



AICUDA
TECHNOLOGY

**VAIDIO 6.1.0
ANALYTICS GUIDE**

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FALSE DETECTION REPORT

- ❑ Notice a false object detection in Vaidio? Send it to Aicuda
- ❑ False Detection Reporting strengthens the accuracy of future results
- ❑ Applies to all analytics
- ❑ The icon to send the false detection report is included in the **detail page** in every dashboard (Video Search, LPR, Alert, etc.)
- ❑ **Internet is required to send the snapshot to Aicuda**

Note: Aicuda engineering team uses the falsely detected image for correct labeling and adds it to training

False Detection

Original Snapshot | Scene ID : 9383493

2021-01-01 14:58:55
Drug Store

Object Type: Truck
Color: Yellow, Black
Width : 325
Height: 856

Age:
Gender:
FR List:
Name:
Emotion:

False Detection Report

To help us improve our product, please send this report if you discovered false detection in the scene.

Scene ID:19473097
Scene Image Time:2022-08-05 04:12:06

Description (Optional)

Cancel Send Report

Detail page

Enter Description after clicking on False Detection icon

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VIDEO SEARCH

- [Dashboard](#)
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- [Smart Tag](#)

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VIDEO SEARCH – DASHBOARD

Original Snapshot | Scene ID : 19472923

2022-08-05 04:11:44
Taipei Street

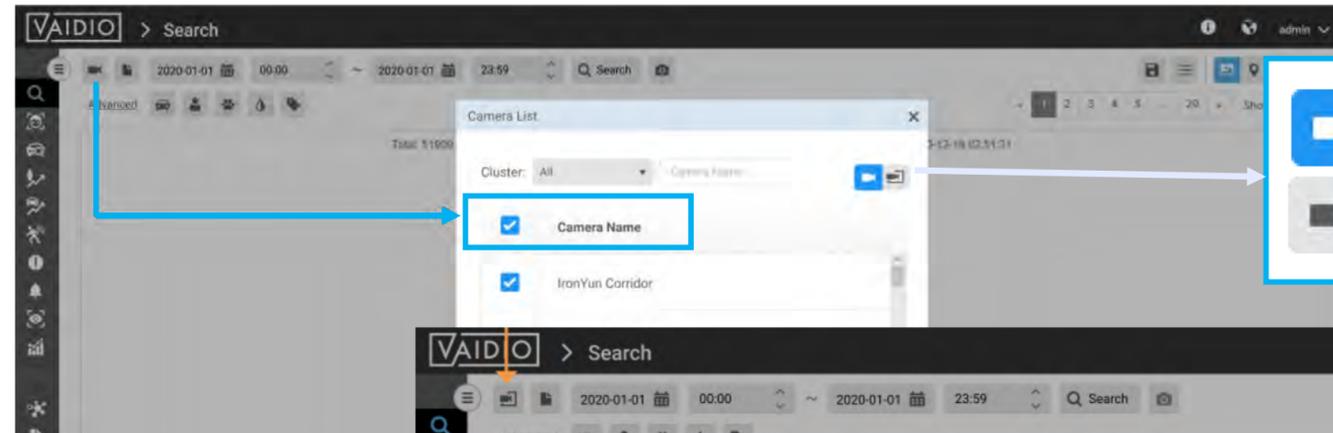
Object Type:	Person	Age:	-	Make:	-	Mask:	-
Confidence:	0.82	Gender:	-	Model:	-	PPE:	-
Color:	White, Black	FR List:	Not in list	LPR List:	-		
Width:	332	Name:	-	License Plate:	-		
Height:	765	Emotion:	-	Speed:	-	State:	-

Icons from left to right:

- Show a specific area/point of view
- Show the bounding box of the detected objects
- Enlarge an area in the image
- Add hashtag to the detected event for future search, e.g., #caraccident
- Download the image
- Blur/unblur faces/people in the image
- Conduct **Face Search** for an individual
- Show **Cross Camera Tracking**
- False Detection Report
- Show image of the detected event (default)
- Show video playback if NVR has been added to the camera
- Show camera location on GPS map
- Show camera location on indoor map

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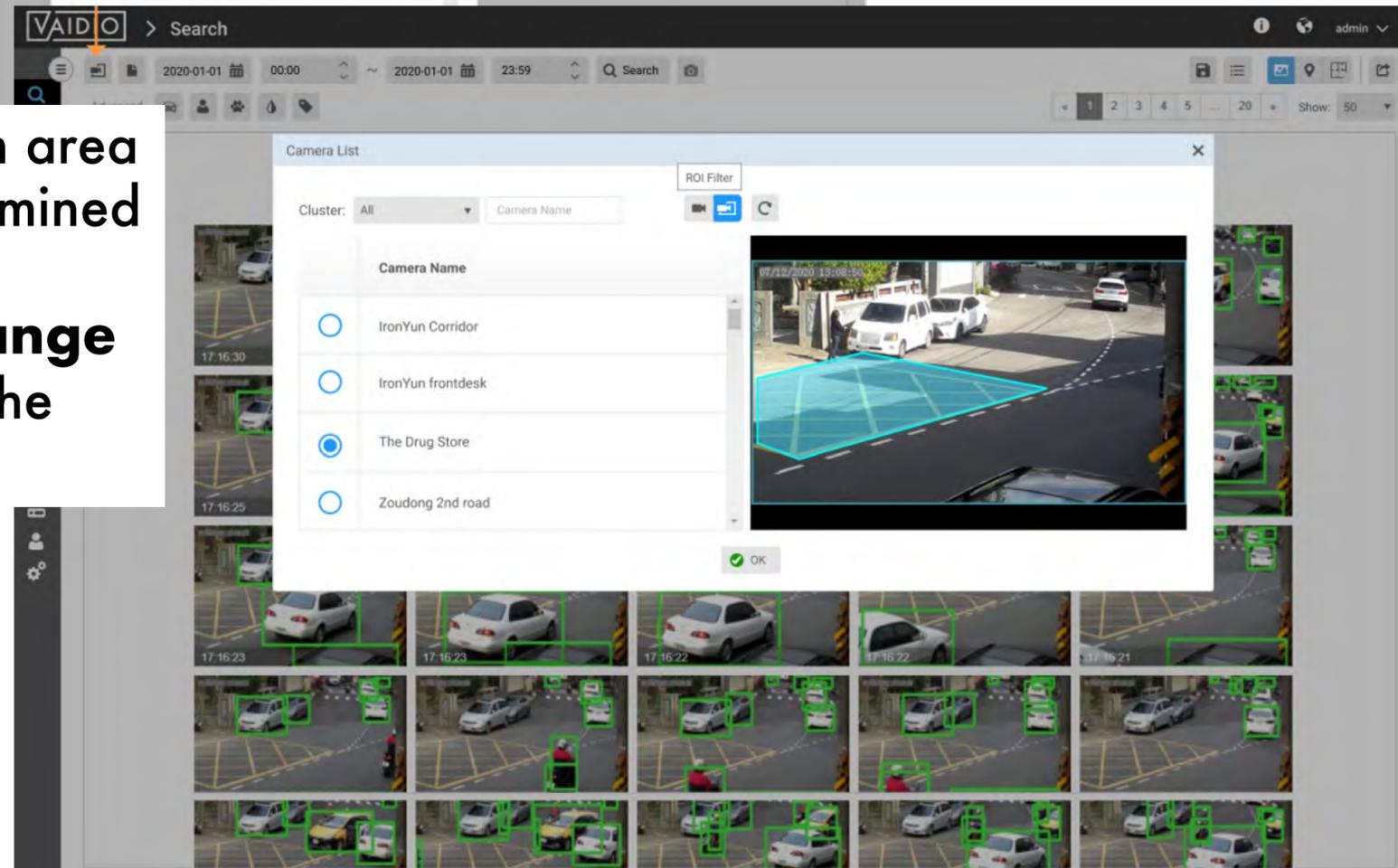
VIDEO SEARCH – CAMERA ROI



Wide Range (multi-camera): Regular video search to get more results

Precise (single-camera): Define an ROI in the camera FOV to get fewer but more precise results

- Specify an ROI to narrow down the search area
- ❑ ROI is drawn on demand, not pre-determined during setup
 - ❑ Toggle Camera ROI between **Wide Range** and **Precise** modes at the top right of the Camera List window



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VIDEO SEARCH – OBJECT TYPES

- Make sure that the correct object types are enabled to be detected:
 - **Camera > Edit > Profile**
- Make sure that the correct AI engine(s) are activated to detect certain attributes:
 - **Camera > Edit > AI Engines**
 - FR: Name, List, Face, with/without mask, Emotion
 - Age & Gender and/or FR: Age group, gender
 - PPE: Person with/without hardhat/helmet, safety vest
 - LPR: Vehicle license plate
 - Vehicle make and model recognition (MMR): contact your local Aicuda support team (or email support@Aicuda.world) if MMR is in your purchase order but does not appear in the search dashboard

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VIDEO SEARCH – PERSON

Check **"Face"** to get the detected results that include a face and filter out those classified as a person but without a face.

Select the specific criteria of the target object.

- Color
- Name & FR List
- Age & Gender
- Emotion
- Facemask
- PPE: Hard Helmet, Safety Vest
- Quantity

Original Snapshot | Scene ID : 118471928

2022-02-14 21:48:23
Demo - Weapon

Click the face icon to directly go to **Face Search** (opened in a new tab) to find a particular person across multiple cameras based on this snapshot.

Can combine different objects to search for a specific scene/event

Person x Backpack x Handbag x

Object Type:	Person	Age:	-	Make:	-	Mask:	👤 (1.0)
Confidence:	1.0	Gender:	-	Model:	-	PPE:	-
Color:	Blue, Green,...	FR List:	Not in list	LPR List:	-		
Width:	426	Name:	-	License Plate:	-		
Height:	921	Emotion:	😡 Angry	Speed:	-		

Original Snapshot | Scene ID : 36959016

2020-07-06 09:13:48
IronYun Corridor

Person

Backpack

Handbag

Object Type:	Person(1.0)	Age:	-	Make:	-	PPE:	-
Width:	224	Gender:	-	Model:	-		
Height:	575	FR List:	-	LPR List:	-		
Color:	Gray,Whit...	Name:	-	License Plate:	-		

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VIDEO SEARCH – PERSON (CONT.)

The screenshot shows the VAIDIO search interface. At the top, there's a search bar with 'Person Anthony' entered. Below it, a filter overlay is visible with the following settings:

- Precondition: Face
- Color: Include (selected) / Exclude
- Name: Anthony
- List: --
- Age: --
- Gender: Both / Male / Female
- PPE: (Icons for various items)
- Quantity: 0

The main view shows a video frame with a person walking on stairs, highlighted by a green bounding box. Below the video, a metadata panel displays the following information:

Object Type:	Face(1.0)	Age:	20-29	Make:	-	PPE:	-
Width:	167	Gender:	Male	Model:	-	LPR List:	-
Height:	167	FR List:	office	LPR List:	-	License Plate:	-
Color:	-	Name:	Anthony	License Plate:	-		

To search for the person who is in the face database, enter the **Name** and select the **FR list**.

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VIDEO SEARCH – PERSON (CONT.)

- When **System > Setting > Privacy Protection** is ON, in the detail page, the Face Search icon is disabled
- To do **Face Search**, the user must first Unblur the image by clicking on the Blur/Unblur icon



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VIDEO SEARCH - VEHICLE

Select the specific criteria of the target object.

- Types
- Color
- Partial License Plate
- License Plate List
- Make & Model
- Quantity

Original Snapshot | Scene ID : 38395001
2022-08-05 04:47:59
Zhudong - 2nd Road

Original Snapshot | Scene ID : 37065721
2022-08-05 04:47:59
Zhudong - 1st Road_test

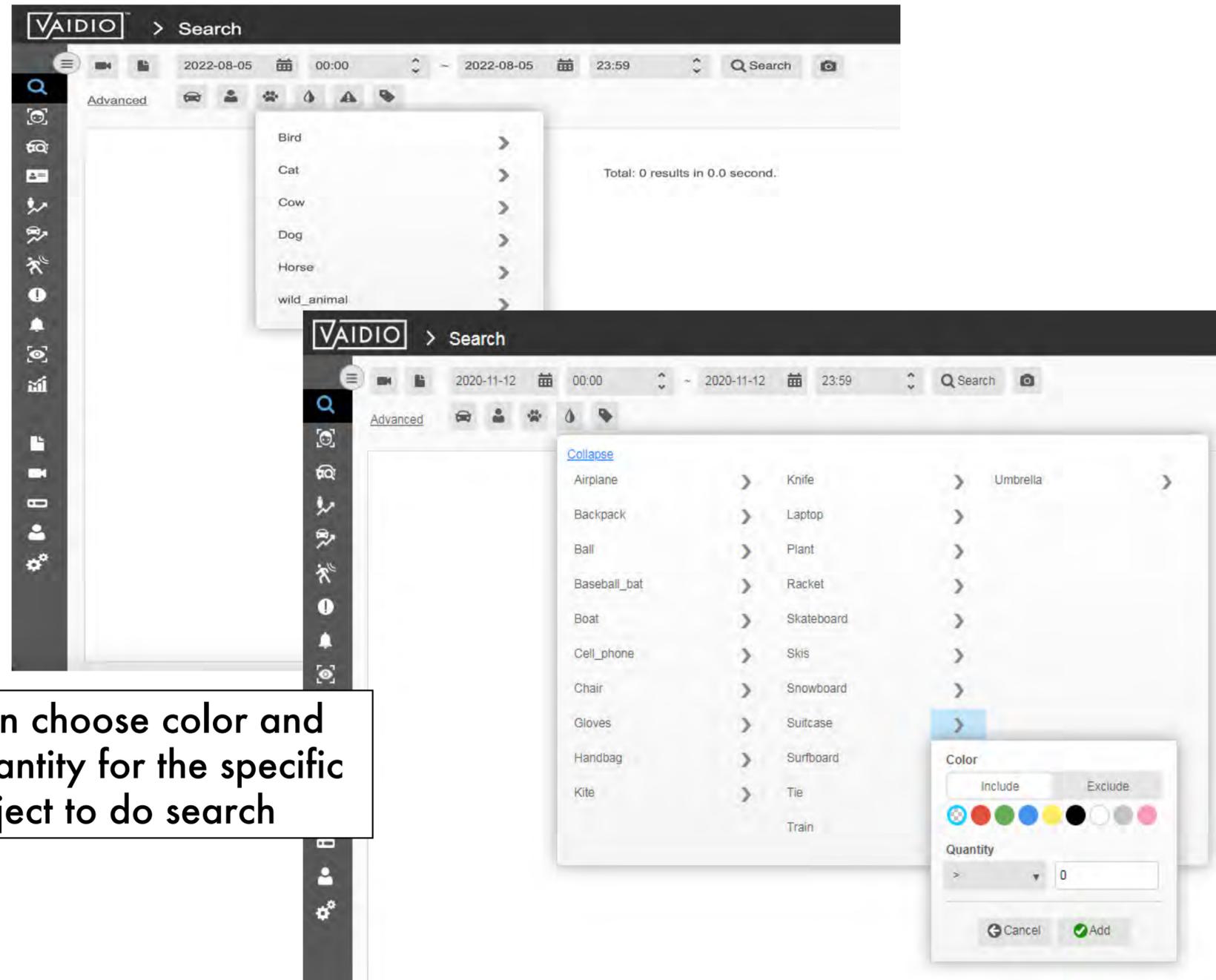
Object Type:	Car(1.0)	Age:	-	Make:	BMW	PPE:	
Width:	547	Gender:	-	Model:	E46		
Height:	366	FR LISC:	-	LPR List:	Not in list		
Color:	Gray,White	Name:	-	License Plate:	AKW5978		

Car, BMW, AKW

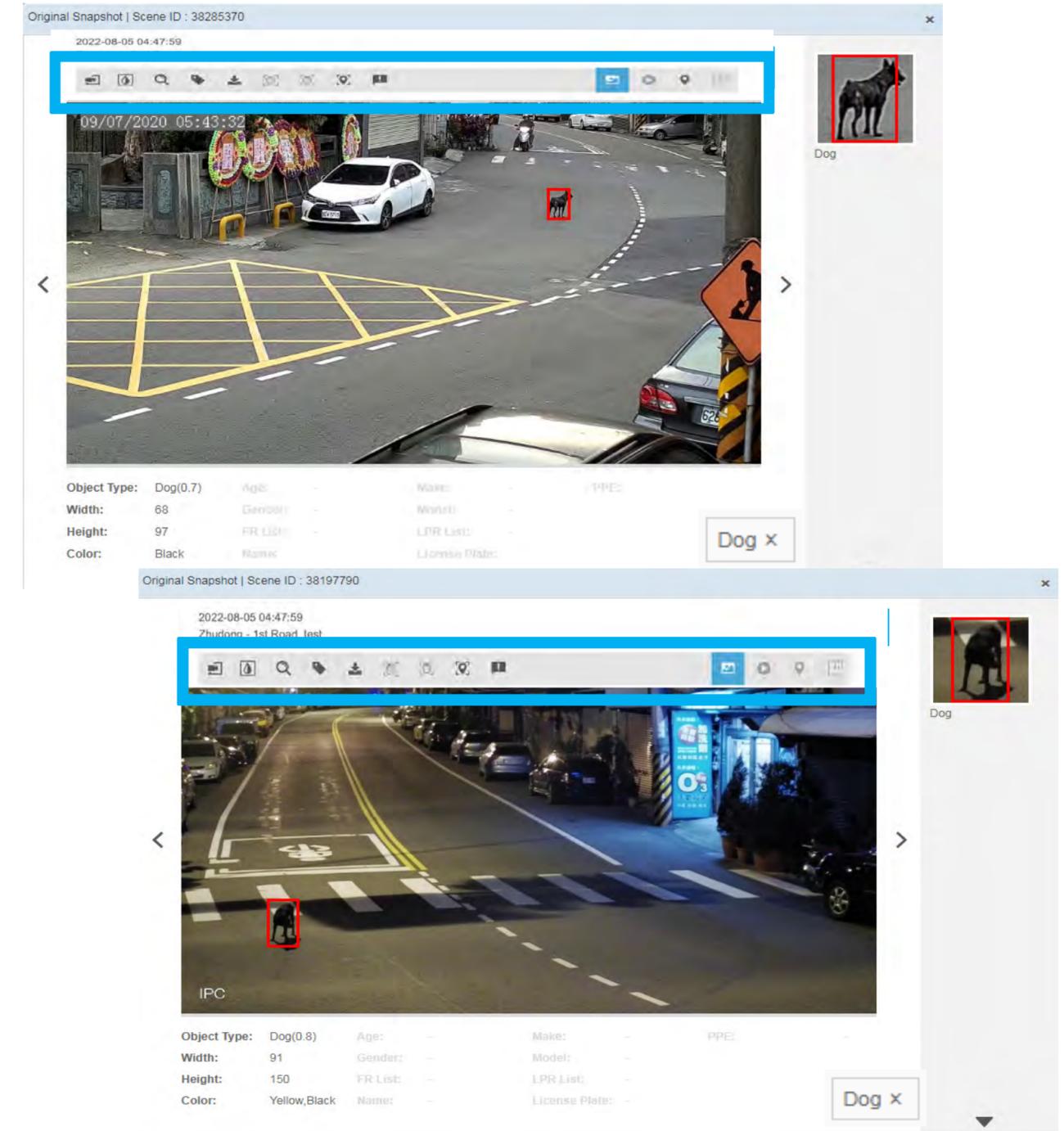
Recognize different vehicle types.

