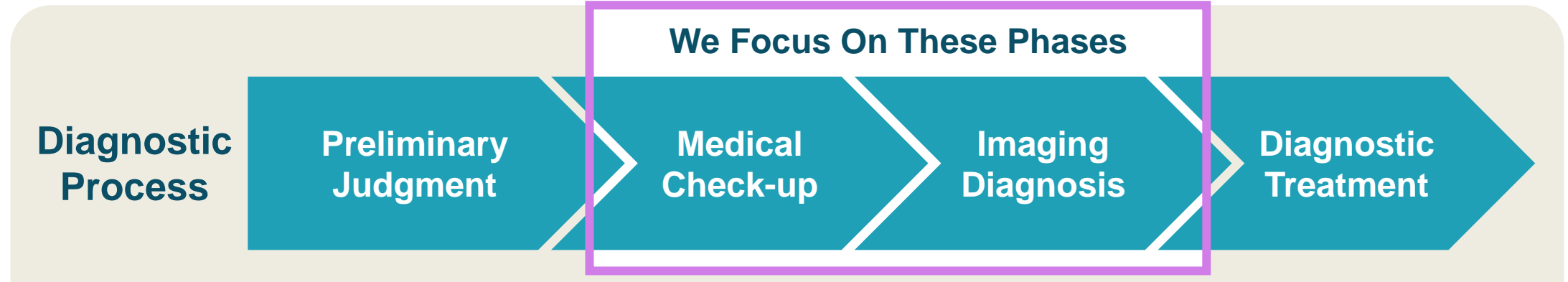


Endoscopy AI Solution

IEI has over a decade experiences in providing endoscopy imaging processing solutions



» IEI Image Processing Pipeline Solutions



IEI-IP-Cores can be optimized for various FPGA architectures, with fast implementation and small cores.

