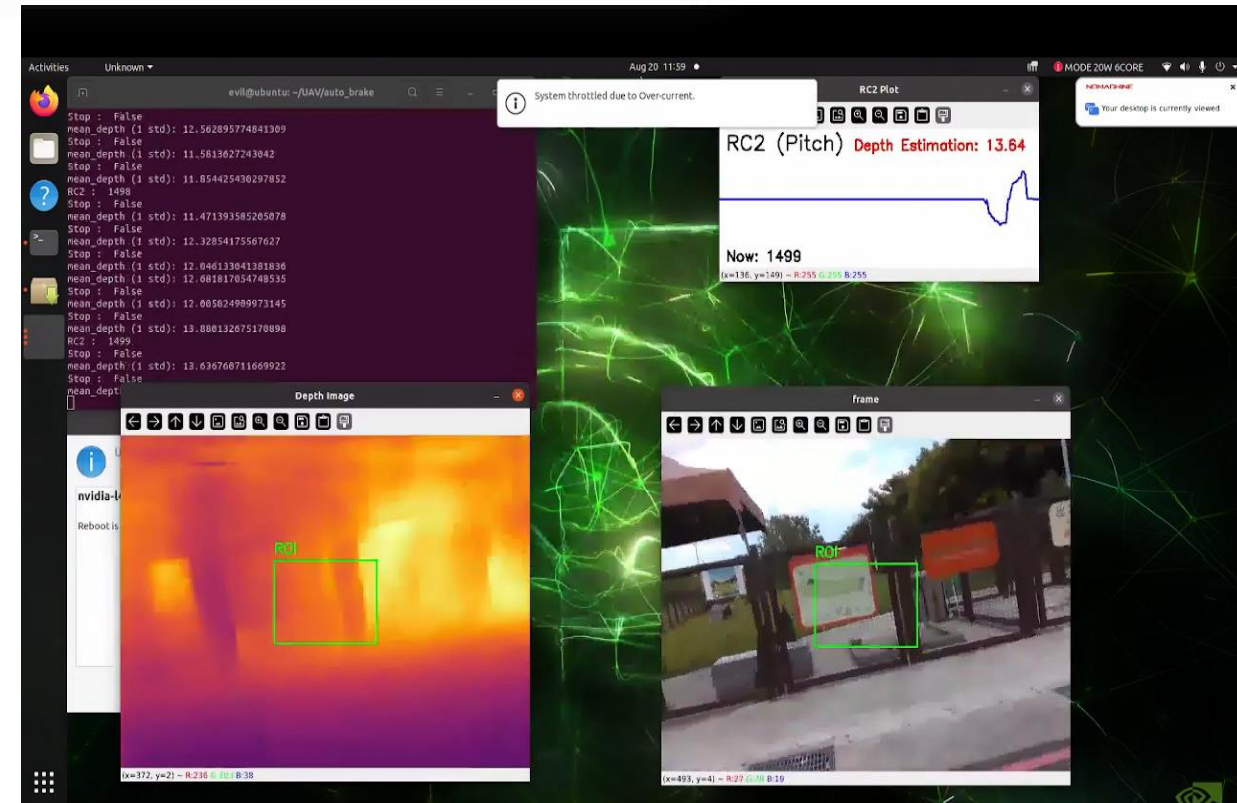
Target
Object



AI深度估計與自主避障飛行控制

Obstacle Avoidance Test

- Emergency Stop Physical Test
- Braking Distance: 2.5 meters



When the detected distance to the around camera is less than 2.5 meters, the braking mechanism is activated, and the UAV stops moving forward.

影像處理晶片 ISP 在無人機之應用

Blade Series: BL01 CVBS camera



1. size 19x19
2. HFOV 110 deg, F1.0 great night vision
3. HDR>100 db
4. Weight : 10.2g
5. CVBS Out



Day - HDR Backlight Compensation



Night - Starlight Night Vision

Wide View Angle Correction & HDR(High Dynamic Range)

Competitor



- [1] Narrow horizontal field of view, approximately 120 degrees
- [2] No lens calibration, heavy image distortion
- [3] High noise in analog output image, severe color rendering errors of objects in the frame
- [4] Low recognition capability in dark areas
- [5] Black-and-white at night, high noise under low-light conditions