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VIDEO SEARCH – ANIMAL & OBJECT



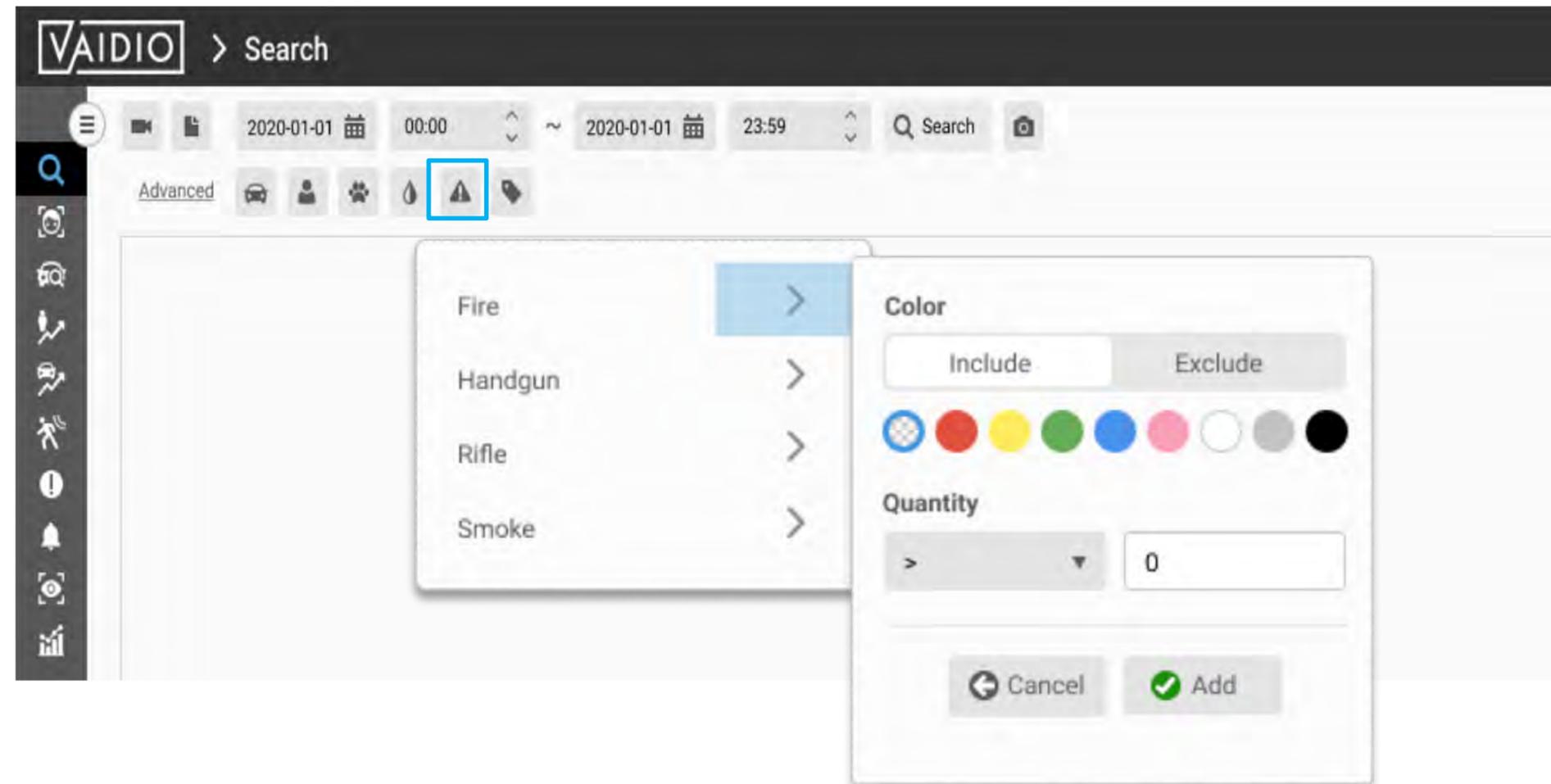
Can choose color and quantity for the specific object to do search



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DANGEROUS OBJECT

- ❑ Specifically search for dangerous objects
- ❑ Object Types:
 - ❑ Fire
 - ❑ Smoke
 - ❑ Handgun
 - ❑ Rifle

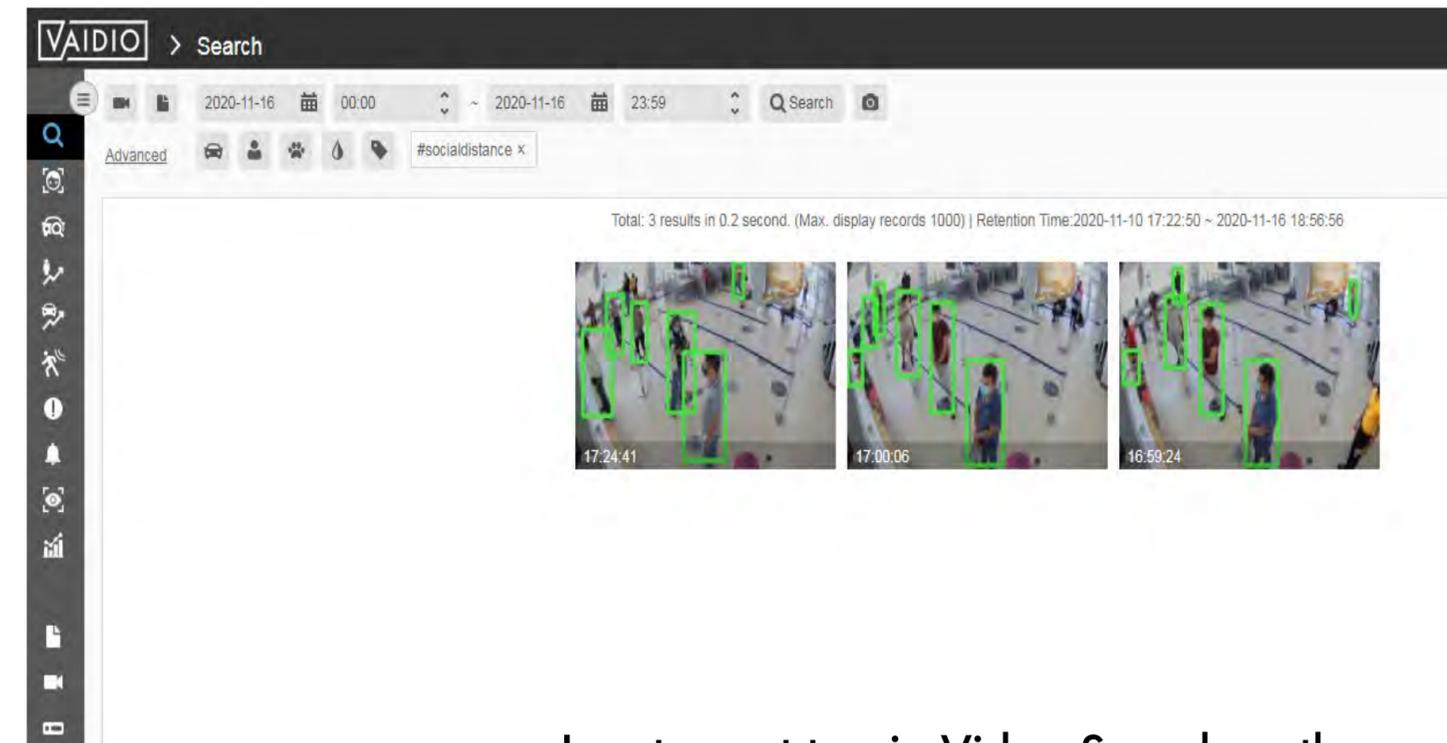
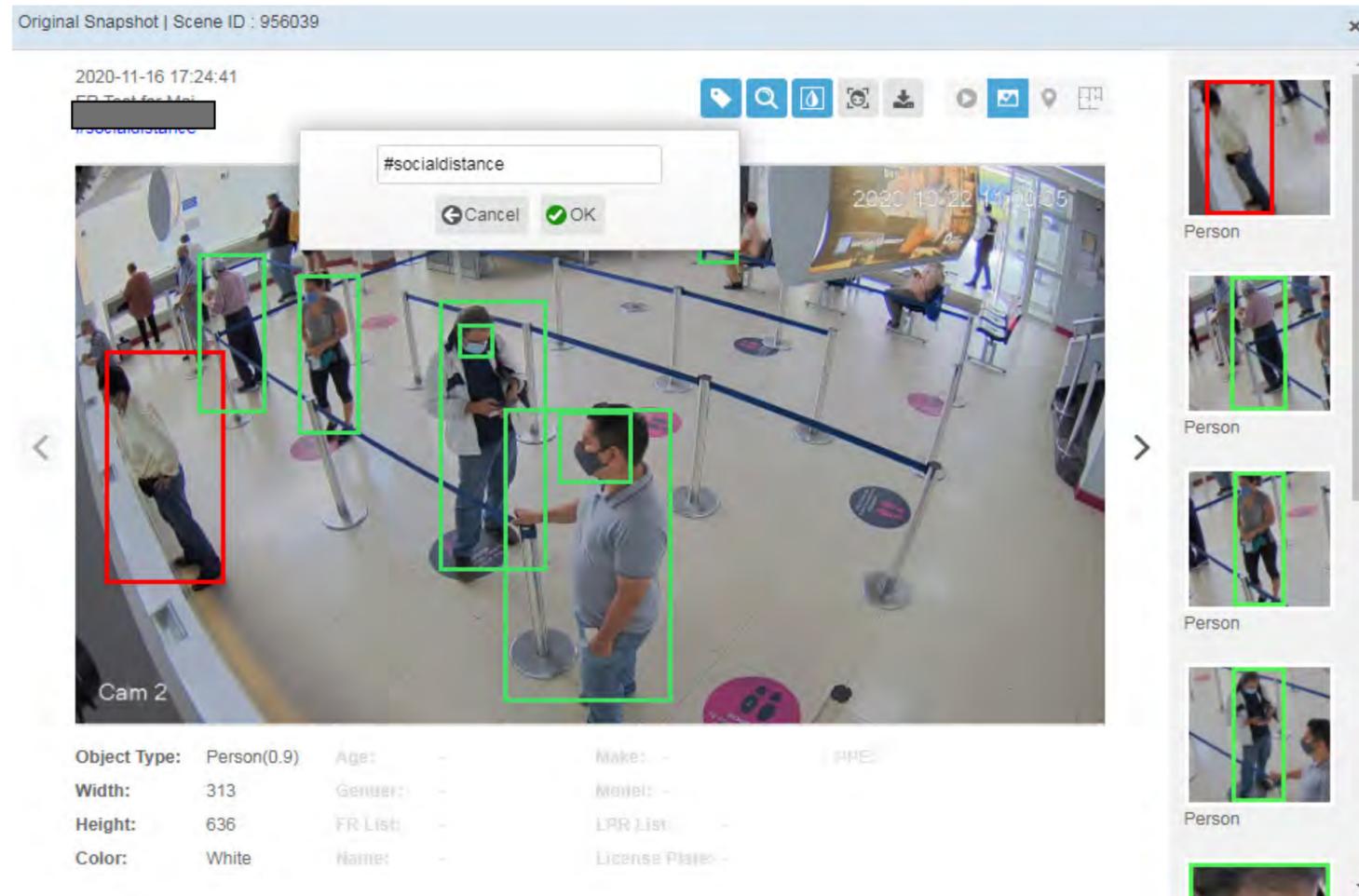


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VIDEO SEARCH – SMART TAG

Add a Smart Tag to the detected events (results) for a special situation.

- Smart Tag(s) can be added to all analytic results, including object search, intrusion, face recognition, abnormal, etc.



Input smart tag in Video Search as the scenarios to get all results with the same tag, e.g., #socialdistancing.

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INTRUSION DETECTION

- [ROI Configuration](#)
- [Dashboard - Real-time Detection](#)
- [AND/OR Selection](#)
- [Illegal Parking & Loitering](#)
- [History](#)

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CONFIGURE ROI (REGION OF INTEREST)

In **Camera Setting**, activate **Intrusion AI Engine**

- Click on the Pencil icon in the **Intrusion** tab to draw the regions of interest
- Add **Exclusion ROI** as necessary: no object is detected in the exclusion region; use this feature to exclude areas that cause false alarms (e.g., statues in a person detection ROI)

Note: The **General ROI** tab is to adjust the entire field of view of the camera. **The Intrusion ROIs must be within the General ROI.**

Advanced

AI Model : 1 selected | AI Engines : 1 selected | Profile : backpack dog

General ROI | Intrusion ×

Resolution: 1280x720 pixel | Preview

Object Type:

* Make sure the selected object is also checked in Profile.

No.	Draw Type	Name		
1	ROI	Crowd detection		
2	Exclude ROI			

Sensitivity

Detect 5 (1~20) scene(s) with defined object

every 10 (1~30) second(s)

Skip Duplicate Event

*Turn on to prolong time in between events.

Save

Adjust the shape of the intrusion ROI as necessary. ROI can be of any shape and can overlap other ROI's.

Adjust Sensitivity:

- More scenes with object per second = lower sensitivity + higher certainty that the object detected is the correct object type of interest = lower probability of false alarms
- Fewer scenes per second = higher sensitivity = shorter delay time

Click to open the side window to add detection rules for the ROI

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CONFIGURE ROI (CONT.)

Parameters:

- ❑ ROI name: **must be unique** across all cameras in Vaidio
- ❑ Day/night support: strongly suggest adding **at least 2 ROIs** with different schedules and sensitivity settings for day/night support
- ❑ Object type: Pre-define object type to be detected, number, and color (Optional).
- ❑ The trigger rule in List can be configured as "AND" or "OR" statements; i.e., all selected object types must be detected to trigger the alarm for "AND" statements, or any of the selected object types must be detected to trigger the alarm for "OR" statements.

Tips:

- ❑ Due to the computation resource consumption, at most 4 ROI's should be set for best performance
- ❑ ROI setting for Crowd Detection: set to the desired number of people with low sensitivity
- ❑ Upper limit: 30 objects per type; e.g., Person > 35 will trigger when there are 31 people, and Person < 25 will trigger when there are 30 people

Make sure to select the profile where the object types to be detected are activated

The screenshot displays the 'Advanced' configuration page for an ROI. At the top, it shows 'AI Model: 2 selected', 'AI Engines: 3 selected', and 'Profile: ag'. Below this are tabs for 'General ROI', 'FR', and 'Intrusion'. A video feed shows a room with a red ROI box. To the right, the 'Object Type' section has 'AND' selected. Below that, a list of ROI settings is shown:

No.	Draw Type	Name	Key	Toggle	Trash
1	ROI	cereal	🔑	🔴	🗑️
2	ROI	coke	🔑	🔴	🗑️
3	ROI	pepsi	🔑	🔴	🗑️
4	ROI	cookie	🔑	🔴	🗑️

Below the table, there are settings for 'Sensitivity' (Detect: 1, every: 5) and 'Cooldown Period' (0 seconds, suggested 9 seconds). A 'Save' button is at the bottom right.

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INTRUSION DETECTION - DASHBOARD

When the defined object is detected, the results appear on the dashboard in real time. The user can click the thumbnail and see detailed information of the detected event.

Select the intrusion ROI to show on Dashboard.
(Default: show the event results of all ROIs)

Intrusion List

Search for: Camera Name

<input checked="" type="checkbox"/>	ROI Name	Camera Name
<input checked="" type="checkbox"/>	Not Wearing Mask	IronYun Front Door
<input checked="" type="checkbox"/>	People Enter Office	IronYun Corridor
<input checked="" type="checkbox"/>	People Intrusion	Taipei Street Demo

Original Snapshot | Scene ID : 44793088

Object Type:	Person(1.0)	Age:	-	Name:	-	TYPE:	-
Width:	201	Gender:	-	Weight:	-		
Height:	532	FR LANE:	-	LPR LIST:	-		
Color:	White,Black	Name:	-	License Plate:	-		

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INTRUSION DETECTION - ILLEGAL PARKING & LOITERING

- ❑ Search for set amount of time vehicle is loitering in unwanted area or parked illegally in **Camera Setting**.
- ❑ Loitering & Illegal Parking AI engines must be turned on.

Time Check Period: Range can be extended to 10-1,200 sec.

Cooldown Interval Time: Adjust when the event occurs (0-1 hour)

Advanced

AI Model: 1 selected | AI Engines: 1 selected | Profile: Default

General ROI | Loitering ✕



Loitering time Check Period: 30 seconds. (10~1200) seconds

Cooldown Interval Time: 30 seconds. (0~3600) seconds

No.	Name
1	<input type="text"/>

Save

Add Camera

Camera Info

* Camera Name:

Cluster: localhost

Location Type: None

Description:

Activate Deactivate

Camera URL

Type: Camera IP Address/Domain Name

* IP/Domain Name: 172.16.22.30

User Name:

Password:

Get RTSP:

FPS: Camera 30

TCP/UDP: Both

NVR

Internal Video Recorder

NVR: Please select

Channel ID:

Advanced

AI Model: 1 selected | AI Engines: 1 selected | Profile: Default

General ROI | Illegal Parking ✕



Vehicle Type: Vehicle

Illegal Parking time Check Period: 30 seconds. (10~1200) seconds

Cooldown Interval Time: 30 seconds. (0~3600) seconds

No.	Name
1	<input type="text"/>

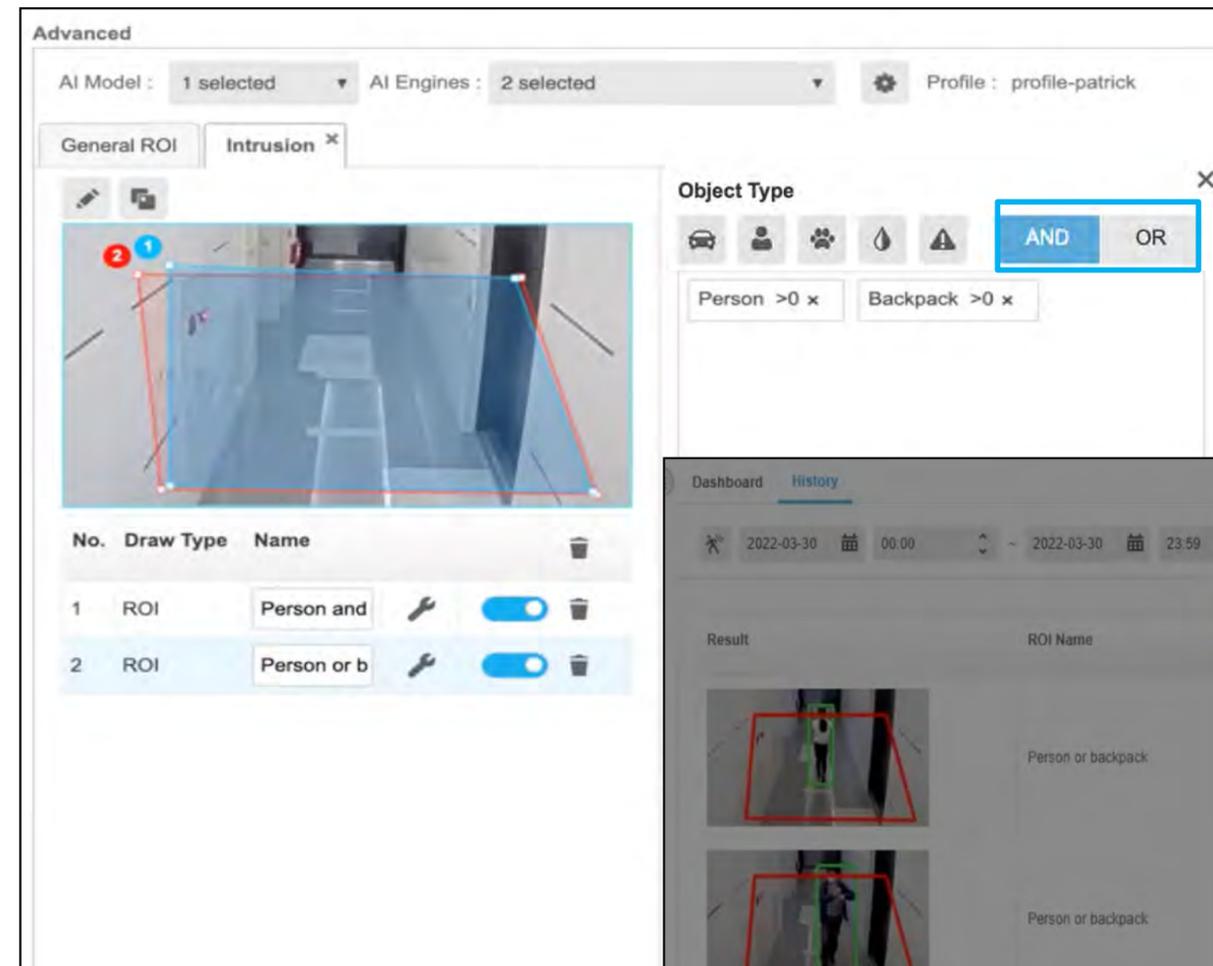
Save

Cancel OK

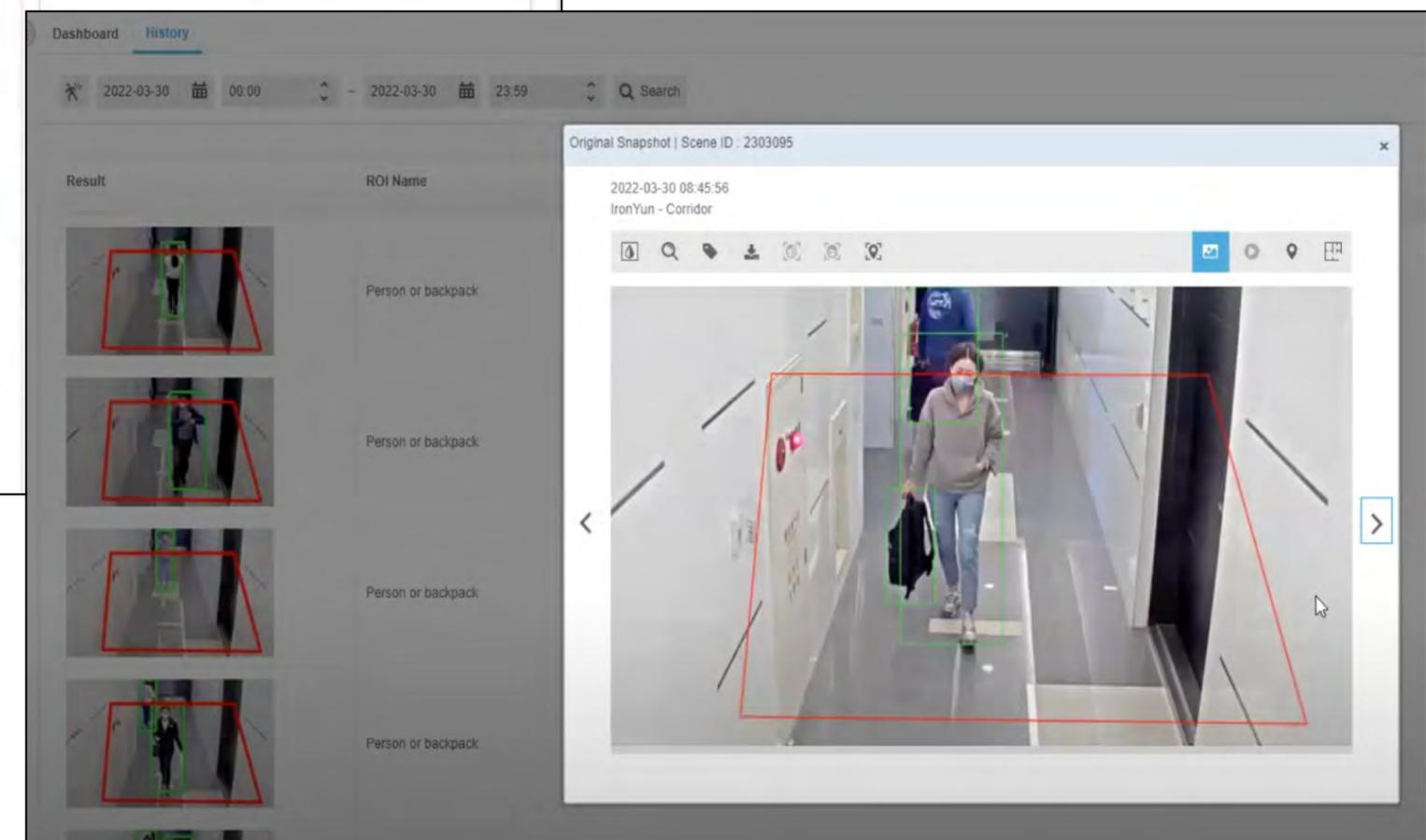
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INTRUSION DETECTION – AND/OR SELECTION

- ❑ Select the **“AND”** or **“OR”** option to trigger an event when **all** or **only 1** of the selected objects is detected
- ❑ Max: 10 object types per ROI



Result



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INTRUSION DETECTION - HISTORY

Select the intrusion ROI and adjust the time period to review the events.

Result	ROI Name	Time	Camera Name	
	Just passing by	2020-11-16 17:36:15	IY Corridor	<input checked="" type="checkbox"/>
	Just passing by	2020-11-16 17:36:14	IY Corridor	<input checked="" type="checkbox"/>
	Just passing by	2020-11-16 17:35:57	IY Corridor	<input type="checkbox"/>
	Just passing by	2020-11-16 17:35:56	IY Corridor	<input type="checkbox"/>

Check to delete the events in the history if needed.

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FACE RECOGNITION

- ❑ [Camera Placement & Settings](#)
- ❑ [Create Face List](#)
- ❑ [Face Image Quality](#)
- ❑ [Dashboard – Real-time Detection](#)
- ❑ [History](#)
- ❑ [Face Search](#)
- ❑ [Mask Detection](#)
- ❑ [Emotion Detection](#)

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CAMERA PLACEMENT AND SETTING

To detect facial features for Face Recognition, please make sure that:

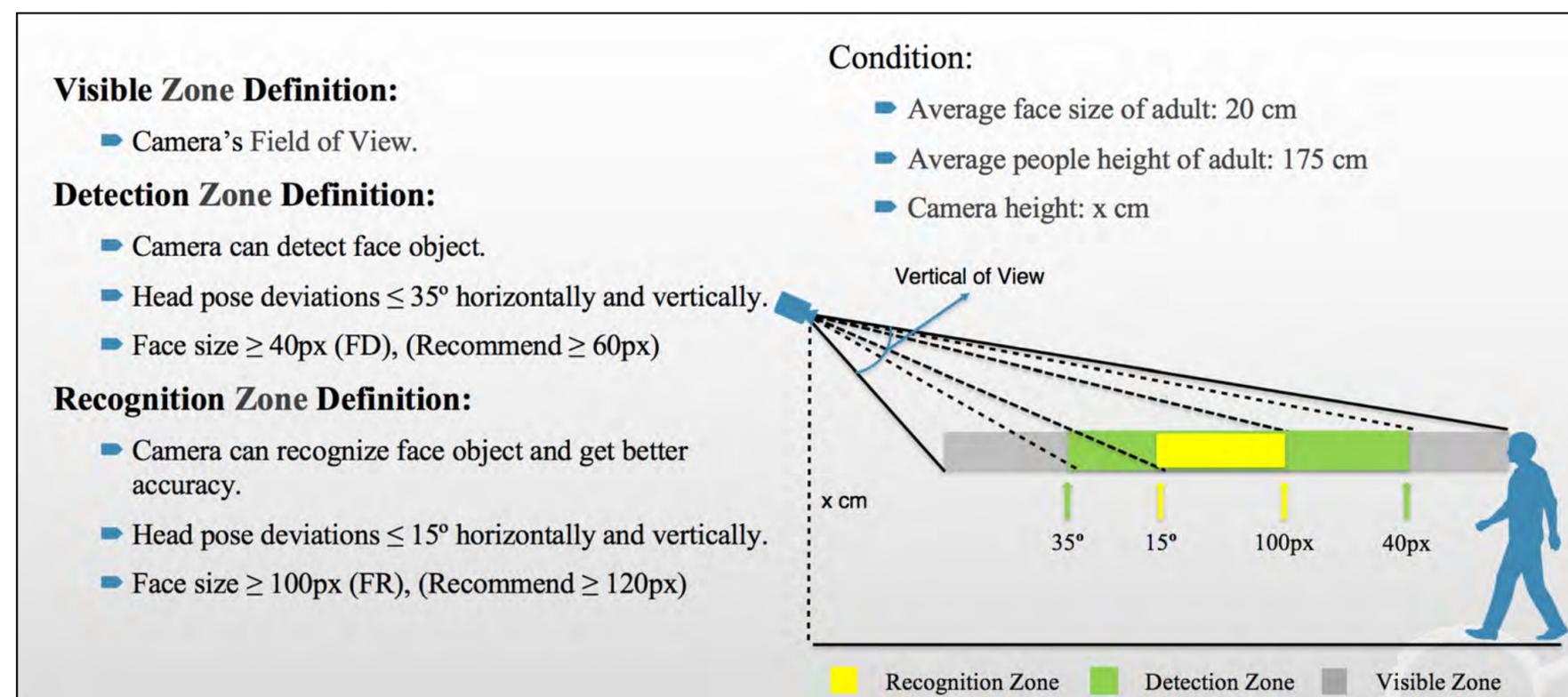
- ❑ **Face Recognition** AI Engine is enabled in Camera setting
- ❑ Face Recognition ROI (region of interest) is defined for each camera within its FoV; e.g., the entrance, to avoid wasting computing power on irrelevant areas in the FoV, increase accuracy and increase speed
- ❑ Each face should be **at least 100 px** wide for clear detection of facial features

Recommended camera placement for FR:

- ❑ Camera is placed at an angle as close to eye level as possible
- ❑ Must be placed 6-7 ft. high in order to obtain face profiles
- ❑ In order for a face to be detected, the camera's height must be **at least 8%** of total screen height

Recommended face image to save in list:

- ❑ Capture images from surveillance camera and save in list (Too high-res image will result in few or no matches because the similarity level between uploaded image and captured image would be too low)
- ❑ Save 5 images for better results



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CAMERA PLACEMENT AND SETTING (CONT.)

If too few faces are recognized by matching to lists:

- Decrease Similarity Threshold in Camera > Edit > Profile** (click on the gear icon > **FR tab**)
- Suggested threshold: 70**
- Toggle OFF **Quality Detection**

Vice versa, if camera is placed at a great angle/lighting for face recognition and too many detections occur, increase **Similarity Threshold** for higher accuracy and toggle ON the **Quality Detection**.

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CREATE FACE LIST

The screenshot shows the VAIDIO Face Recognition interface. At the top, there are navigation tabs: Dashboard, History, List (selected), and Face Search. Below the tabs, there's a search bar with 'List: All' and a 'Name:' input field. A blue box highlights the 'List' and 'Add Target' buttons. A table below shows a list of targets with columns: Face Image, Created Time, Name, List, and Birth Year. The table contains five entries: Yingchu, Yashiang, Winnie, Wayne, and Vivian. A 'Create New Target' modal is open, showing a form with fields for Name, List (dropdown), Birth Year, Gender, and ID. It also has a 'Description' field and 'Cancel'/'OK' buttons. A blue arrow points from the 'Add Target' button to this modal. Another blue arrow points from the 'List' column of the table to a 'New List' modal, which has a 'List Name' input field and 'Cancel'/'OK' buttons. A third blue arrow points from the 'List' column of the table to a 'List' modal, which shows a table of existing lists with columns 'Created Time' and 'List Name'. The table contains six entries: AI-Team, 大愛_TEST2, IY, VIP guest, and Black List. A blue arrow points from the 'List' modal to the 'List' column of the main target table.

Add Target, each target can have 5 images to be uploaded. User can upload the images with different face angles to increase the accuracy.

List to categorize different groups of targets

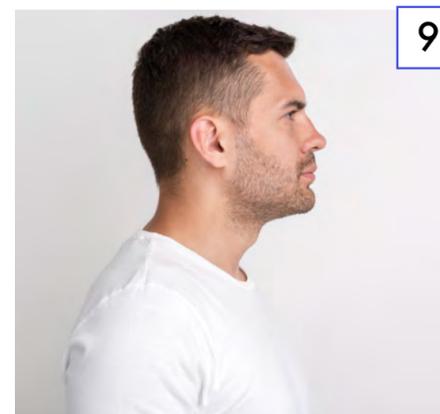
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FACE IMAGE QUALITY

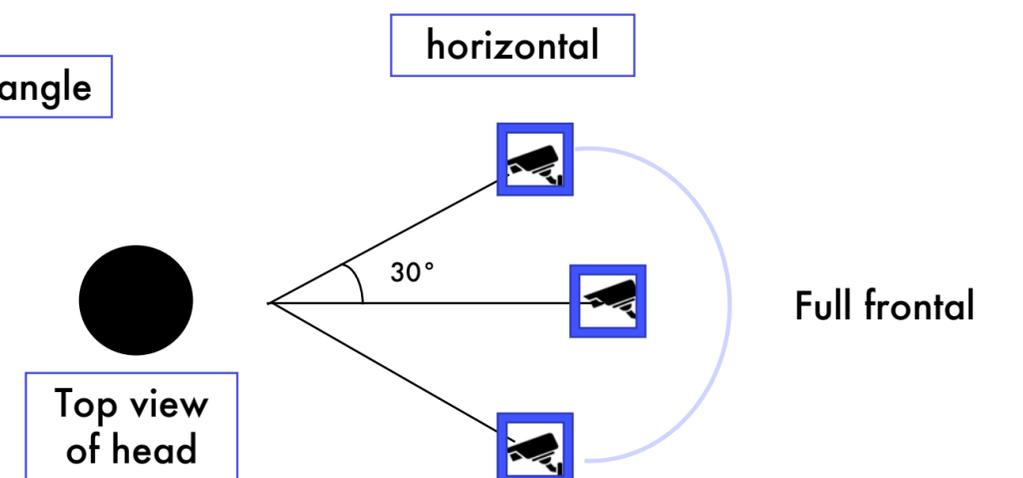
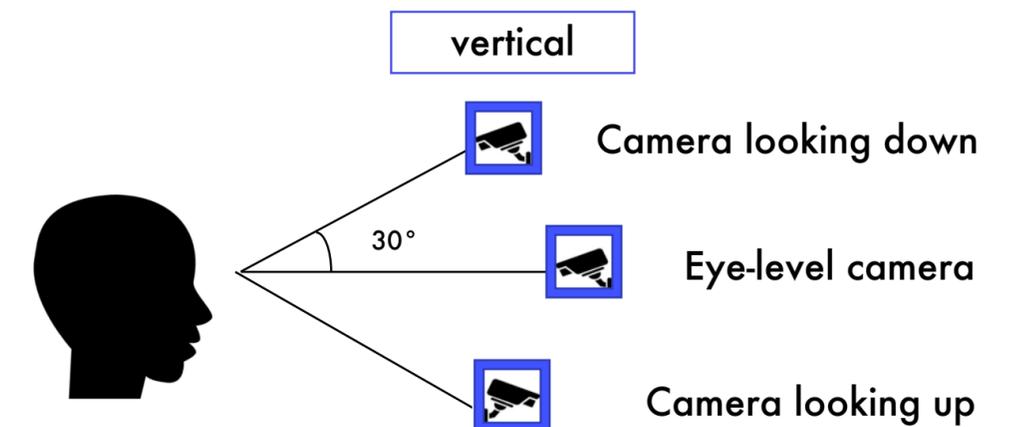
The camera should be positioned so that each face is not at an angle $>30^\circ$, vertically and horizontally.

One image capturing the full frontal profile of the person's face is recommended for high accuracy.

Side profiles, as well as upward & downward profiles may also be added to improve accuracy.



Horizontal & Vertical Angles



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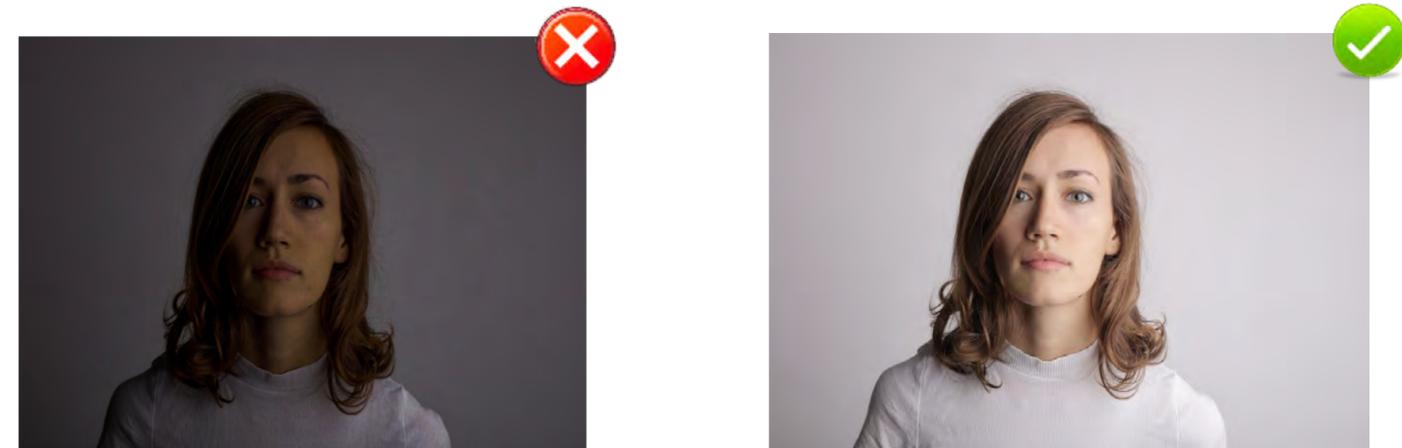
FACE IMAGE QUALITY (CONT.)