Color Image Pipeline

Color Space Conversion

Image Enhancement

Scaling

More than 30 image processing IP cores

» Endoscopy AI Solution Features

1

**Ultra Low Latency
Image Processing**

**IEI's FPGA design
capability
& image processing
technology**

2

**Ultra Low Latency
Image Capture &
Transmission**

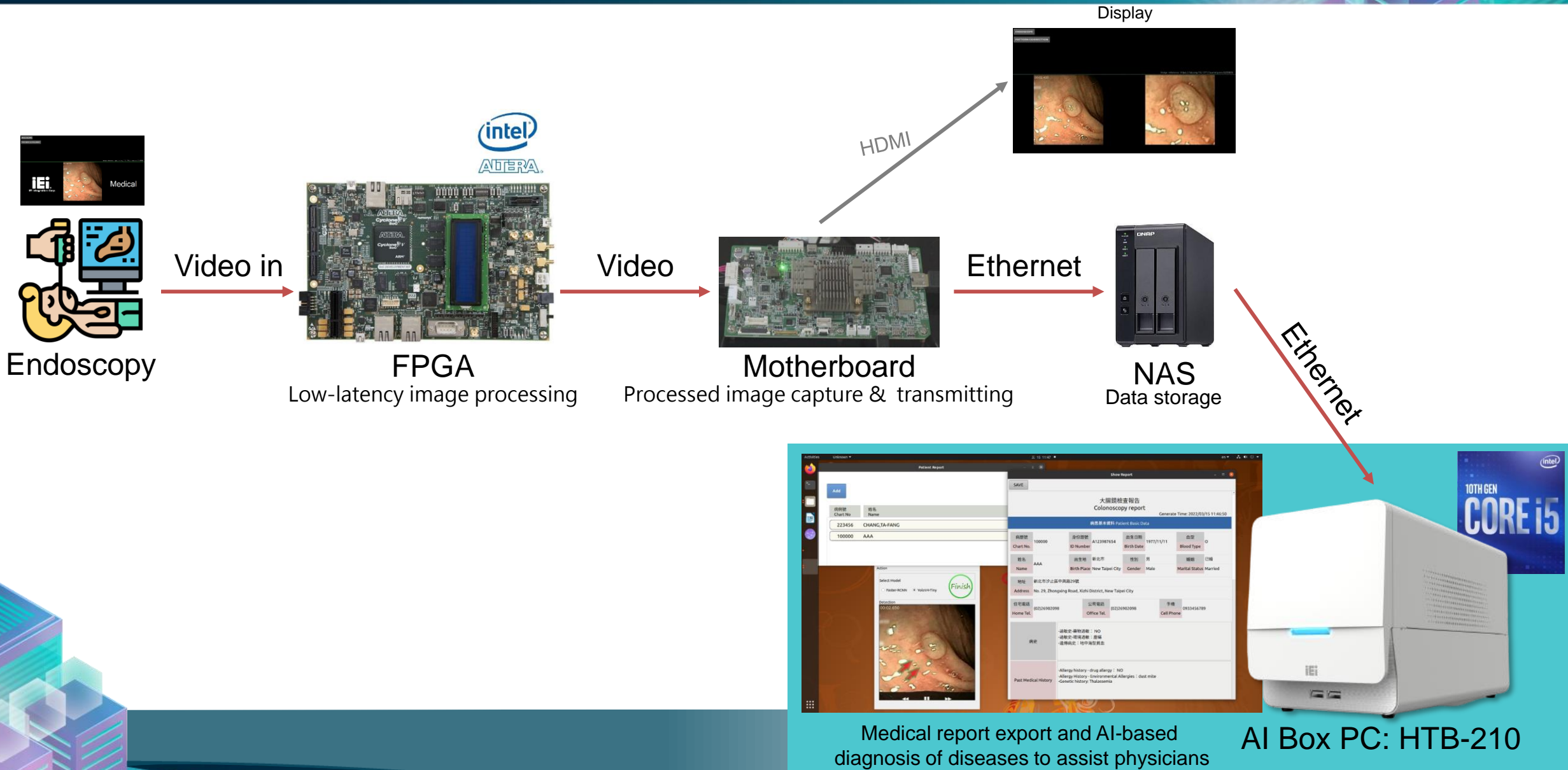
Great design capability

3

**Exporting Medical
Report and
AI-marked Symptoms**

AI integration capability

» Endoscopy AI Solution Workflow



Endoscopy AI Solution Demonstration

1

Real-time image from Endoscopy

PATIENT INFORMATION

Before

Image reference: <https://doi.org/10.1371/journal.pone.0255809>

00:02.550



Medical



2

Image processed, capture & transmitting



PATIENT INFORMATION

After

2 times enlarged

Image reference: <https://doi.org/10.1371/journal.pone.0255809>

00:02.433



3

AI Medical Report

大腸鏡檢查報告
Colonoscopy report

Generate Time: 2022/03/15 11:46:50

病患基本資料 Patient Basic Data

Chart No.	100000	ID Number	A123987654	Birth Date	1977/11/11	Blood Type	O
Name	AAA	Birth Place	New Taipei City	Gender	Male	Marital Status	Married
Address: 新北市汐止區中興路29號 No. 29, Zhongxing Road, Xizhi District, New Taipei City							
Home Tel.	(02)26902098	Office Tel.	(02)26902098	Cell Phone	0933456789		

病史

-遺傳史-藥物過敏: NO
-過敏史-環境過敏: 塵蟎
-遺傳病史: 地中海型貧血

Past Medical History

-Allergy history - drug allergy: NO
-Allergy History - Environmental Allergies: dust mite
-Genetic history: Thalassemia

Action

Select Model

-Faster-RCNN

-YOLOV4-Tiny

Finish

Detection

00:02.630



1

Ultra Low Latency Image Processing

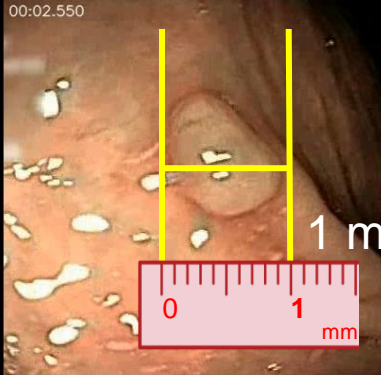
- Perfectly reflect the real image
- Improve AI recognition accuracy by 4% (Yolo-v4)

ENDOSCOPE
PATTERN CORRECTION

Before
Real-time image in endoscopy

Image reference: <https://doi.org/10.1371/journal.pone.0255809>

00:02.550



1 mm

Medical

IEI
IEI Integration Corp.