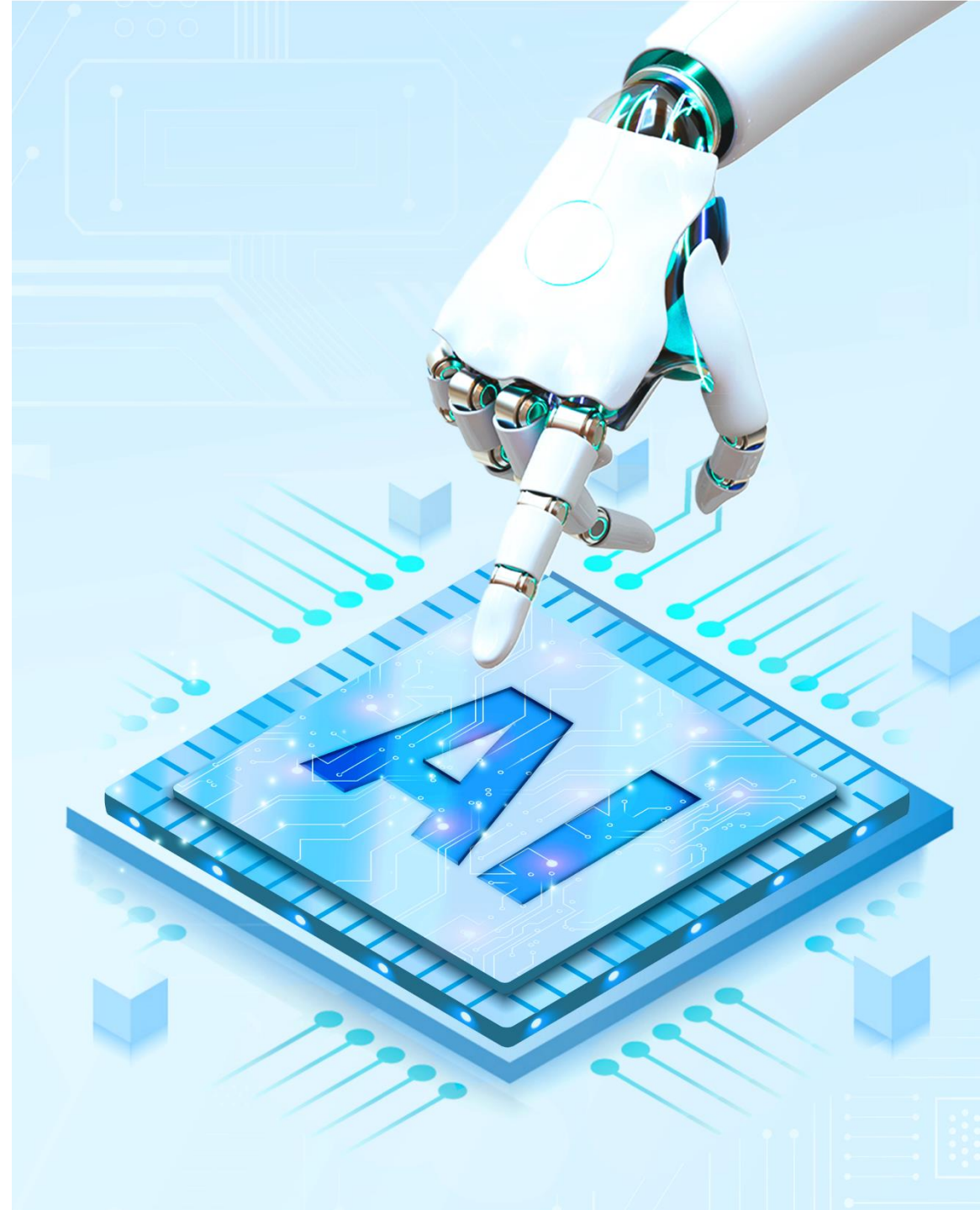
ELAN Group (Avisonic)



- [1] Wide horizontal field of view, 150 degrees
- [2] Lens distortion correction, low image deformation
- [3] Low noise in analog output image, minimal color rendering errors of objects in the frame
- [4] High recognition capability in dark areas
- [5] Full-color at night, low noise under low-light conditions



AI x ADAS



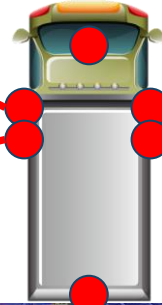
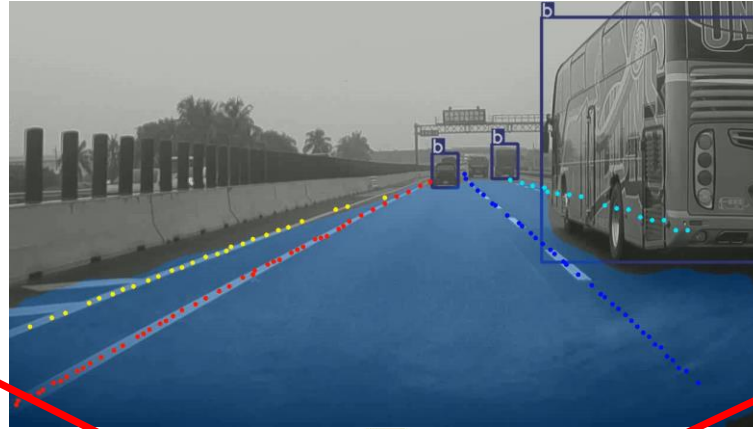
應用於電動巴士與物流車輛的 AI 輔助駕駛系統 (ADAS) Level 1/2+