- Images should not have a strong backlight or a strong point light source



Strong backlight or strong light point may result in distortion of facial features, possibly causing errors in recognition

- Faces should not be poorly illuminated



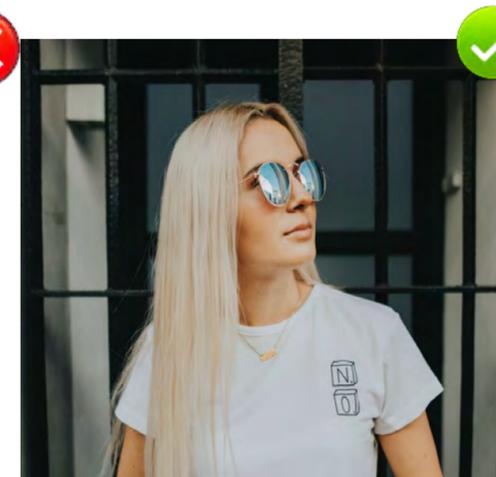
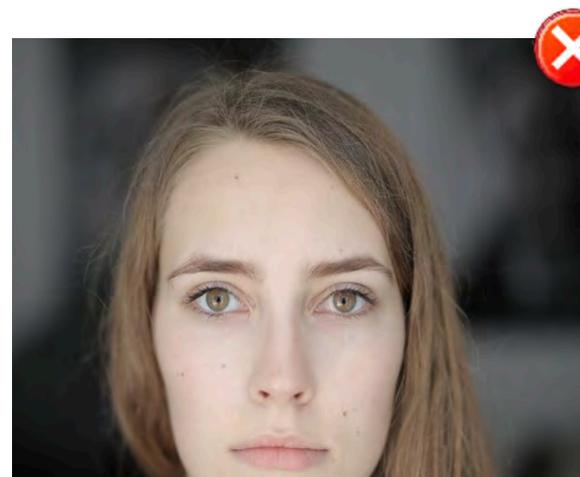
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FACE IMAGE QUALITY (CONT.)

- ❑ Images for registration purposes should not have multiple or partial faces in the background. Each image should be of one single face.



- ❑ The face in each image must not be cropped. Faces partially concealed with hats, sunglasses, etc. can be added as variations of the same person to increase matching probability.

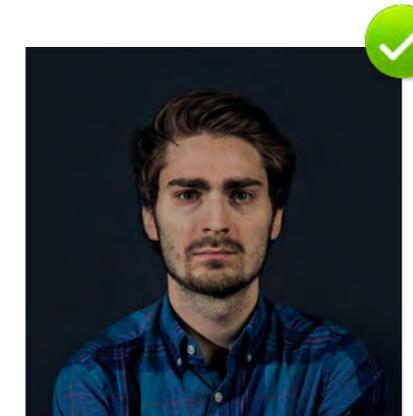
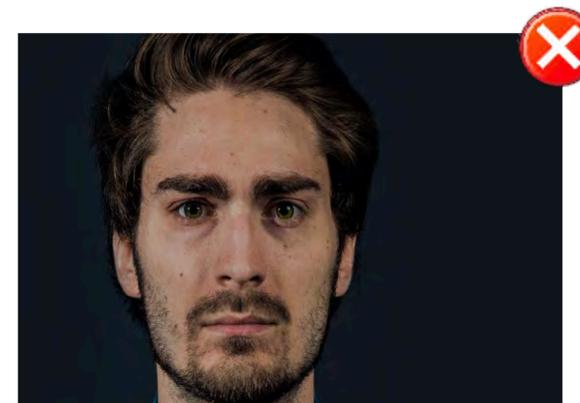
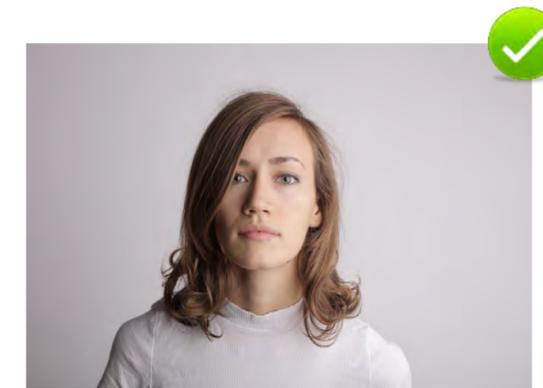


Cropped images should be avoided

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FACE IMAGE QUALITY (CONT.)

- Image noise should be low
- Images must be shot from a distance
- Color images are preferable to black and white images, but the latter can be used.

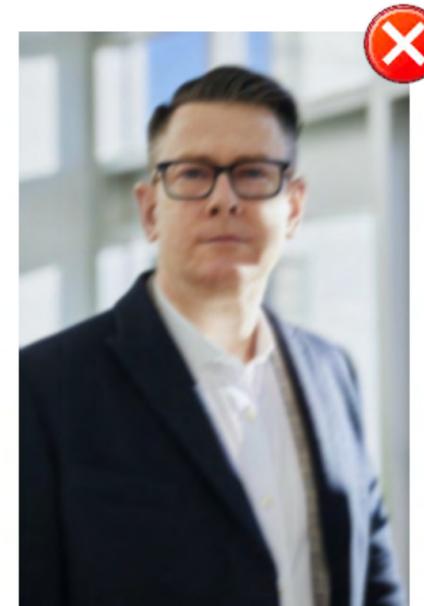
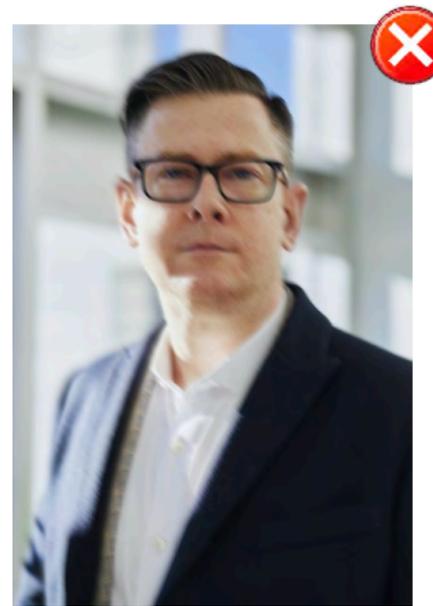


Height of the image must not be the same as the height of the face

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REGISTERING A FACE (CONT.)

- Images should not be blurry



Images must not be blurred due to motion blurring or lens blurring

- Image resolution must be sufficient.
- For **FR**, it is best to add an image of the same resolution as the face image actually detected by the security camera



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FACE RECOGNITION - DASHBOARD

The detected faces will appear on the **Face Recognition Dashboard** in real time

Click on Image icon to display the snapshot on the left

Click to create a new target or directly add the detected face to the existing target

Match Targets

Event Face	Target Face
Age : 19 (±5) Gender : Male 77%	Navid Target ID : 11 List : AI-Team Description : AI Team Staff List
Age : 24 (±5) Gender : Male 88%	Joy Target ID : 24 List : AI-Team Description : AI Team Staff List
Age : 22 (±5) Gender : Male 72%	Navid Target ID : 11 List : AI-Team Description : AI Team Staff List
Age : 36 (±5) Gender : Male 83%	Sophia Target ID : 33 List : AI-Team Description : AI Team Staff List

Add to Existing Target

Name: All Name:

1

Manish List: S1 AI-Team View +Add	Max List: S1 AI-Team View +Add
Michael List: S1 AI-Team View +Add	Navid List: S1 AI-Team View +Add
Patrick List: S1 AI-Team View +Add	Paul List: S1 AI-Team View +Add
PoLo List: S1 AI-Team View +Add	Scott List: S1 AI-Team View +Add

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FACE RECOGNITION - HISTORY

In History, input the criteria to search for a specific person

Click Match Target to see the details of the matched person in the preset face database.

Target

Name:	Sandy-Peng	Description:	
List:	office		
Birth Year:	1980 (Age: 41)		
Gender:	Female		AI Team Staff List
ID:	A012-345-67-890-1		

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FACE SEARCH – MATCH VIDEO

Select cameras/files and adjust the time period to search for a target. Adjust the similarity as desired.

VAIDIO > Face Recognition

Dashboard History List **Face Search**

Match Video Match List

2020-11-09 00:00 ~ 2020-11-16 23:59 Similarity: 70 Search

07.37.21.669.jpg

Face Detected

21, Female

82%	84%	71%	71%	74%	72%	79%
15:37:18	15:35:01	15:14:31	15:11:11	14:05:20	13:51:44	12:09:46
76%	77%	71%	76%	70%	72%	70%
11:47:26	09:28:45	11-13 13:35:33	11-13 09:19:33	11-12 18:54:06	11-12 16:47:09	11-12 16:44:07
70%	80%					
11-12 16:40:49	11-12 13:32:34					

Original Snapshot | Scene ID : 928396

2020-11-16 15:14:31
IY Corridor

Object Type: Face(1.0) Age: 30-39 Make: Model: PPE:
Width: 163 Gender: Female
Height: 163 FR List: office LPR List:
Color: Name: Sandy p License Plate:

Show in Timeline

Camera Name	09:28	11:47	12:09	13:51	14:05	15:11	15:14	15:35	15:37
IY Corridor									
IY right fro...									

In **Match Video**, use the detected faces in the search result or upload a face image to search through the selected cameras and files.

[Return to Face Recognition](#)

FACE SEARCH MATCH LIST

In **Match List**, match the detected face from the camera or file with the face database.

Target



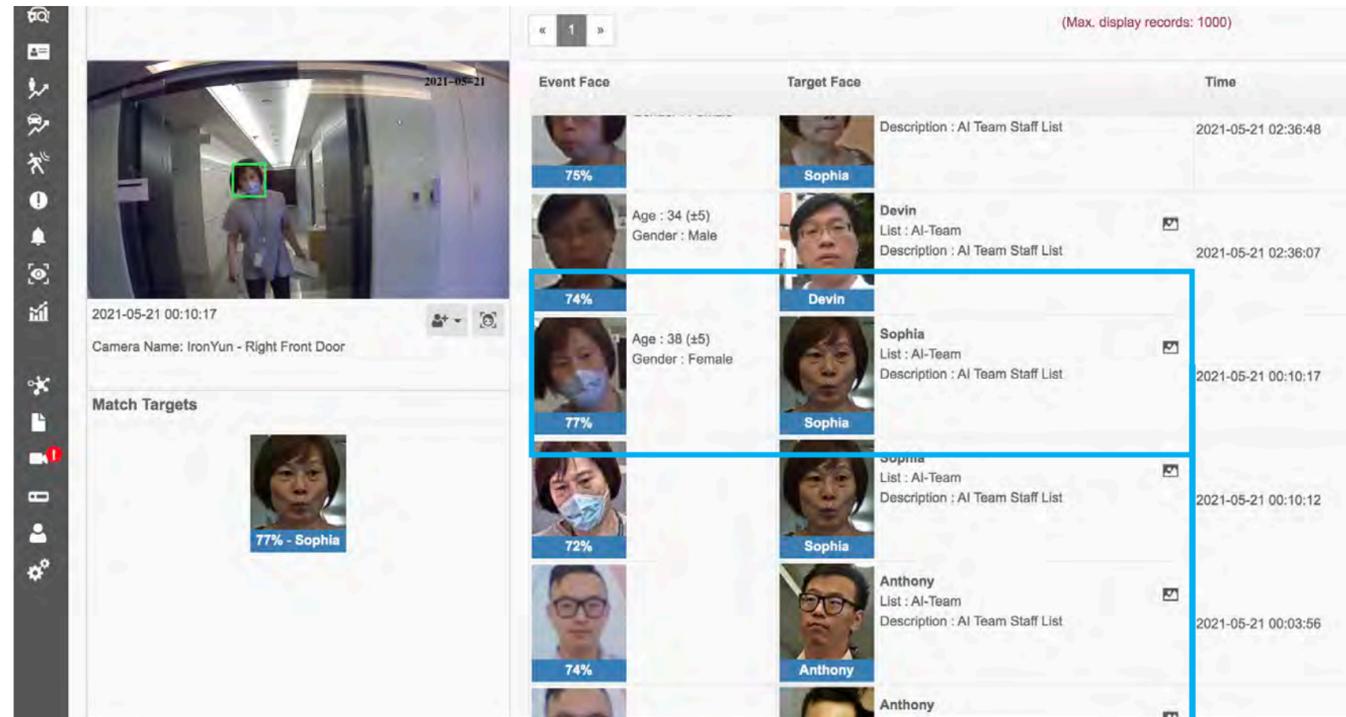




Name:	Sandy-Peng	Description:
Birth Year:	2000 (Age: 20)	AI Team Staff List
Gender:	Female	
List:	AI-Team	

[Return to Face Recognition](#)

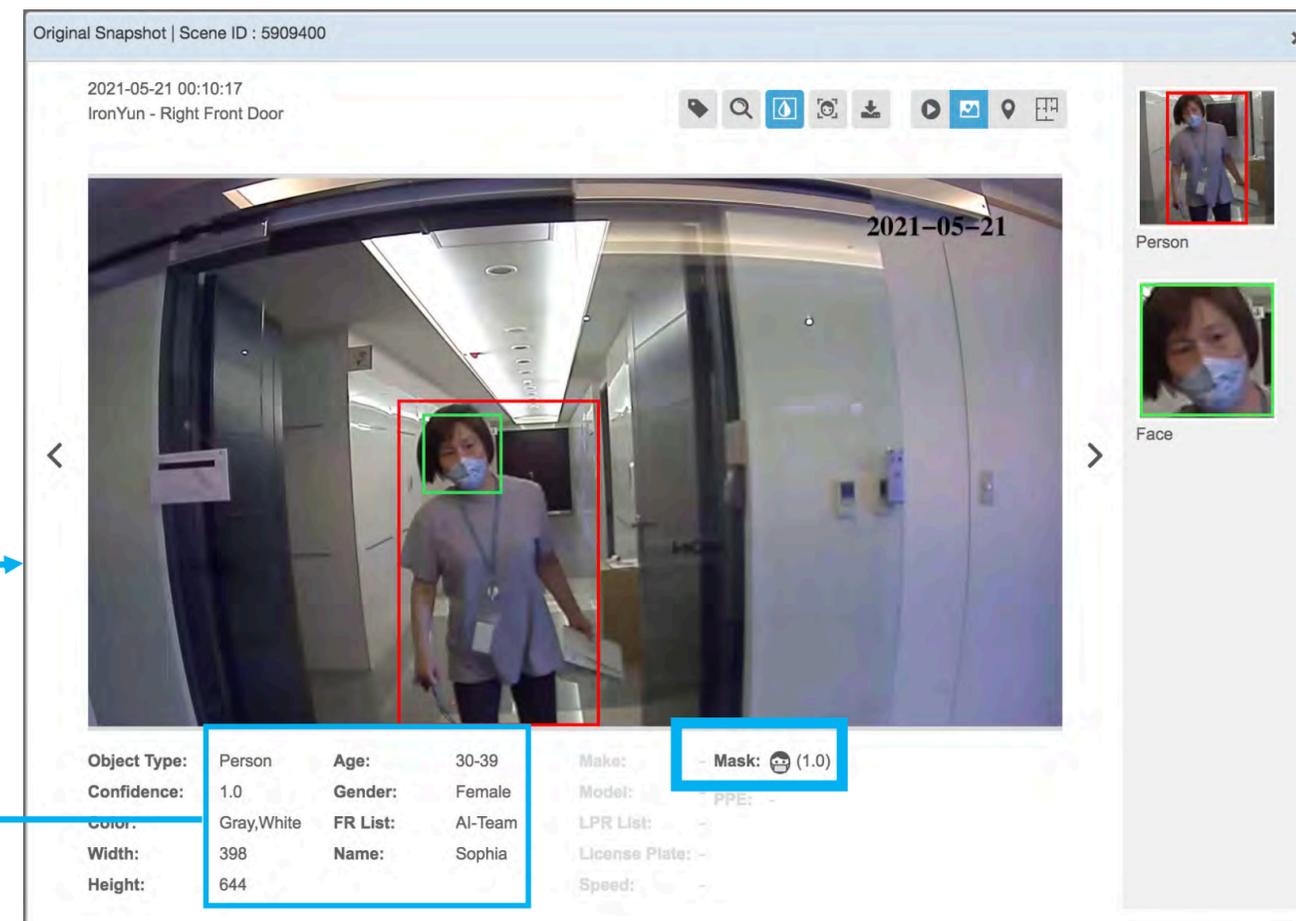
MASK DETECTION



In 5.1.0, **Mask Detection** was built into **Face Recognition**.
There is no separate **Mask Detection** AI engine in Vaidio.

By running **PPE** and **Face Recognition** together, the user can see the detected personal information and the condition of wearing or not wearing a facemask in the result.

- The users can search for these instances in **Video Search**, view new detections in real time in **Face Recognition** dashboard, or receive real-time alerts in the **Alert** dashboard.



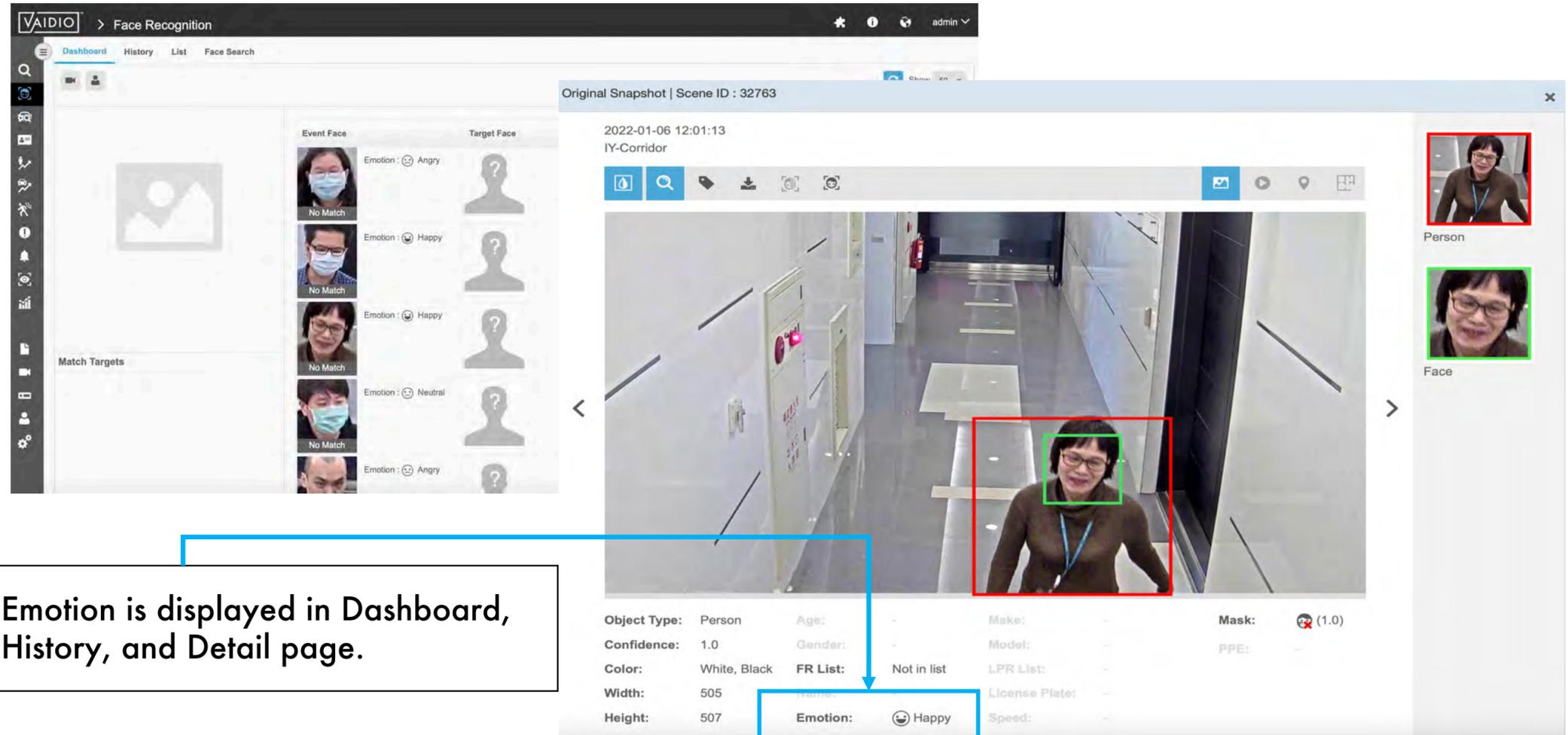
[Return to Face Recognition](#)

EMOTION DETECTION

In the **Facial Recognition** dashboard, the user can see the faces detected from each camera, and their emotion.