Raw Data

ENDOSCOPE
PATTERN CORRECTION

After
Real size with medical AI correction


Image reference: <https://doi.org/10.1371/journal.pone.0255809>

00:02.433



0.85 mm

2 Times Enlarged



Processed Image

» Increase Recognition Accuracy

Increase adenomatous identification rate from 81.3% to 85.7%. Our solution can improve the identification rate up to 4%.

Before: Endoscopy raw data
(Distortion image)



(Yolo-v4)

After: Restored image
Image processed by FPGA



(Yolo-v4)

2

Ultra Low Latency Image Capture & Transmission

- Image transmission latency is less than 200ms

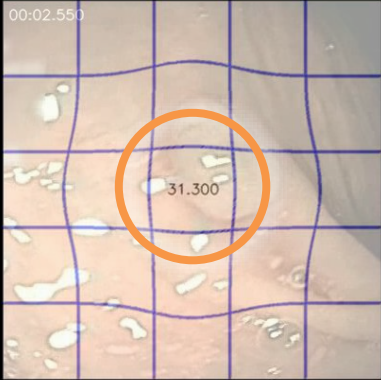
ENDOSCOPE

PATTERN CORRECTION

Before
Real-time image in endoscopy

Image reference: <https://doi.org/10.1371/journal.pone.0255809>

00:02.550



31.300

Medical

iEi
IEI Integration Corp.

ENDOSCOPE

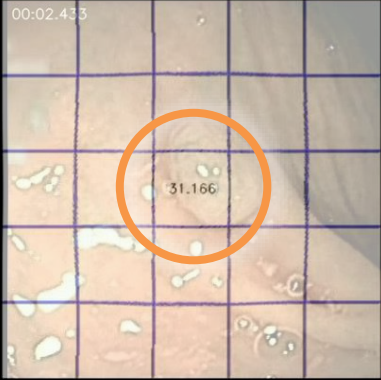
PATTERN CORRECTION

After
Real size with medical AI correction

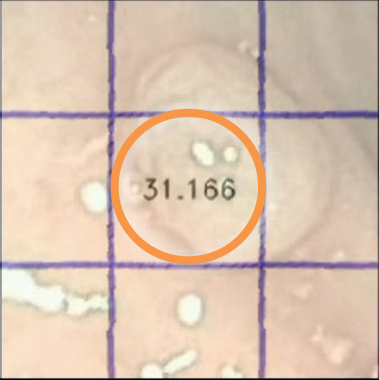
2 Times Enlarged

Image reference: <https://doi.org/10.1371/journal.pone.0255809>

00:02.433



31.166



31.166

3

Exporting Medical Report & AI Marked Symptoms

- Use AI functions to assist physicians in symptom identification with customizable medical reports
- Reduce physicians' medical report preparation time after patient examination

The screenshot displays a web-based medical report system. On the left, a 'Patient Report' window shows a table with columns for 'Chart No' and 'Name'. The table contains three rows of data. Below the table, there is an 'Action' section with 'Select Model' options: 'Faster-RCNN' and 'YoloV4-Tiny'. A 'Finish' button is visible. A video player shows a medical image of a tumor with red arrows pointing to it. On the right, a 'Show Report' window displays 'Exam Result' and 'AI Detection Result' sections. The 'Exam Result' section includes 'Exam Date' and 'Exam Date' fields. The 'AI Detection Result' section shows a video frame with a tumor, the filename '2_05_AD_det.jpg', and the AI result: '腫瘤型態: 腺腫', 'Tumor type: Adenoma', and '位於影像中心', 'In the center of the image'. A 'Remove' button is also present.

MEDICAL

Contact Us



- » Visit IEI Medical Solution website
www.ieiworld.com/medical-solution
- » Contact us:
iei_medical@ieiworld.com