Enhanced Lane Assistance Navigator 3.0
電動巴士AI緊急轉向防護系統

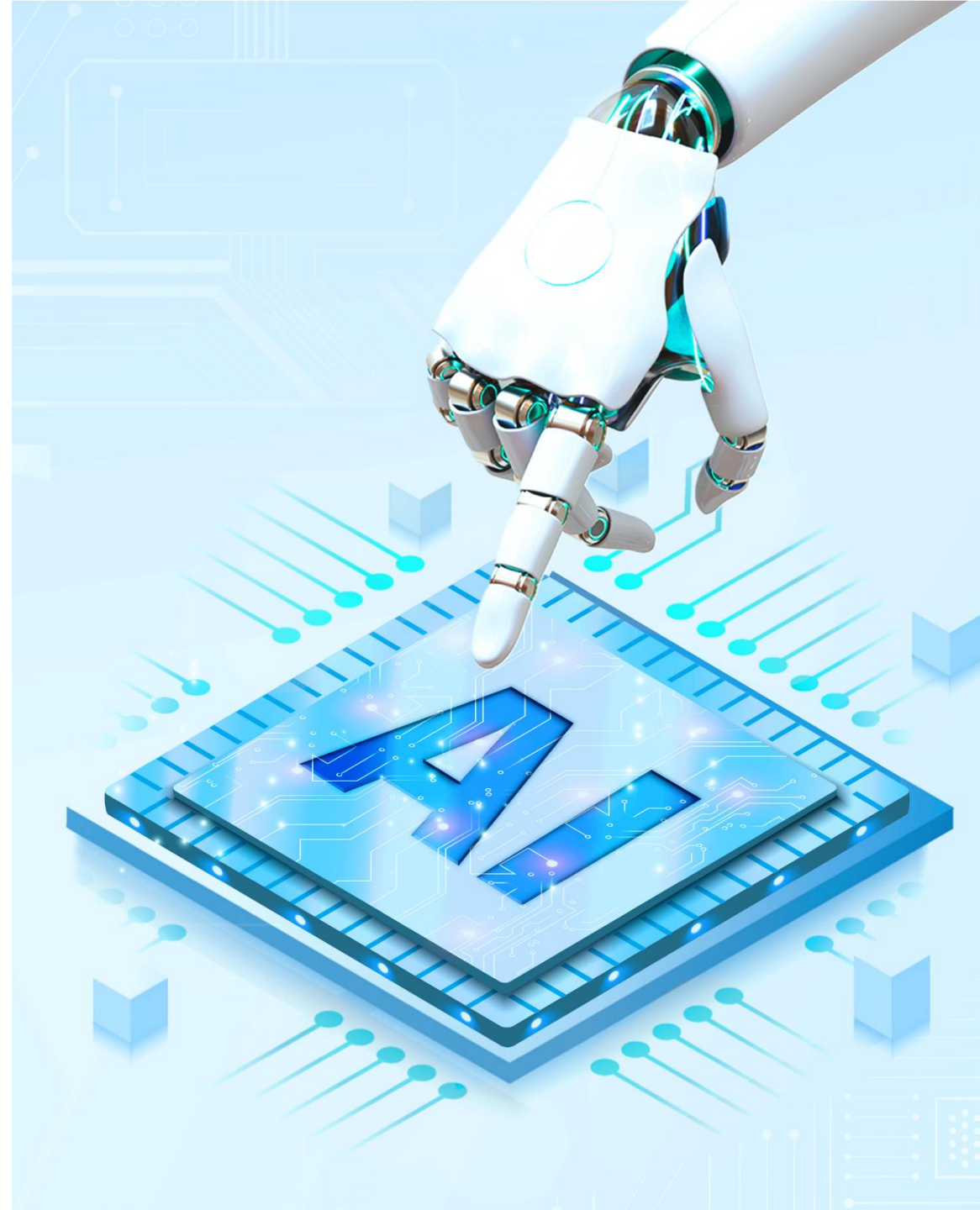


ADAS Level 2+ 攝影感知系統





AI x ITS 智慧交通系統 (Intelligent Transportation System)



AI 三合一智慧監控

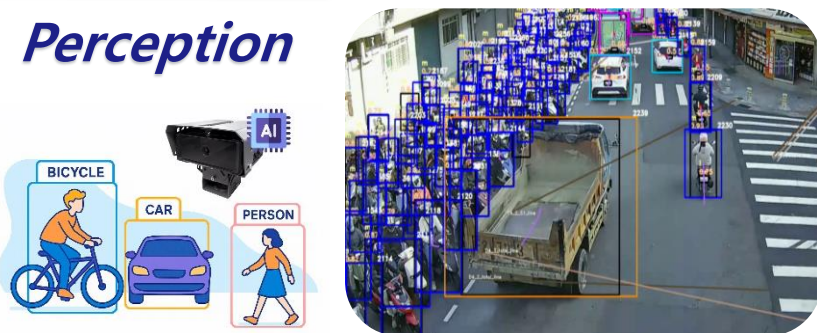


Perception, Planning, Protection

< 0.05 Sec

Applications

Perception



**Real-Time for
Mixed & Complex Roads**

- ✓Diverse Environmental & illumination Conditions
- ✓Multi class - Trucks / Bus / Sedan / Motorcycle / Riders / Pedestrians

Planning



**AI RL Based Adaptive
Traffic Signal Control**

- ✓ms – Level Strategy
- ✓Ensure Arterial Progression with Non-fixed Cycles
- ✓Build for Mixed Traffic Harmony