Note: In 6.0.0, Emotion Detection will no longer work be applied to faces with masks to ensure quality control. If the system recognizes a person wearing mask, a corresponding emotion will no longer appear as it did in these screenshots. This change is to ensure improved accuracy in emotion detection.

Event Face	Target Face
 70%	 Sonia
 71% Emotion : 😐 Neutral	 Cindy Cindy List : office Description :
 70% Age : 23 (±5) Gender : Female Emotion : 😄 Happy	 Patti Patti List : office Description :
 87% Age : 35 (±5) Gender : Female Emotion : 😐 Neutral	 Sonia Sonia List : office Description :
 78% Emotion : 😲 Surpr...	 Sonia Sonia List : office Description :
 70% Age : 31 (±5) Gender : Male Emotion : 😐 Neutral	 Leo Leo List : office Description :

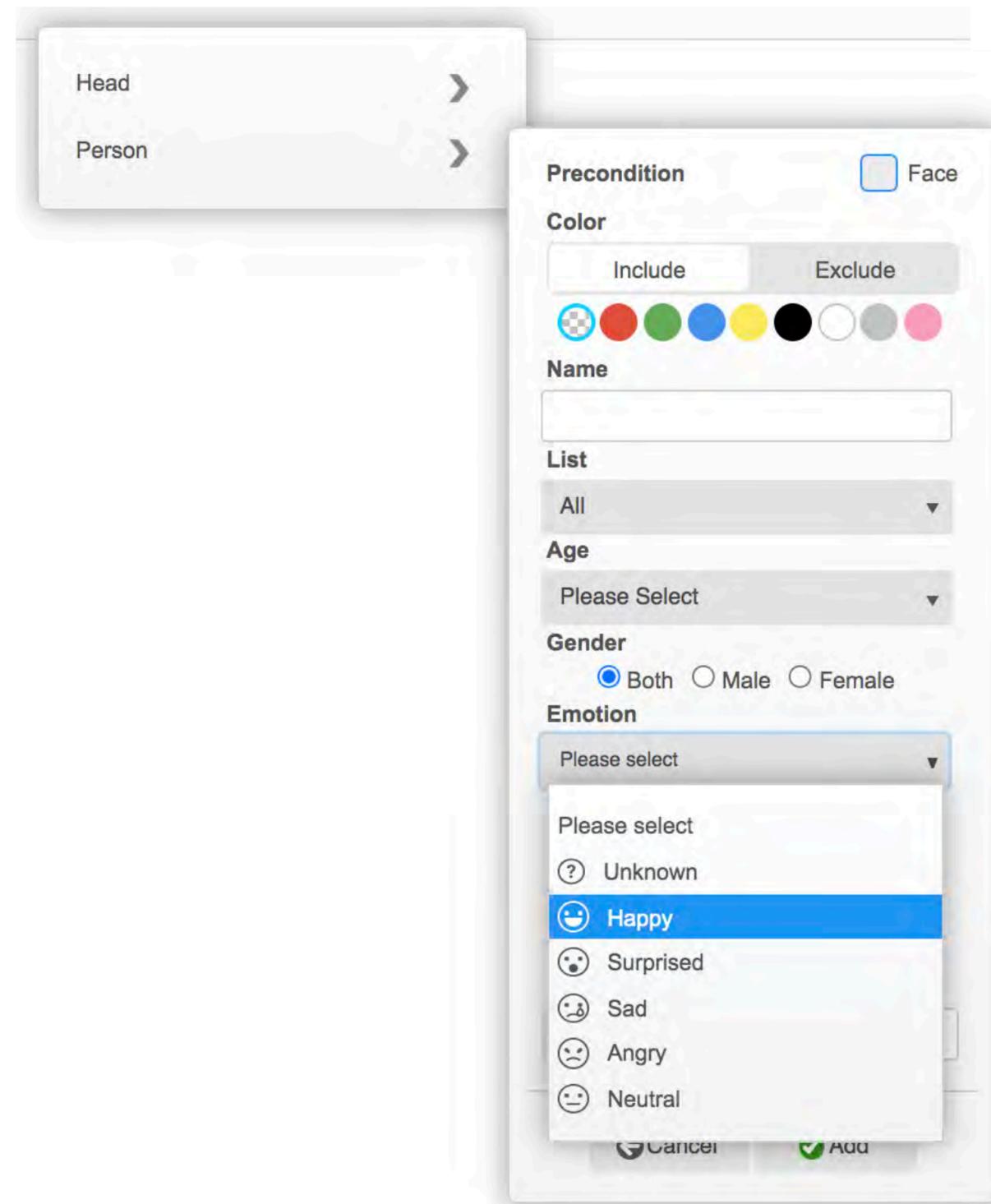


Emotion is displayed in Dashboard, History, and Detail page.

[Return to Face Recognition](#)

EMOTION DETECTION (CONT.)

- ❑ In **Search** and **Alert**, the user can set the search/alert criteria for people with certain emotions
- ❑ Categories: Angry, Happy, Neutral, Sad, Surprised, Unknown



[Return to Face Recognition](#)

EMOTION DETECTION (CONT.)

Enable or disable Emotion Detection in **System** > **Setting** for the entire server

General Time Storage Mail LDAP Log Audit Trail License **Setting** AI Model Utility

Theme Selection : Light Dark Grey

Privacy Protection :

Camera Connection Retry Interval : 10 Seconds.
Suggested Value : 3 ~ 60 Seconds.

Log Retention Time : 7 days 3 ~ 365 days

Audit Trail Retention Time : 7 days 3 ~ 365 days

People Counting Reset Time : 00:00

Vehicle Counting Reset Time : 00:00

Search Result Display : 1000 1000-10000
Suggested value: 1000

Emotion detection :

GPS Map :

API Basic Authentication :

SSL Certificate

* Required to activate Certificate

* Private Key : Upload File

* Public Key Certificate : Upload File

Certificate chain : Upload File

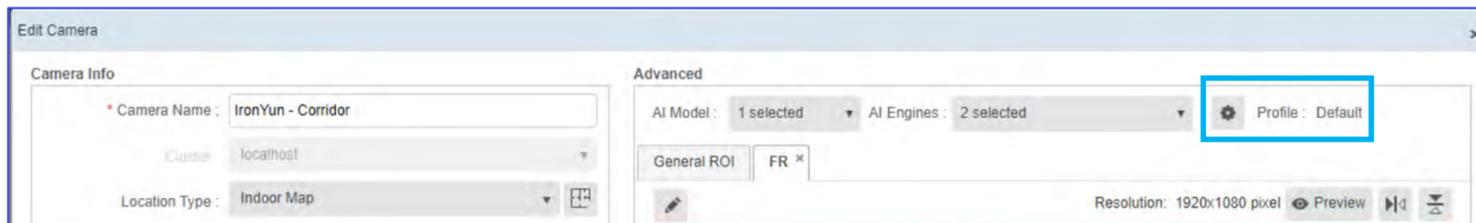
Password :

[Return to Face Recognition](#)

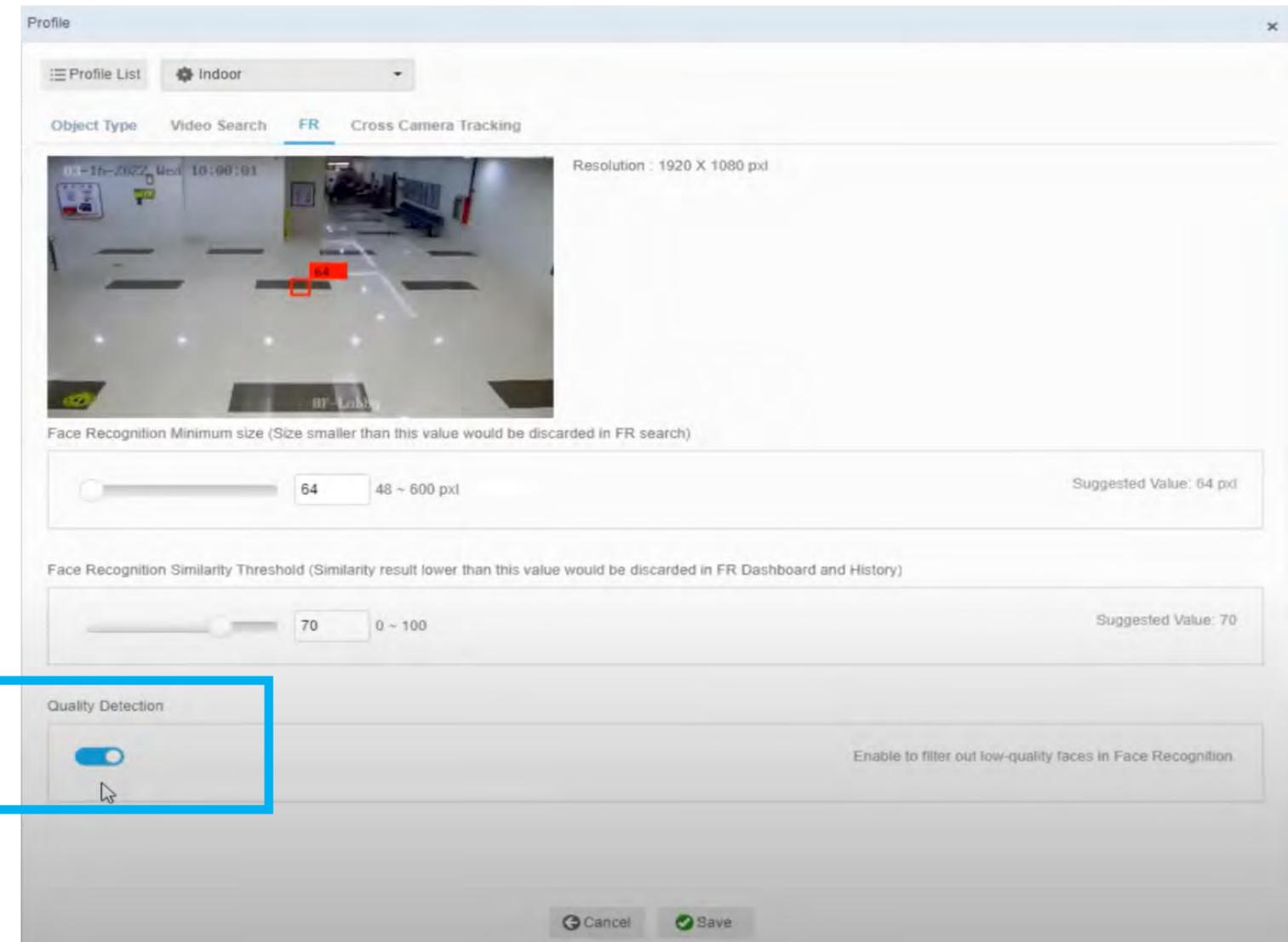
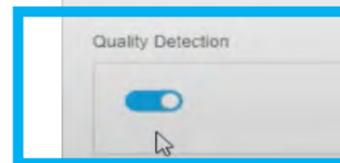
EMOTION DETECTION (CONT.)

Enable **Quality Detection** for face detection to filter out faces with mask, taken from an incorrect angle or with insufficient details for face matching, age and gender detection, or emotion detection.

To turn on or off **Quality Detection**, go to **Camera > Edit Camera > Profile**



Enable **Quality Detection** for better accuracy



[Return to Face Recognition](#)

LICENSE PLATE RECOGNITION

- [Camera Placement & Setting](#)
- [ROI Setup](#)
- [Vehicle Type](#)
- [Create License Plate List](#)
- [Illegal Parking & Loitering](#)
- [Dashboard – Real-time Detection](#)
- [History](#)

[Return to Table of Content](#)

CAMERA PLACEMENT & SETTING

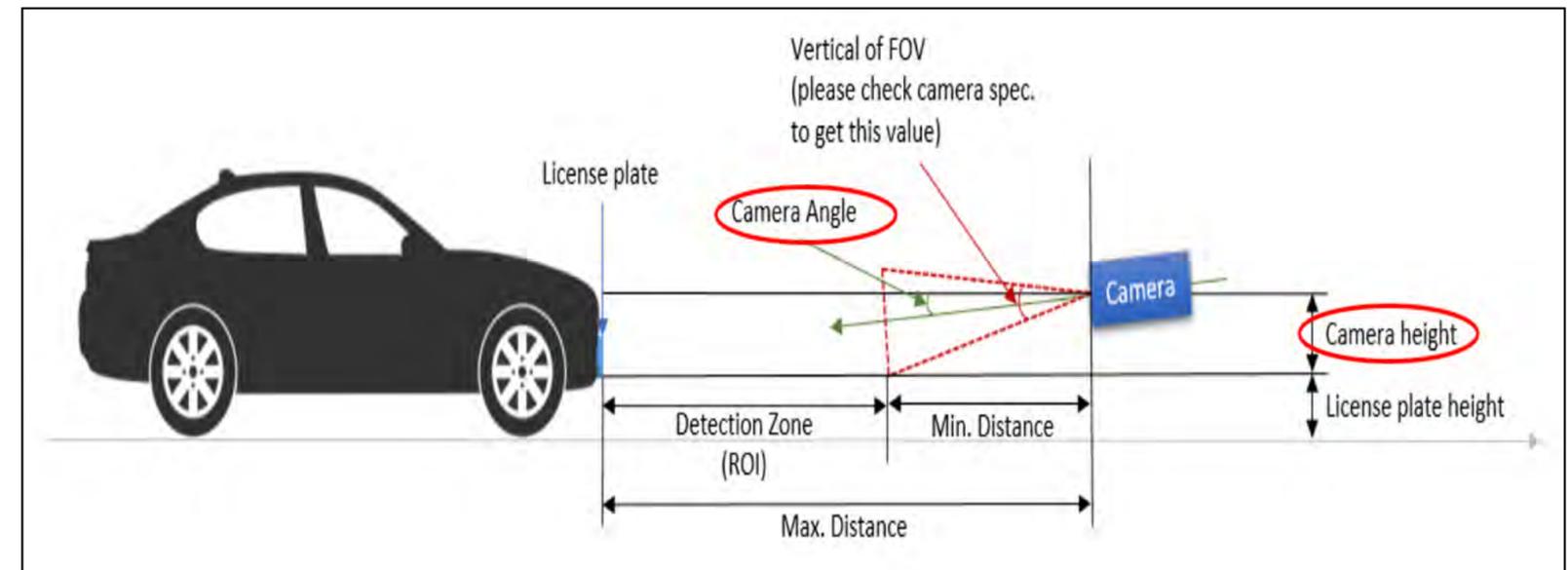
To detect license plate for LPR, please make sure that:

- ❑ **License Plate Recognition** AI Engine is enabled in Camera setting
- ❑ Object type "license plate" is enabled in Camera Profile
- ❑ **Each character on license plate is at least 16 px wide** for clear detection; e.g., a plate with 6 alphanumeric characters should be at least 100 px wide for clear detection
- ❑ Typical best-performance deployment: **cameras** at parking lot entrances and traffic light, car moving at **< 10 mph**, and detecting **max. 3 lanes** of vehicles at the same time

Maximum Speed Supported:

- Depending on camera height, vertical camera angle, camera vertical FOV (provided by camera manufacturer), camera resolution and size of characters on license plate
- Example: camera height = 3m (typical street light), vertical angle = 25°, vertical FOV = 18°, resolution 1080p, license plate character = 7cm tall → maximum speed = 31.38 km/h ~ 19.5 miles per hour
- For more calculation, contact support@Aicuda.world

Recommended camera placement for LPR:
Camera is placed at an angle as close to license plate level as possible



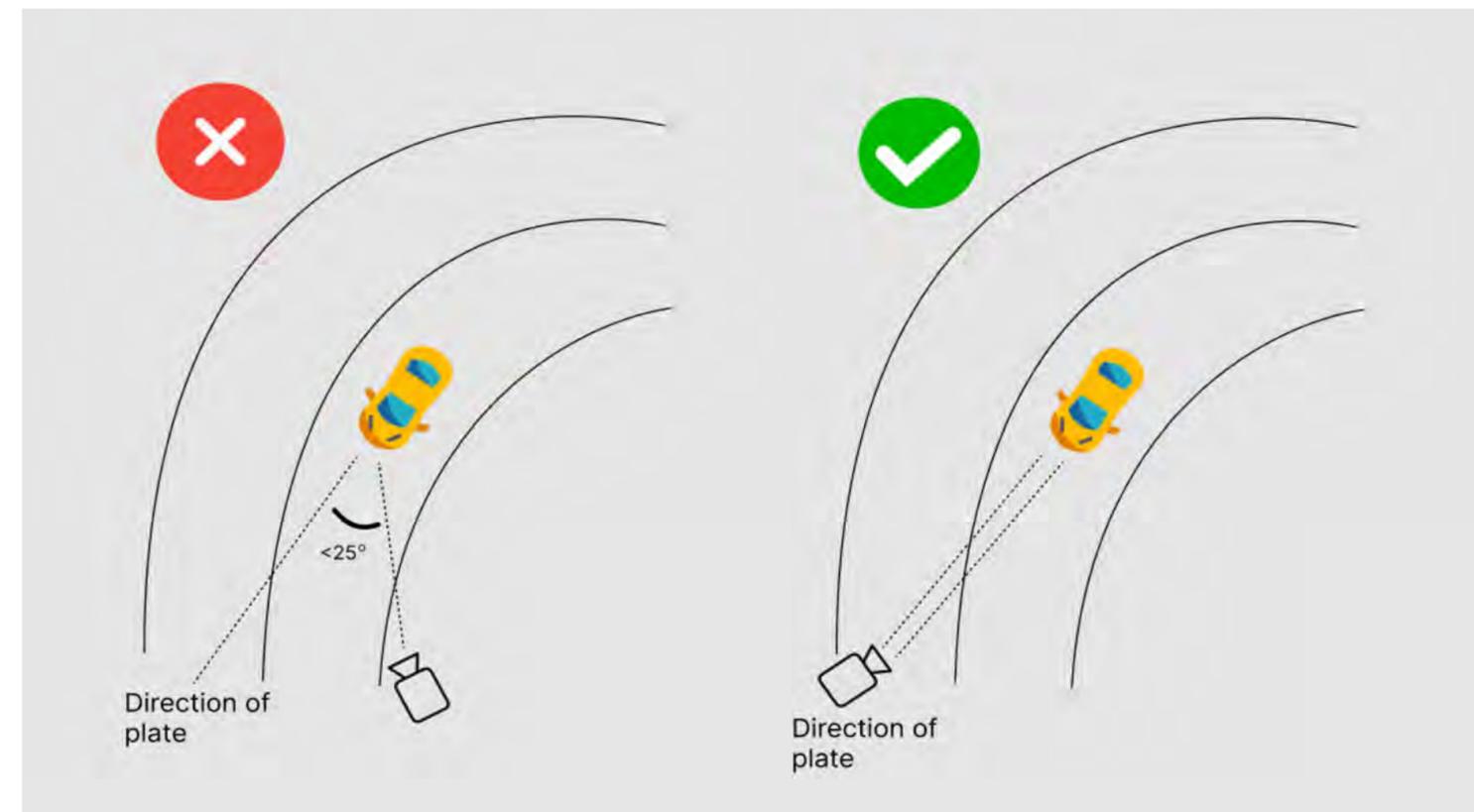
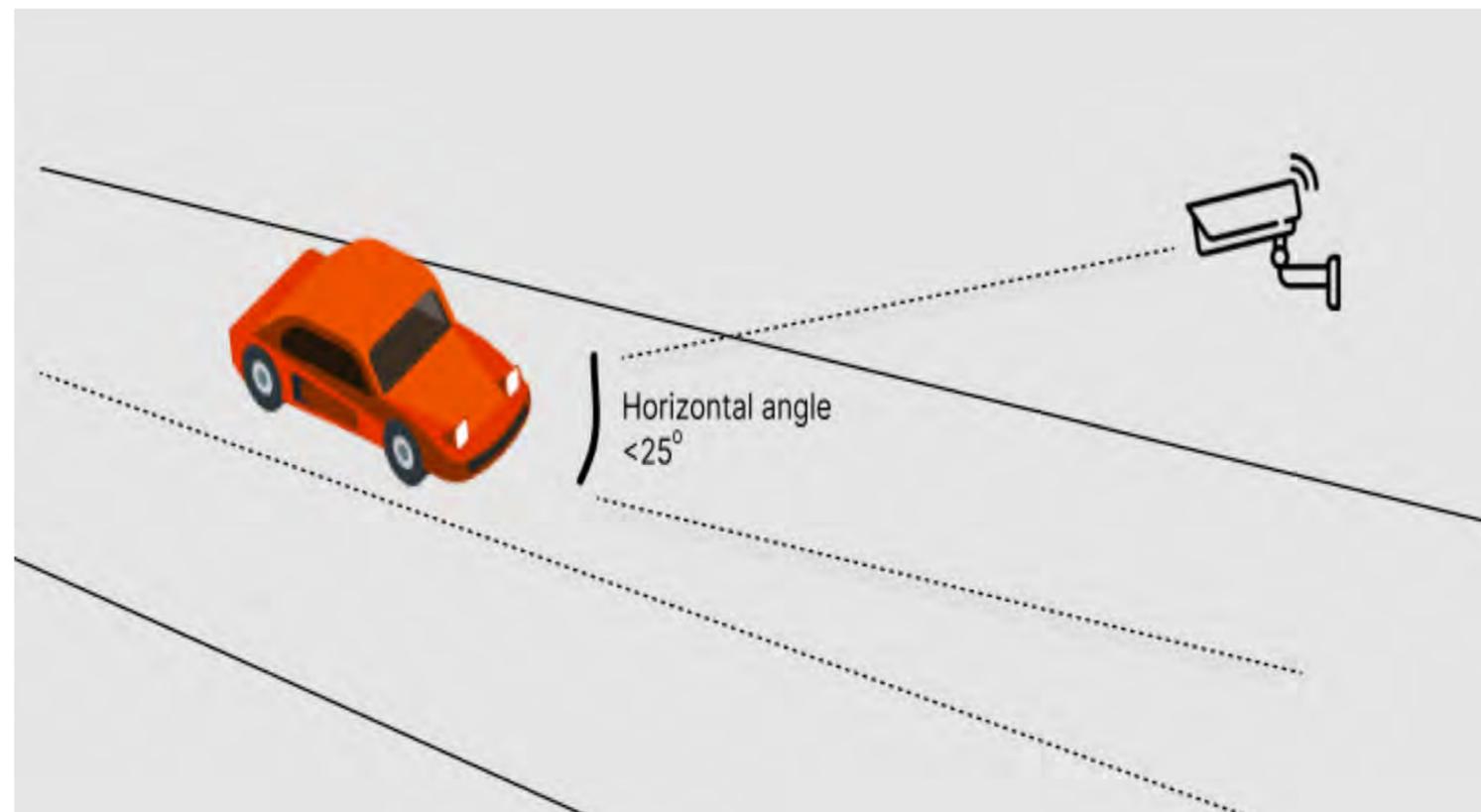
Focal Length	f = 2.8 ~ 2 mm
Aperture	F1.4 ~ F2.8
Auto-iris	P-iris
Field of View	32° ~ 93° (Horizontal) 18° 50° (Vertical) 37° ~ 110° (Diagonal)



Example of camera specification

[Return to License Plate Recognition](#)

CAMERA PLACEMENT AND SETTING (CONT.)



Camera placement for best LPR results:

1. Horizontal angle $< 25^\circ$, i.e., angle between the line of sight (straight line from license plate to camera) and the ground.
2. Side angle $< 25^\circ$, i.e., angle between the line of sight and the vehicle's direction of movement.

[Return to License Plate Recognition](#)

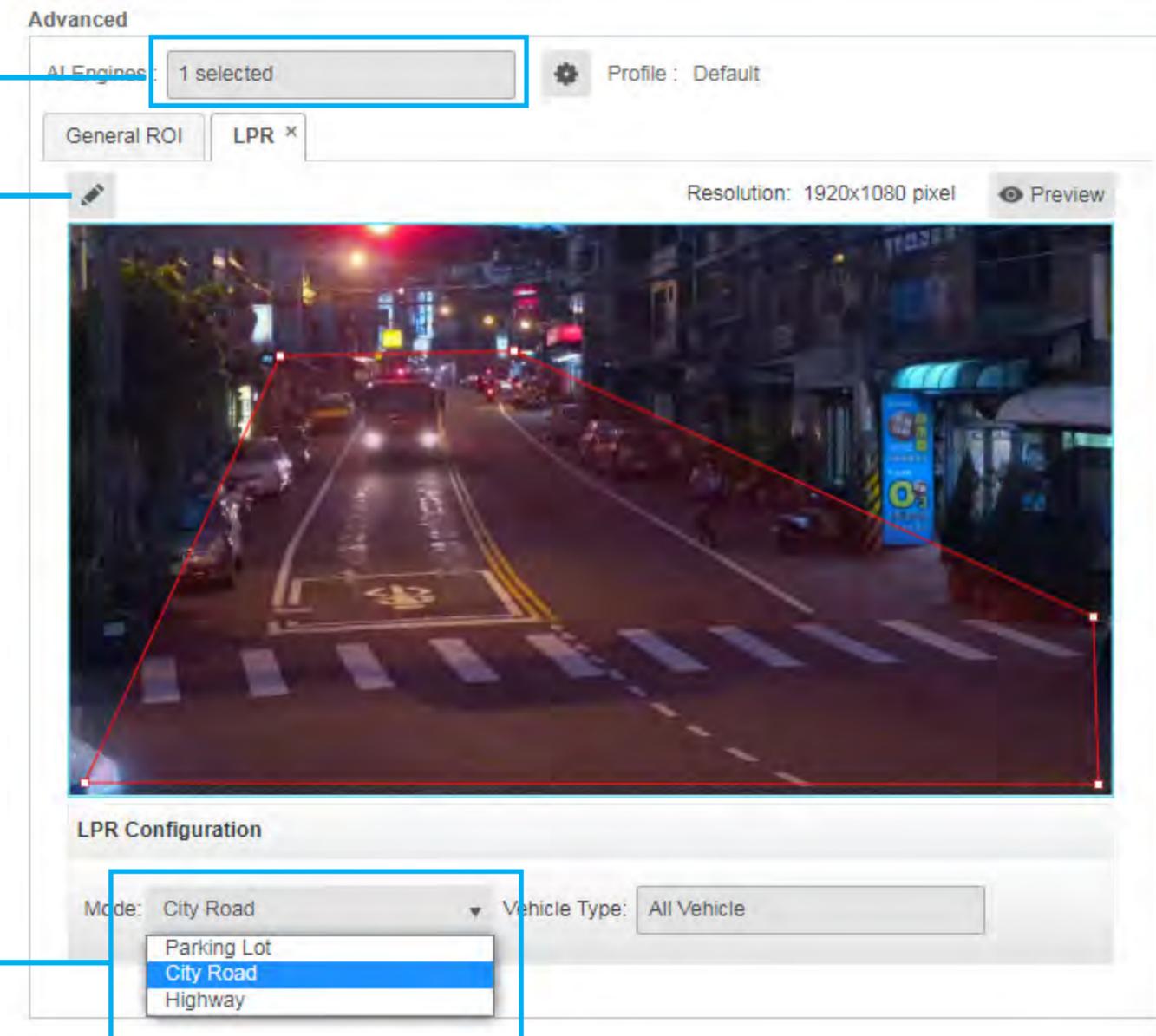
ROI SETUP

In **Camera Setting**, activate the **License Plate Recognition AI Engine**

Click on Pencil icon in LPR tab to draw the LPR region of interest (ROI). The ROI can be of any shape.

To optimize the performance and resource usage, LPR has 3 modes for different applications.

Parking Lot	City Road (Default)	Highway
Car speed < 5 miles/hour	Car speed within 40 miles/hour	Car speed > 40 miles/hour
Max 8 ch can be supported in VSB-110	Max 4 ch can be supported in VSB-110	Max 2 ch can be supported in VSB-110



[Return to License Plate Recognition](#)

ROI SETUP (CONT.)

The screenshot displays the 'Edit Camera' interface with the following details:

- Camera Info:** Camera Name: Zhudong - 1st Road, Location Type: GPS Map, Description: , Activate: Active.
- Advanced:** AI Model: 1 selected, AI Engines: 4 selected, Profile: Default (highlighted with a blue box).
- General ROI:** LPR (highlighted with a blue box), Vehicle Counting, Illegal Parking.
- Resolution:** 1920x1080 pixel, Preview button.
- Profile Window:**
 - Profile List: Default
 - Object Type: LPR (highlighted with a blue box), MMR
 - Video Search: Video Search, LPR, MMR
 - License Plate Height size (Sizes outside the range will be discarded): Minimum 20 ~ Maximum --
 - License Plate Width size (Sizes outside the range will be discarded): Minimum 40 ~ Maximum --

- ❑ Set min/max width & height for dimensions of the license plate
- ❑ Vehicle license plate detection uses 100% confidence inside the LPR ROI
- ❑ To set width & height of the license plate object, choose the desired **Camera** with LPR > **Edit Camera** > **Profile** > Select the **LPR** tab > Select **width/height**

[Return to License Plate Recognition](#)

VEHICLE TYPE

- Enable specific vehicle objects to display on the LPR page for license plate search
 - Unselect uncommon vehicle types or those without a license plate to declutter the results
- **System > Setting > scroll to License Plate Recognition > Enable desired vehicle type(s) to display on the LPR page**

VAIDIO > System

General Time Storage Mail LDAP Log Audit Trail License **Setting** AI Model Utility

License Plate Recognition

Enter LPR pattern

Enter vehicle type/ license plate #

Only support A 9 @ ?. Please use comma to separate each pattern.
A : Alphabet
9 : Numerical digit
@ : Unicode character except English character
? : don't care

Vehicles allowed in LPR

Vehicle

- Vehicle
- Bicycle
- Bus
- Car
- Forklift
- Jeepney
- Motorcycle
- Tricycle
- Truck
- TukTuk

Advanced

Theme Selection

Privacy Protection

Camera Connection Retry Interval

Log Retention Time

Audit Trail Retention Time

People Counting Reset Time : 00:00

Vehicle Counting Reset Time : 00:00

Search Result Display : 1000 1000-10000
Suggested value: 1000

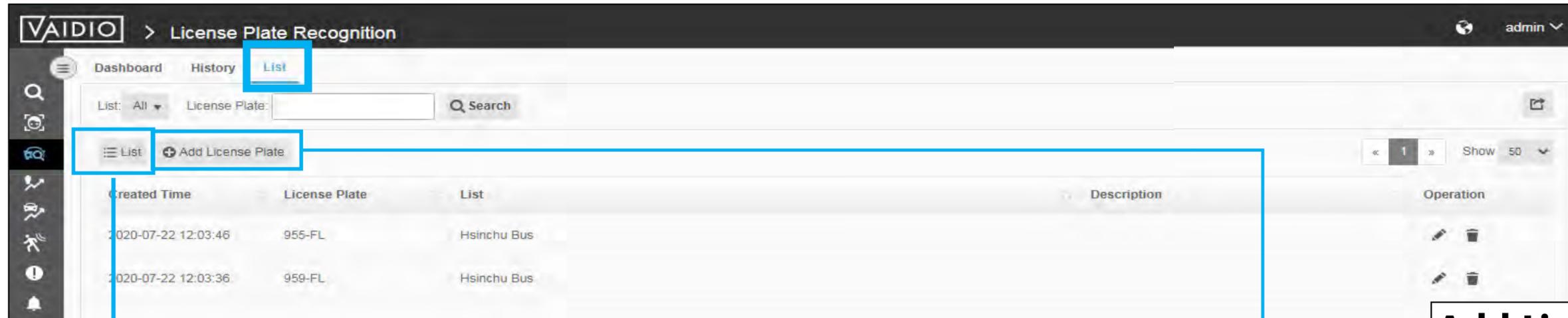
Emotion detection :

GPS Map :

API Basic Authentication :

[Return to License Plate Recognition](#)

CREATE LICENSE PLATE LIST



Add License Plate, input the license plate (can use alphanumerical and special characters) and choose the correct List. Add more information if needed.

Edit List to modify the name of an existing list. Click **New List** to create a new list.

[Return to License Plate Recognition](#)

LICENSE PLATE RECOGNITION – DASHBOARD

Recommended setup: the camera should be <10 ft high, and the plate is tilted to <25° from face-on. Make sure that the plate size is at least 100 px wide to detect the characters with high accuracy.

The dashboard displays a live camera feed from 'Zhudong 1st Road' on 2020-11-16 at 11:24:12. Below the feed, a 'License Plate Detected' section shows a close-up of a license plate 'APT1'. The main results table lists the following detections:

Detected Image	License Plate Image	License Plate	Time	Camera Name
		Truck(Gray,White) Make & Model: List: Not in list Confidence: 1 Description:	2020-11-16 11:24:22	Zhudong 1st Road
		Car(Gray,White) Make & Model:Toyota Yaris List: Not in list Confidence: 1 Description:	2020-11-16 11:24:12	Zhudong 1st Road
		Car(Gray,White) Make & Model: List: Not in list Confidence: 1 Description:		
		Bus(Yellow,Gray,White) Make & Model: List: Not in list Confidence: 0.94 Description:	2020-11-16 11:23:57	Zhudong 1st Road
		Car(Gray,White,Black) Make & Model: List: Not in list	2020-11-16 11:23:56	Zhudong 1st Road

Detect License Plate, Vehicle Type, Color, and Make & Model

[Return to License Plate Recognition](#)

LICENSE PLATE RECOGNITION – HISTORY

The screenshot displays the VAIDIO License Plate Recognition History interface. The 'History' tab is active, showing a search bar and a list of detected license plates. A search filter dialog is open, allowing users to select vehicle type, color, and license plate details. The main area displays a grid of images with license plate numbers like AXZ3796, AXZ2136, and AXZ2136. A table on the right shows a list of records with columns for Time and Camera Name / File Name.

In the **History** tab, the user can select the specific type, color, make and model, & state, and input partial license plate number (alphanumeric and special characters are okay) to narrow down the search results.

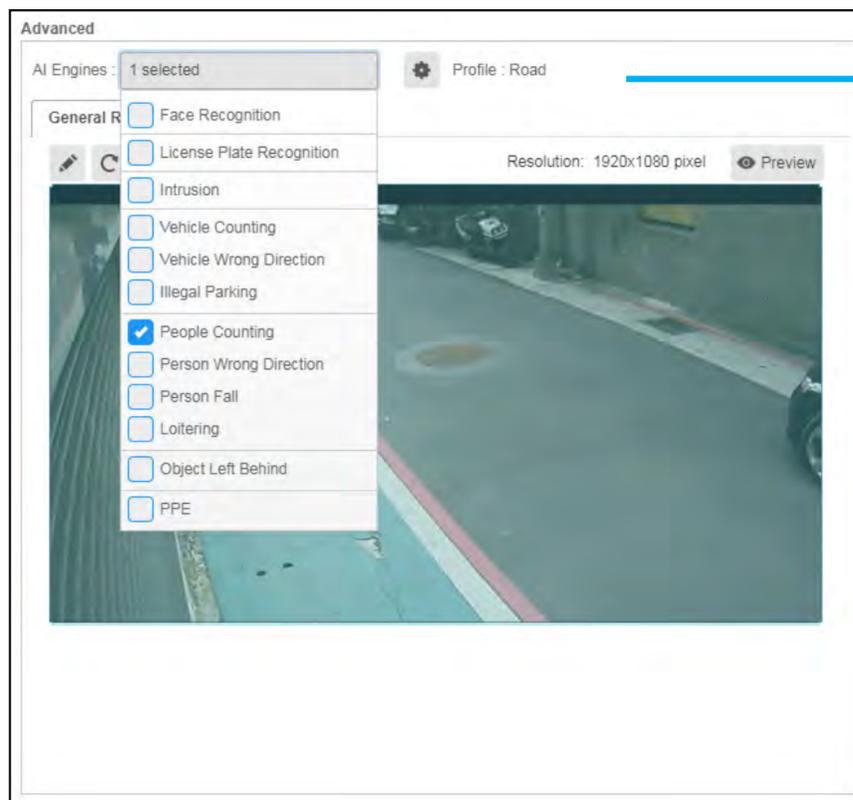
[Return to License Plate Recognition](#)

PEOPLE/VEHICLE COUNTING

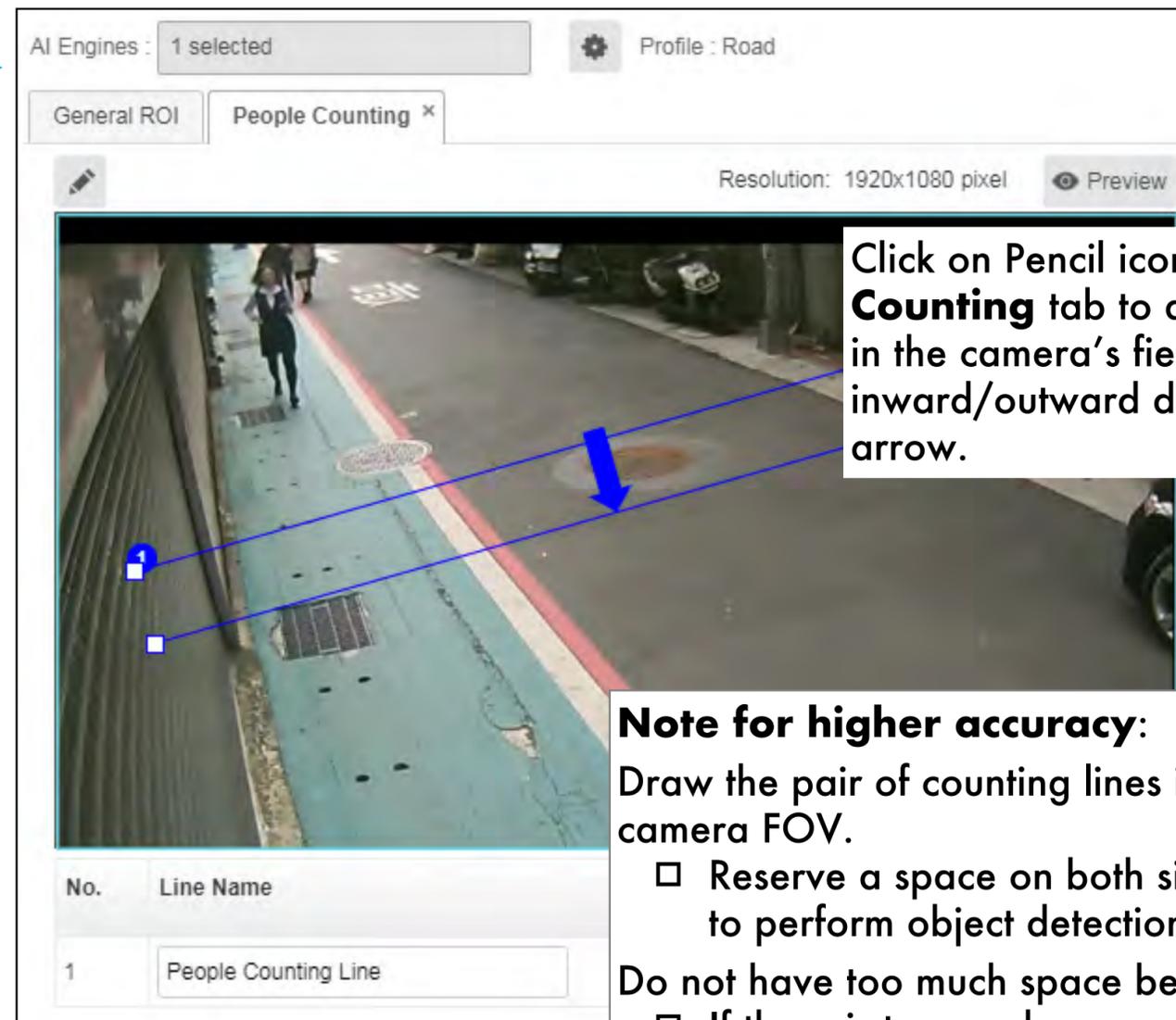
- [Counting Line Configuration](#)
- People Counting: [Configuration](#), [Dashboard - Real-time Detection](#), [History](#)
- Vehicle Counting: [Configuration](#), [Dashboard](#), [History](#)
- [Counting Alerts](#)

[Return to Table of Content](#)

COUNTING LINE CONFIGURATION



In **Camera Setting**, activate **People/Vehicle Counting** AI Engine



Click on Pencil icon  in **People/Vehicle Counting** tab to draw the **Counting Line** in the camera's field of view, and define the inward/outward directions by clicking on the arrow.