Protection



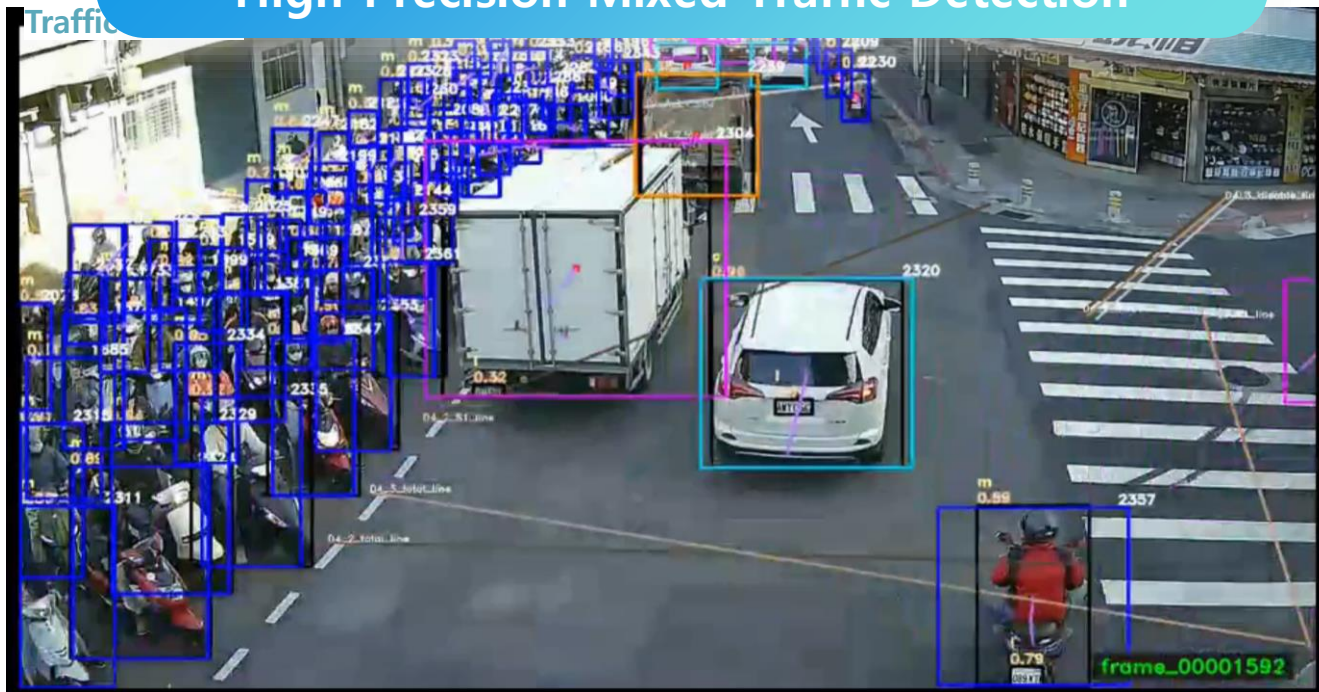
**Real-Time
AI Safety Protection**

- ✓Robust VRUs Detection
- ✓Red Light Violation Prediction
- ✓Real-Time Extended All-Red & Alerting

AI智慧監控 — Edge AI交通號誌控制系統

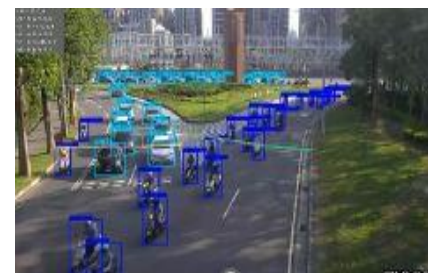


High-Precision Mixed Traffic Detection

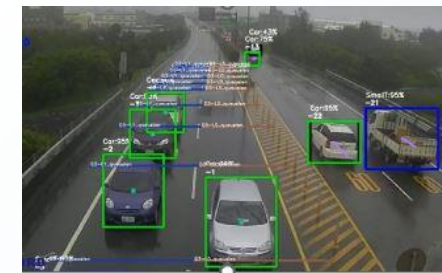


Edge Vision AI Traffic Signal Control
邊緣端AI感知與動態號誌控制系統

Recognition and Tracking
Providing Intersection Mixed
Traffic Volume and Turning
Movement Data



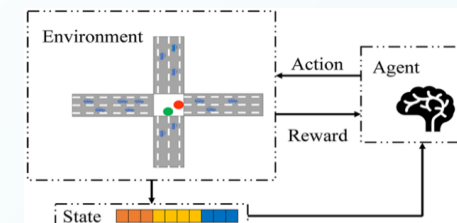
Queue Length Estimation
Providing Traffic Congestion
Information



Traffic Simulation Software
Algorithm Training

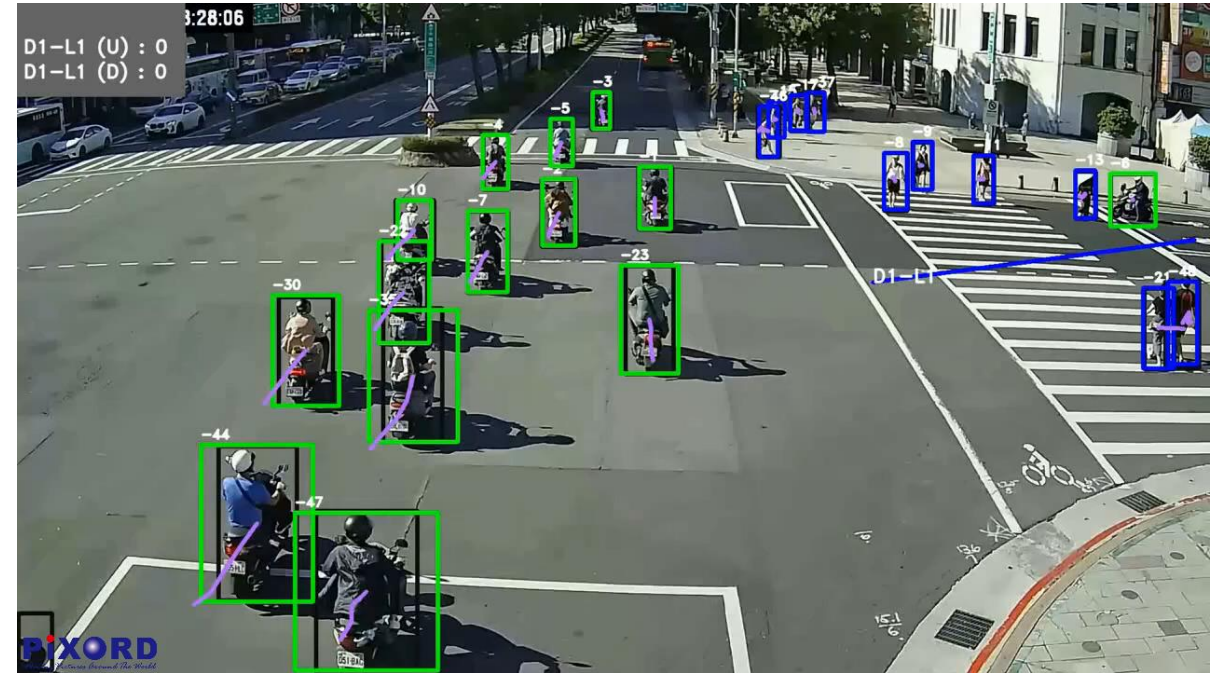
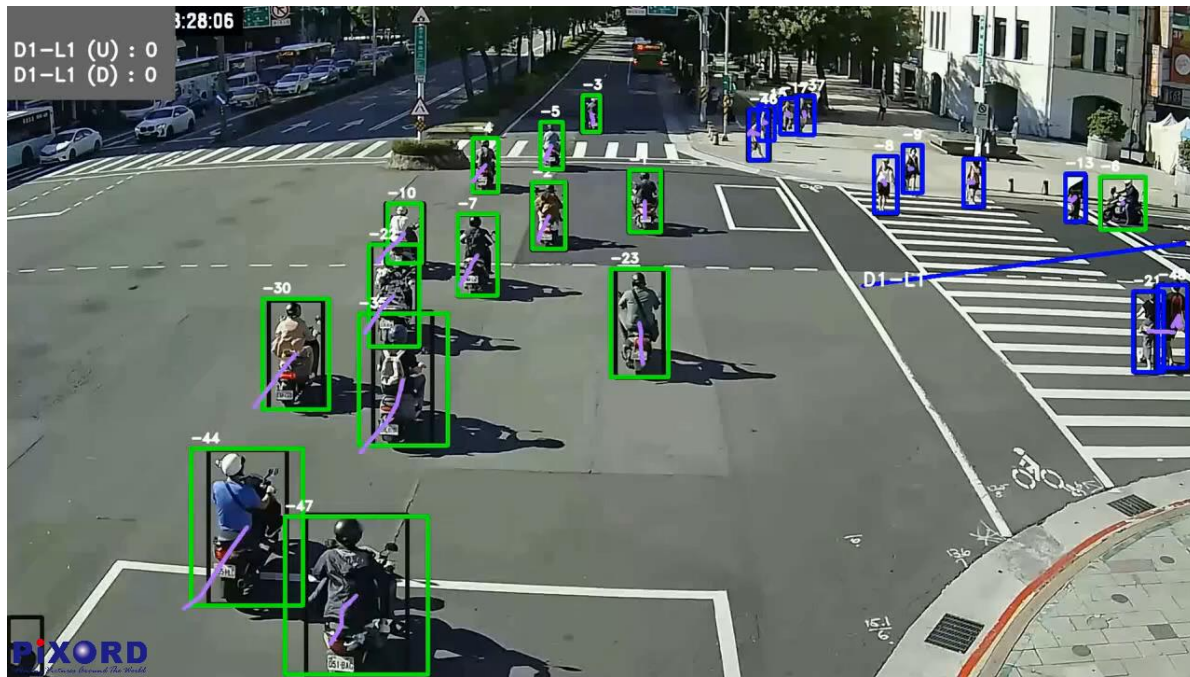


AI RL Traffic Signal Control
Algorithm



行人智慧安全防護系統

Real-time AI Image Recognition to Alert Pedestrians of Oncoming Vehicles & Alert Drivers of Crossing Pedestrians