Note for higher accuracy:

Draw the pair of counting lines in the middle of the camera FOV.

- Reserve a space on both sides of the line for Vaidio to perform object detection.

Do not have too much space between the two lines.

- If there is too much space, it may cause Vaidio to lose track of the object.
- The object cannot be counted when the tracking is lost.

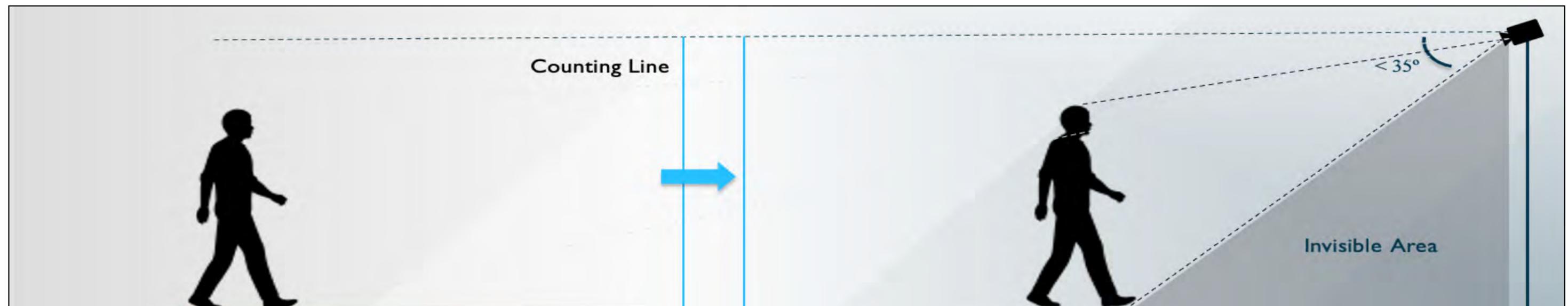
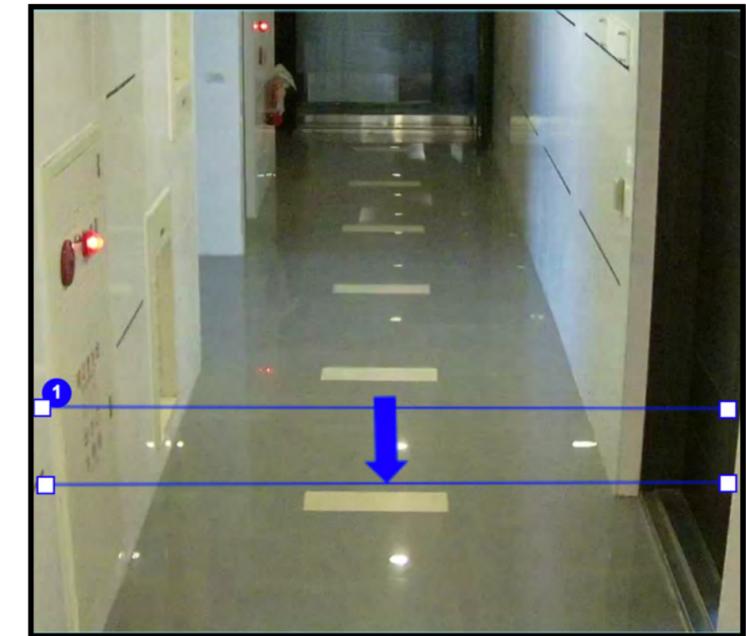
[Return to People/Vehicle Counting](#)

PEOPLE COUNTING – CONFIGURATION

For better accuracy of **People Counting**, the following configuration is recommended:

1. The angle of the camera should be $< 35^\circ$ in the recognition zone.
2. Object type configuration should be as follows:

Object Type	Confidence Suggested Value (0.1 ~ 1.0)	Minimum Size (px)
Person	0.80	30



[Return to People/Vehicle Counting](#)

PEOPLE COUNTING - DASHBOARD

Select Camera to see the live view & live count

Select the counting line

Since: 2022-08-05 00:00:00

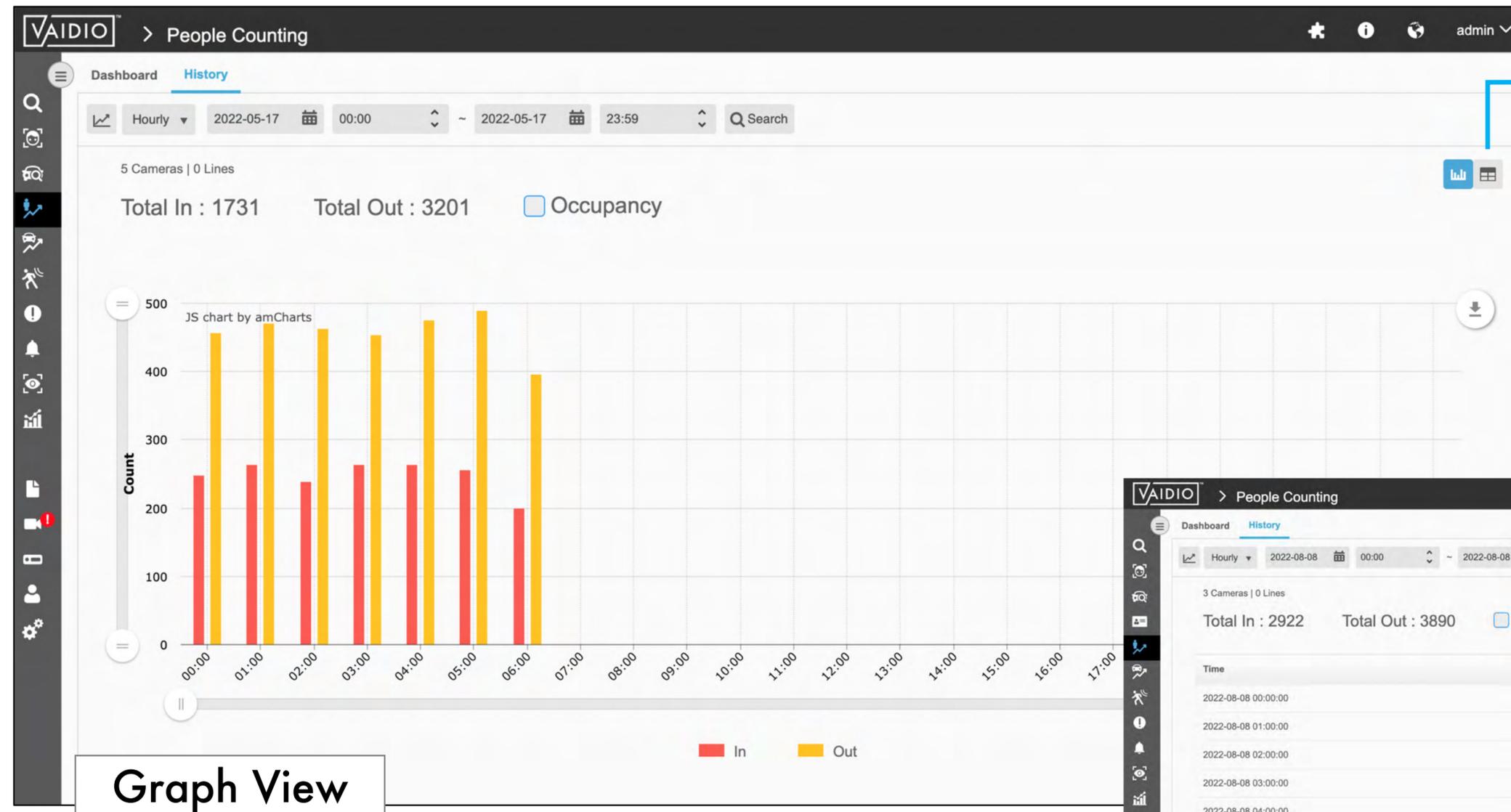
Total In : 172 Total Out : 104

Camera Name	Line Name	In	Out
PPE	1. count1	0	0
test123	1. counting123	85	50
IronYun - Corridor	1. into office	87	54

Occupancy

[Return to People/Vehicle Counting](#)

PEOPLE COUNTING - HISTORY



	A	B	C
1	History of People Counting		
2			
3	Search Time: 2020-06-22 00:00:00 - 2020-06-22 23:59:00		
4	Download Time: 2020-06-29 16:10:37		
5	Time	In	Out
6	2020-06-22 09:00:00	262	274
7	2020-06-22 10:00:00	434	434
8	2020-06-22 11:00:00	438	433
9	2020-06-22 12:00:00	444	448
10	2020-06-22 13:00:00	192	202
11	2020-06-22 14:00:00	299	310
12	2020-06-22 15:00:00	439	441
13	2020-06-22 16:00:00	433	443
14	2020-06-22 17:00:00	444	425
15	2020-06-22 18:00:00	170	159
16			
17			

Click to export to Excel file

3 Cameras | 0 Lines

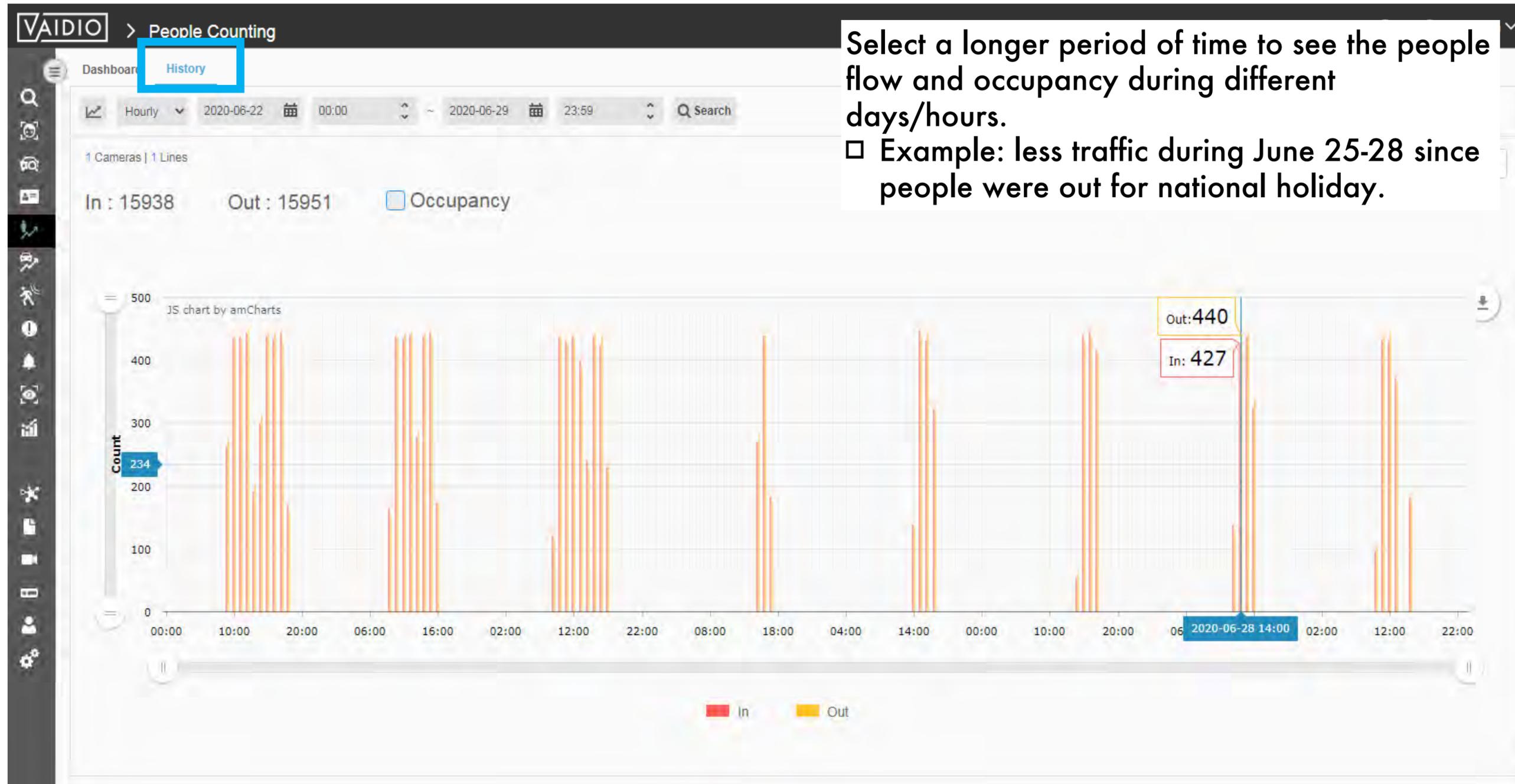
Total In : 2922 Total Out : 3890 Occupancy

Time	In	Out
2022-08-08 00:00:00	392	539
2022-08-08 01:00:00	338	413
2022-08-08 02:00:00	392	450
2022-08-08 03:00:00	296	465
2022-08-08 04:00:00	312	487
2022-08-08 05:00:00	267	429
2022-08-08 06:00:00	342	415
	344	377
	213	273
	26	42

List View

[Return to People/Vehicle Counting](#)

PEOPLE COUNTING - HISTORY (CONT.)



Select a longer period of time to see the people flow and occupancy during different days/hours.

- Example: less traffic during June 25-28 since people were out for national holiday.

[Return to People/Vehicle Counting](#)

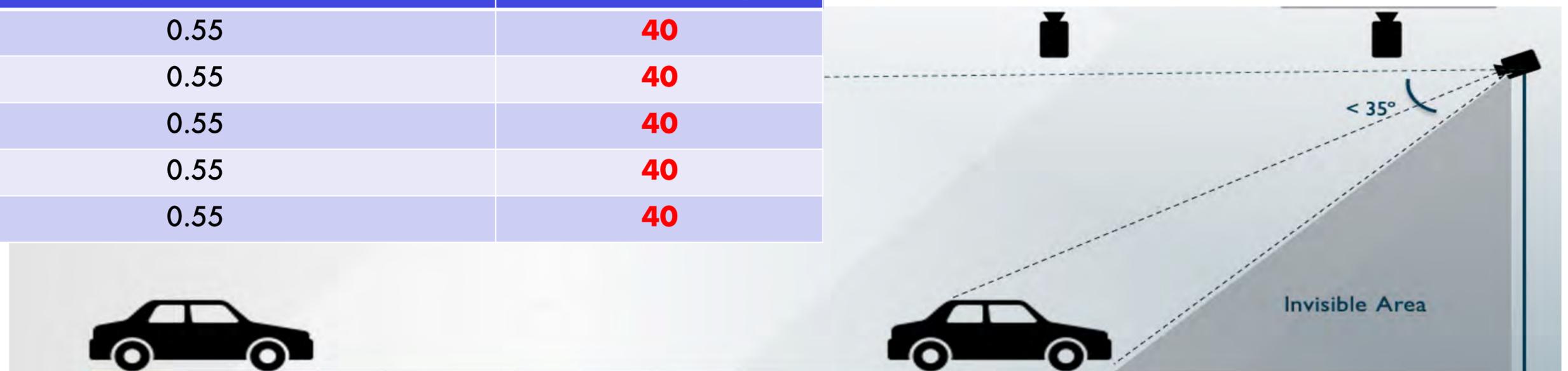
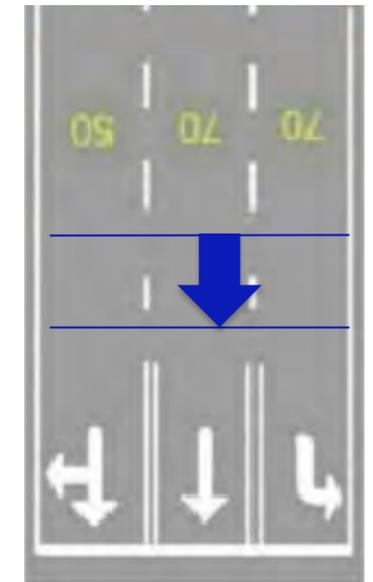
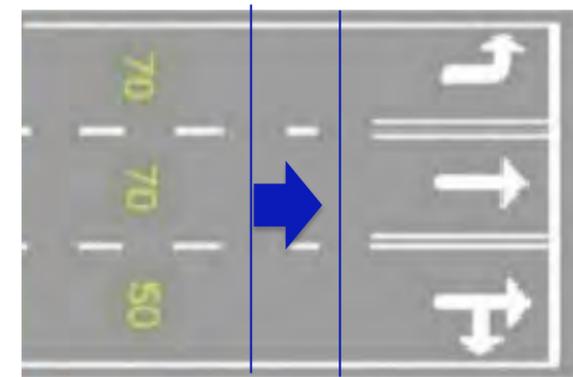
VEHICLE COUNTING - CONFIGURATION

For better accuracy of Vehicle Counting, the following configuration is recommended:

1. The angle of the camera should be $< 35^\circ$ in the recognition zone.
2. Every vehicle to be counted should be fully visible. Vehicle may be missed if it is hidden by another vehicle.
3. Object type configuration should be as follows:

Object Type	Confidence Suggested Value (0.1 ~ 1.0)	Minimum Size (pxl)
Car	0.55	40
Bus	0.55	40
Truck	0.55	40
Motorcycle	0.55	40
Bicycle	0.55	40

Ideal camera perspective



Recognition Zone

[Return to People/Vehicle Counting](#)

VEHICLE COUNTING - DASHBOARD

Select camera to see the live view

In: 189 / Out: 185

See live counting with inbound and outbound numbers per minute, and the numbers of different types of vehicle.