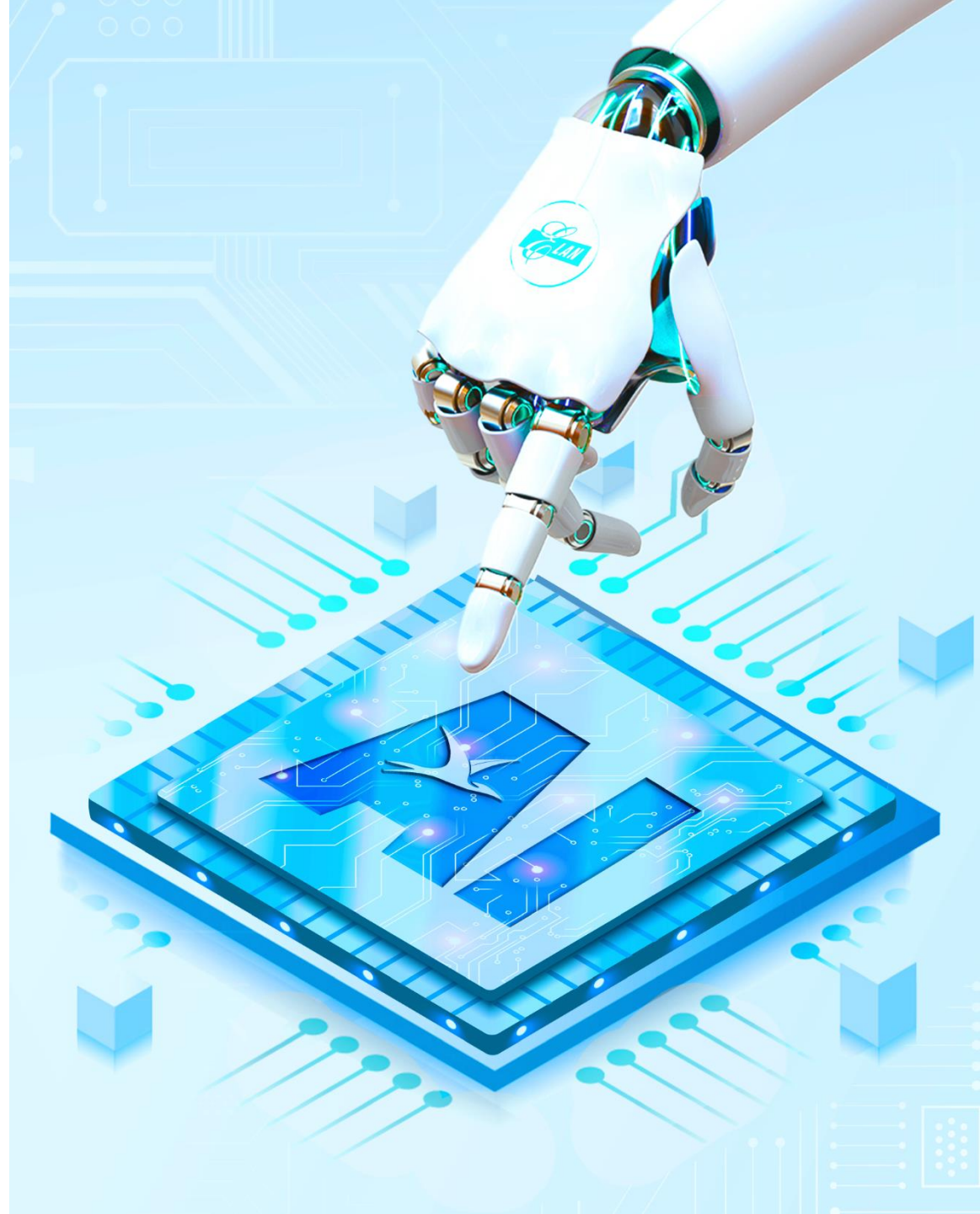
COMPUTEX TAIPEI 2025
Best Choice Award

Edge-based Pedestrian AI Safety System





AI x 人機介面



藉由AI實現企業轉型

ELAN Won 2025 COMPUTEX BC Awards



Edge AI Touchpad with Accessibility Mode
邊緣運算AI輔助殘障筆電觸控板



AI Enabled Touchscreen Solution for IPC
AI賦能工控電腦觸控方案



ELAN3.0
電動巴士AI緊急轉向防護系統



Edge Vision AI Traffic Signal Control
邊緣端AI感知與動態號誌控制系統



Edge-based Pedestrian AI Safety System
邊緣端行人AI安全保護系統

具備輔助模式與手勢操作的Edge AI筆電觸控板

Apple, Google, and Microsoft's Latest Accessibility Innovations

ELAN is Ready to Implement Accessibility Mode for Touchpad



Edge AI NB Touchpad with
Accessibility Mode & Gesture
邊緣運算AI輔助殘障筆電觸控板



Global Accessibility
Awareness Day

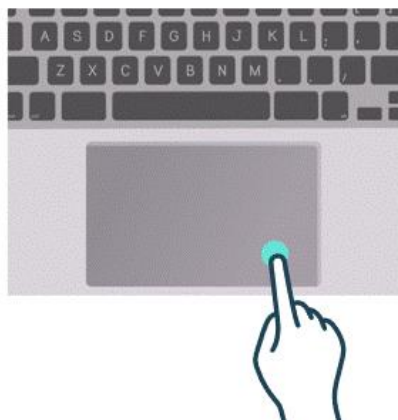
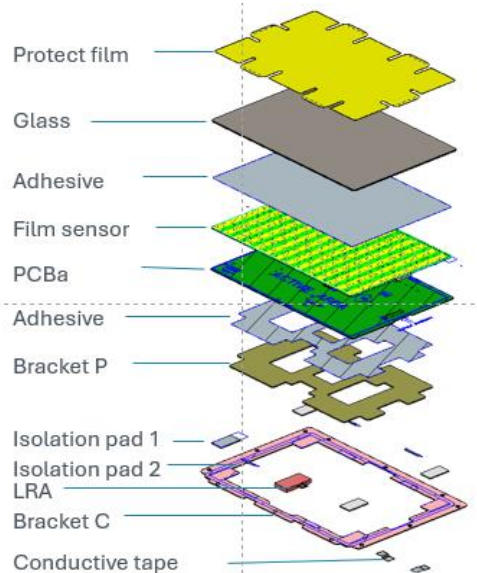


Enhancing Brand
Image



帶有AI功能之觸覺回饋觸控板的特色與優勢

Gen2 (Premium)

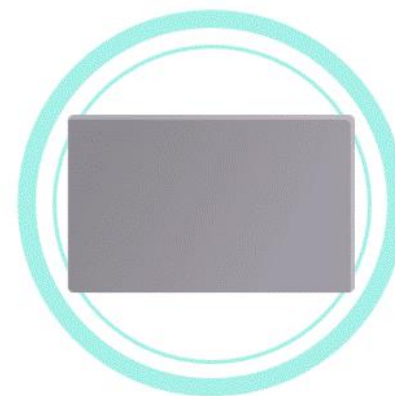
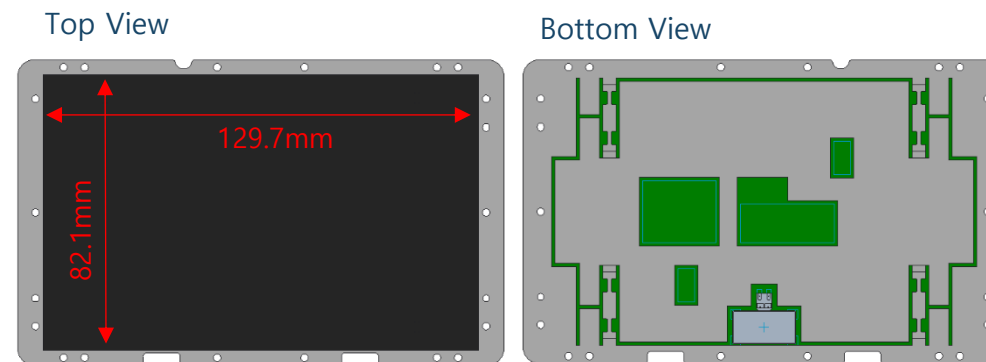


All-Zone
Clickable



Silent
Click Sound

Gen3 (Mainstream)



Different
Haptic Performs

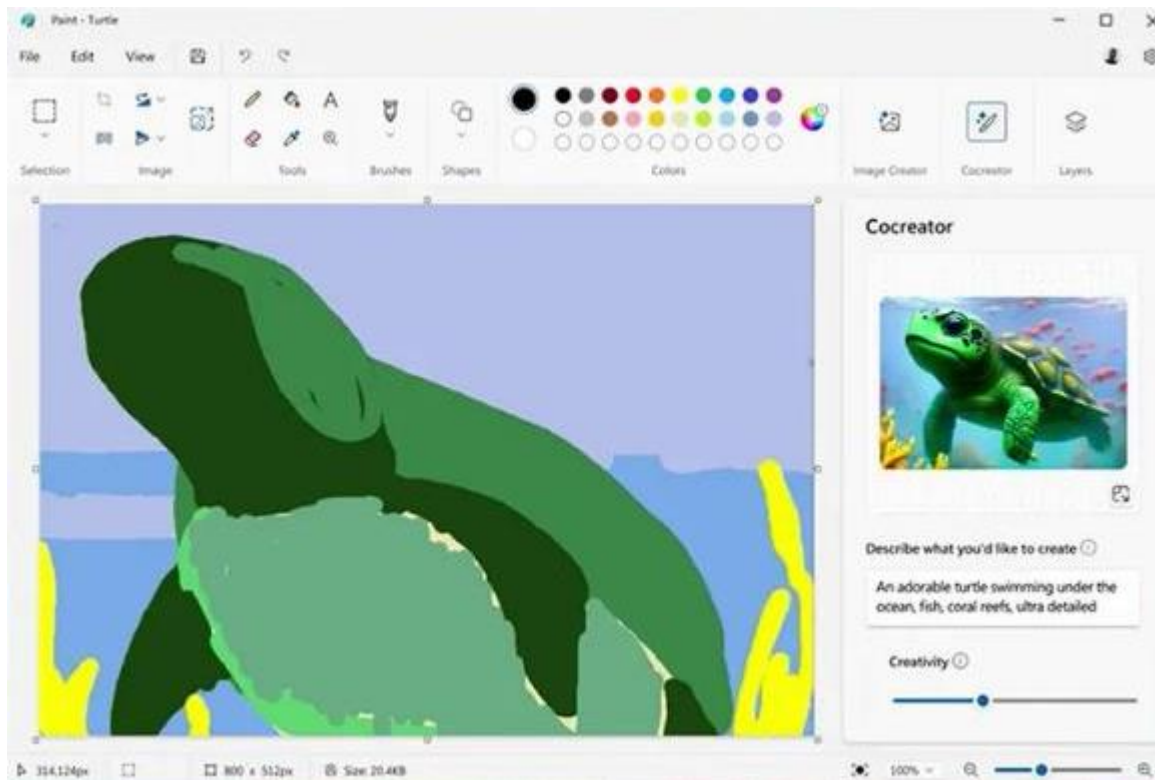


Gesture
Control

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Pen on TouchPad / HapticPad的應用

 Microsoft MPP Protocol **Microsoft's Cocreator**



 Wacom AES Protocol

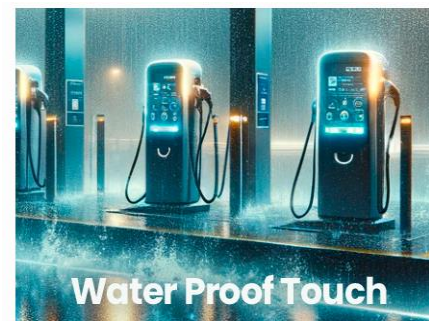


義隆戶外觸控解決方案

New Solution for Raining Water Touch, Glove Touch and Salt-water Touch



AI Enabled Touchscreen Solution for IPC
AI賦能工控電腦觸控方案



義隆戶外觸控解決方案可應用領域

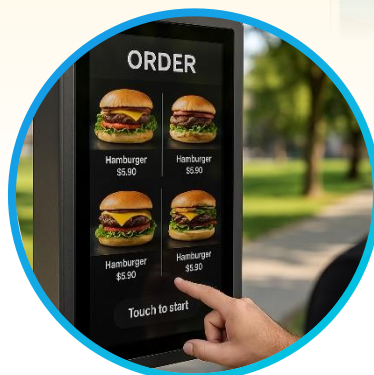


Outdoor Touchscreen Solutions



Outdoor Devices

EV Chargers
Smart Infrastructure



Interactive Kiosks

Self-ordering
Public Terminals



Marine Use

Onboard Systems
Yacht Electronics



Military Field

Rugged Mobility
Tactical Command



Medical Use

Surgical Tablets
Healthcare Devices

合併損益表 - 2025年上半年 vs. 2024年上半年

NT\$M

	1H25	%	1H24	%	YoY(%)
Sales	6,151	100.0	6,257	100.0	(1.7)
Gross profit	3,020	49.1	3,019	48.2	0.0
Sales expense	167	2.7	184	2.9	
G&A expense	227	3.8	257	4.1	
R&D expense	1,097	17.8	1,161	18.6	
OPEX	1,491	24.3	1,602	25.6	(6.9)
Operating profit	1,529	24.8	1,417	22.6	7.9
Non-operating income & exp.	(390)	(6.2)	285	4.6	
Profit before tax	1,139	18.6	1,702	27.2	(33.1)
Net profit	825	13.4	1,365	21.8	
Belong					
Parent company	902	14.7	1,421	22.7	(36.5)
Non-Controlling Interests	(77)		(56)		
* EPS (NT\$)	3.15		4.98		(36.7)

- 期末發行股數: 3.04億股；流通在外股數: 2.863億股(2025年6月底)、2.862億股(2024年6月底)
- 財務資料來源: 會計師核閱

義隆營運績效

NT\$ M

4,000

3,000

2,000

1,000

-

1Q23

2Q23

3Q23

4Q23

1Q24

2Q24

3Q24

4Q24

1Q25

2Q25

Revenue

Gross Margin

2,405

3,042

3,501

3,111

3,106

3,151

3,403

3,036

3,119

3,032

40.7%

44.1%

47.2%

46.9%

47.9%

48.6%

49.3%

49.6%

50.1%

48.0%

50%

40%

30%

20%

10%

0%

AI解決方案: 從PC技術演進到市場拓展

I) Edge and On-Device AI Evolution Driving Business Growth

1. Drones

- Proprietary AI algorithms delivering superior performance with extended battery life
- Mini LED local dimming enhancing visual quality while improving power efficiency
- ISP for High Dynamic Range & Wide View Angle

2. ADAS

- Level 2+ ADAS with automated lane changing for safer mobility
- AI-enabled CCTV and Life & Safety systems for intelligent monitoring and protection

3. AI CCTV

- Real Time Traffic Signal Control
- Life & Safety Systems for Vulnerable Road Users

II) AI PC Era – A Core Growth Engine

1. Smart Touchpad – Hapticpad

Larger size + intuitive interface for precise control and smooth experience

2. Smart Touchscreen

Active stylus + intuitive interface boosting penetration rate

3. Smart Fingerprint Recognition

Essential and reliable security to protect AI PC confidential data



**THANK
YOU**

ELAN MICROELECTRONICS