No.	Line Name
1	Vehicle Counting Line

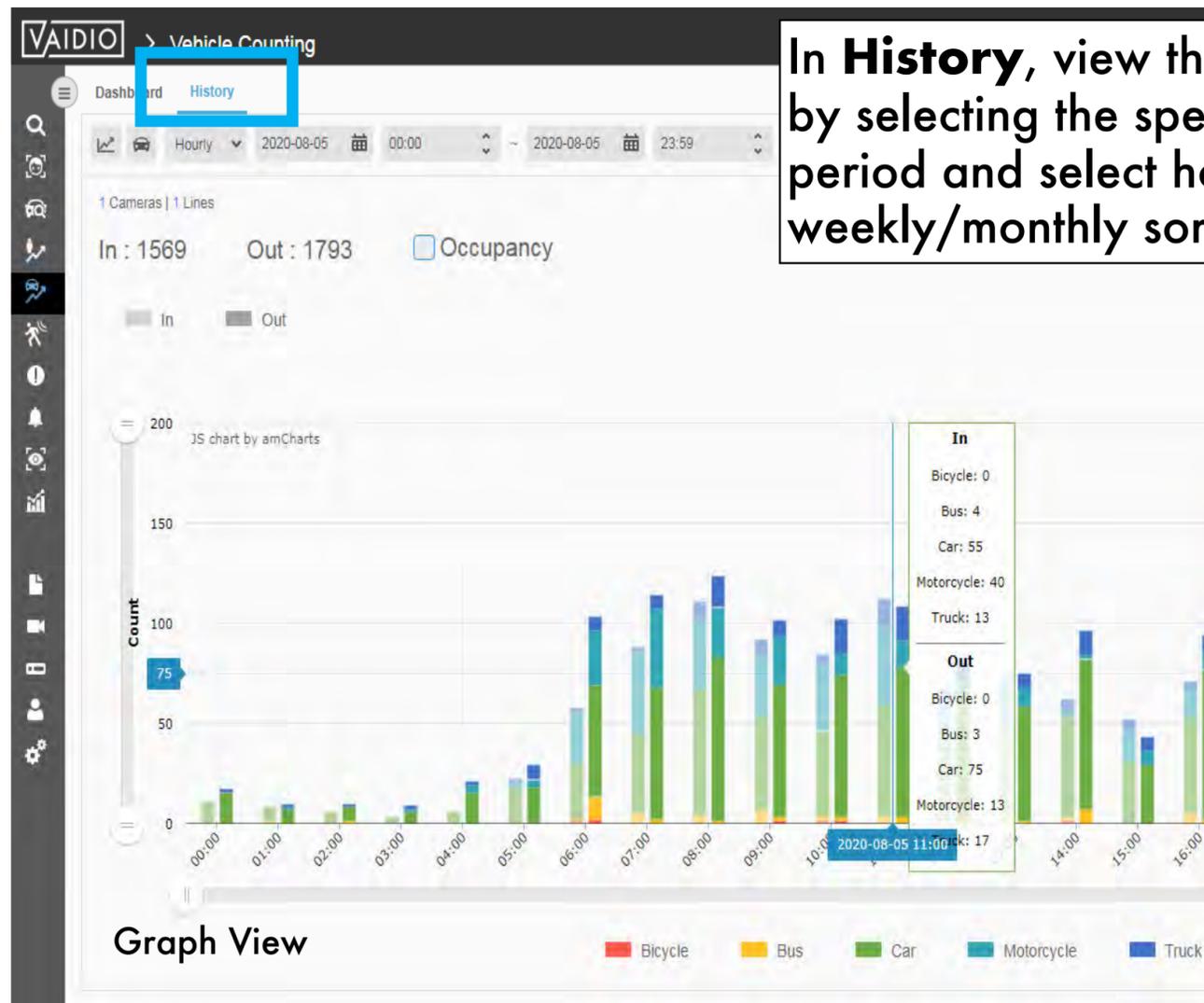
Count

17:08 17:09 17:10 17:11 17:12 17:13 17:14 17:15 17:16 17:17 17:18 17:19 17:20 17:21 17:22 17:23 17:24 17:25 17:26 17:27 17:28 17:29 17:30 17:31 17:32 17:33 17:34 17:35 17:36 17:37 17:38

All Vehicle
 Bicycle
 Bus
 Car
 Motorcycle
 Truck

[Return to People/Vehicle Counting](#)

VEHICLE COUNTING - HISTORY



In **History**, view the vehicle flow by selecting the specific time period and select hourly/daily/weekly/monthly sorting

Time	In		Out	
2020-08-05 00:00:00	Bicycle	0	Bicycle	0
	Bus	0	Bus	0
	Car	11	Car	15
	Motorcycle	0	Motorcycle	1
	Truck	0	Truck	1
	Total vehicle	11	Total vehicle	17
2020-08-05 01:00:00	Bicycle	0	Bicycle	0
	Bus	1	Bus	0
	Car	7	Car	7
	Motorcycle	0	Motorcycle	1
	Truck	0	Truck	1
	Total vehicle	8	Total vehicle	9

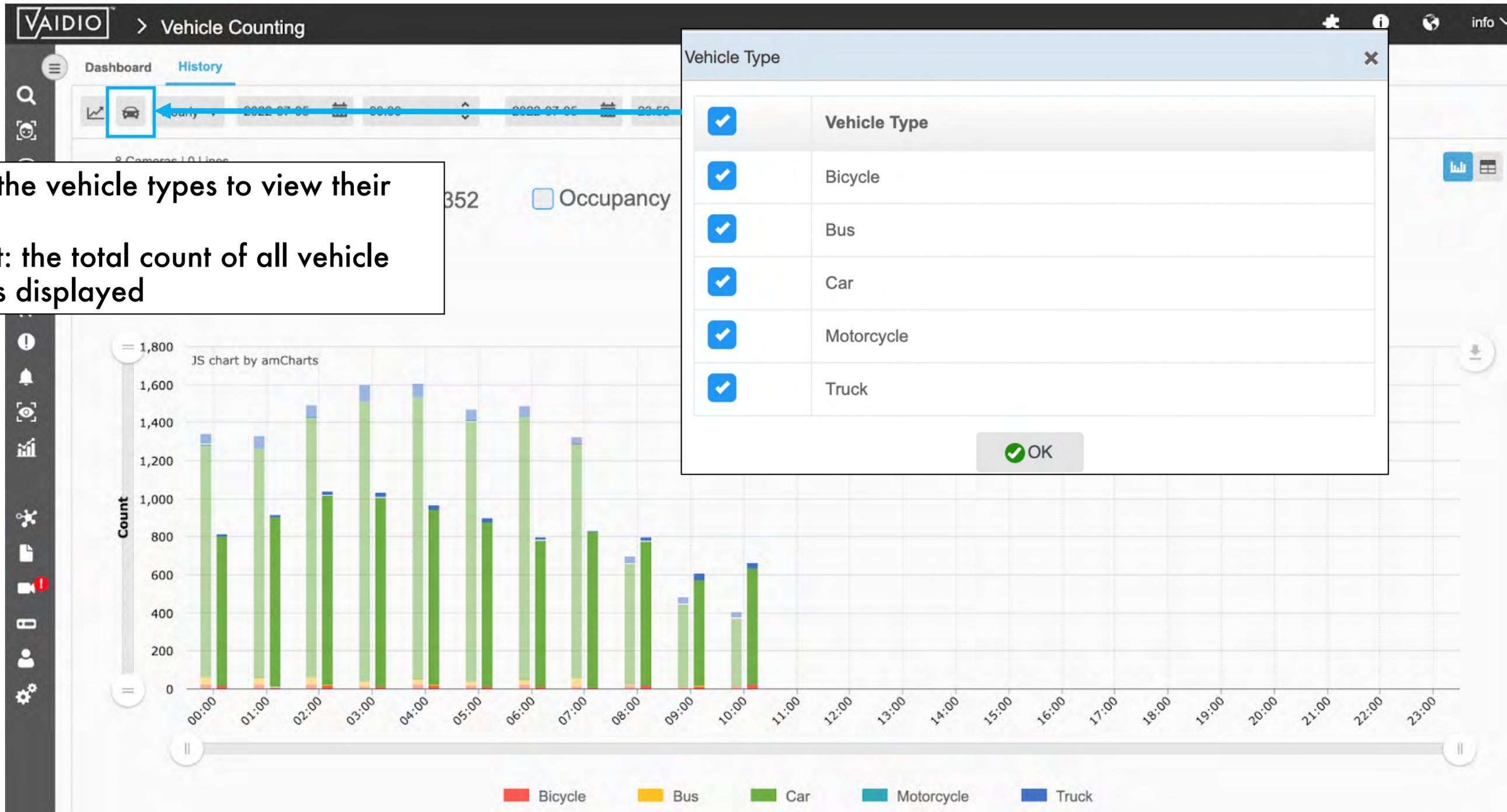
Click to export the result to an Excel file

Time	In	Out
2020-08-05 00:00:00	11	17
2020-08-05 01:00:00	8	9
2020-08-05 02:00:00	6	6
2020-08-05 03:00:00	3	9
2020-08-05 04:00:00	6	21
2020-08-05 05:00:00	22	29
2020-08-05 06:00:00	58	103
2020-08-05 07:00:00	88	114
2020-08-05 08:00:00	111	123
2020-08-05 09:00:00	92	101
2020-08-05 10:00:00	84	102
2020-08-05 11:00:00	112	108
2020-08-05 12:00:00	87	80

[Return to People/Vehicle Counting](#)

VEHICLE COUNTING - HISTORY

Select the vehicle types to view their counts.
 Default: the total count of all vehicle types is displayed



[Return to People/Vehicle Counting](#)

COUNTING ALERT

- For both People & Vehicle Counting, set occupancy alerts in **Alert > Alert Rule > Add Alert > Alert Type: People Counting** or **Vehicle Counting** after the counting lines have been configured
- Options available: (all count values take into account the counts of all selected cameras and counting lines)
 - **Occupancy**: current number of people/vehicles in the area
 - **In**: current number of people/vehicles moving into the area
 - **Out**: current number of people/vehicles moving out of the area
 - **>/<**: more than / fewer than a certain value of people/vehicles
- Toggle ON **Duplicate Event** to keep sending the alert as long as the count still satisfies the alert criteria
 - The period between successive alerts is the **Duplicate Threshold**
 - Example: an alert for Occupancy > 100 with a Duplicate Threshold of 5 minutes will be triggered as soon as there are 101 people in the area and continue every 5 minutes until the count becomes 100 or less.

[Return to People/Vehicle Counting](#)

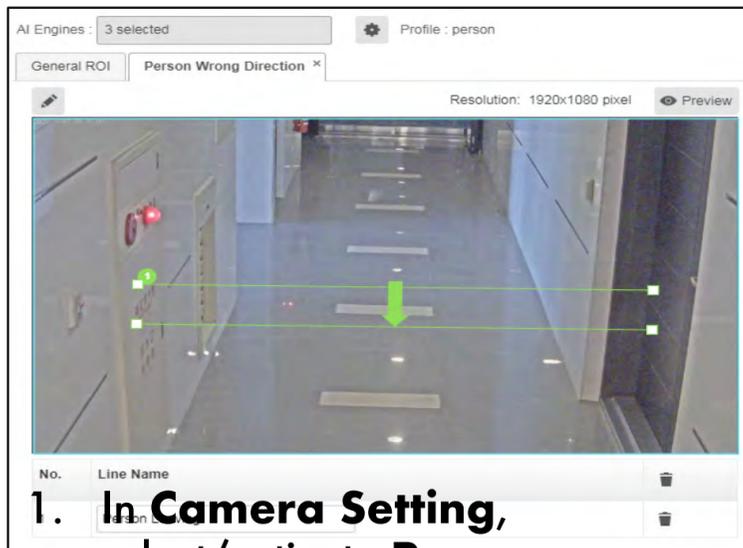
ABNORMAL

- ❑ [Person Wrong Direction](#)
- ❑ [Person Fall](#)
- ❑ [Person Loitering](#)
- ❑ [Person Without Object](#)
- ❑ [Object Left Behind](#)
- ❑ [Vehicle Wrong Direction](#)
- ❑ [Illegal Parking](#)
- ❑ [Speeding Detection](#)
 - ❑ [Abnormal Speed Alert](#)

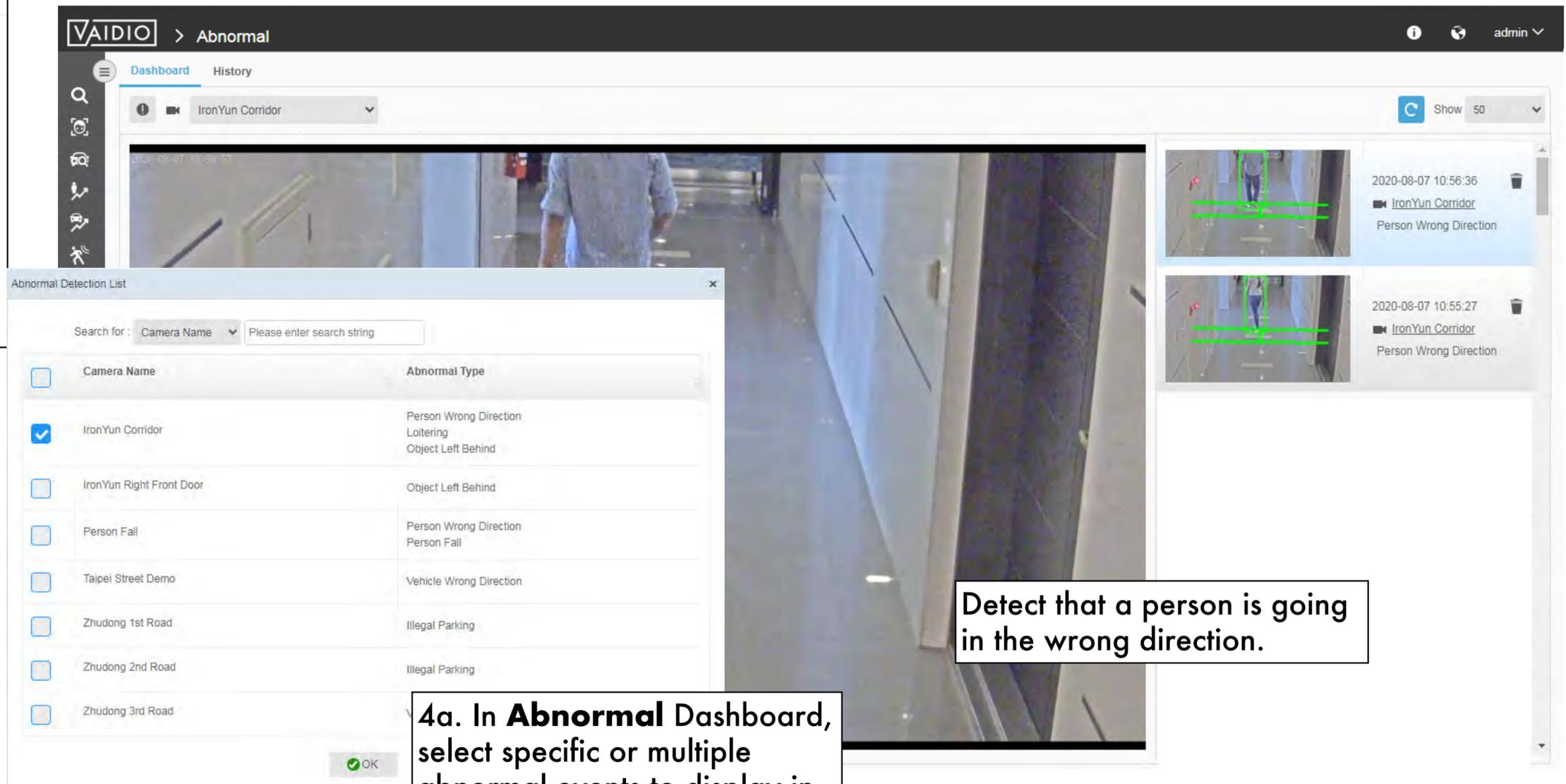
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PERSON WRONG DIRECTION

4b. Real-time Alert:
When defining the alert rule, select **Person Wrong Direction** alert type and choose the preconfigured line to get real-time notifications when the event happens.



1. In Camera Setting, select/activate **Person Wrong Direction** from the dropdown list of **AI Engines**
2. Draw the line
3. Define the direction by click on the arrow (the direction of the arrow is the correct direction, the opposite direction is the wrong direction to trigger an event)

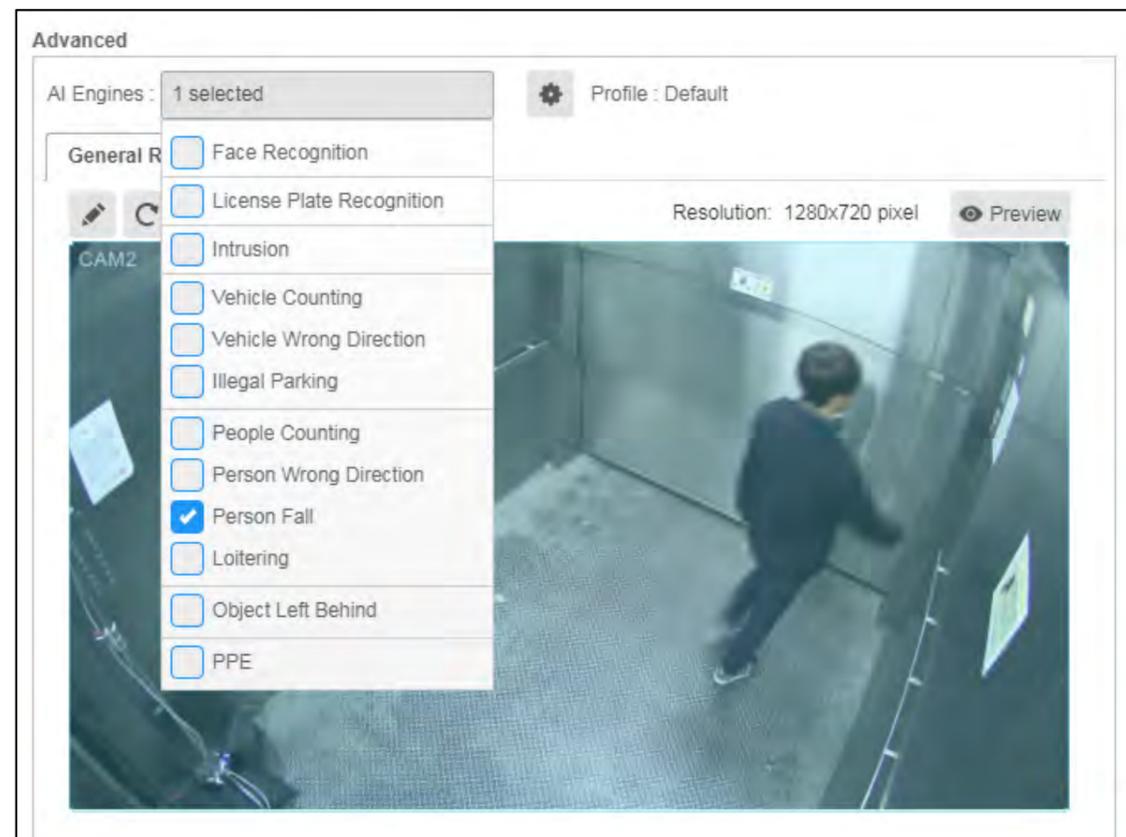


Detect that a person is going in the wrong direction.

4a. In **Abnormal** Dashboard, select specific or multiple abnormal events to display in the dashboard.

[Return to Abnormal](#)

PERSON FALL

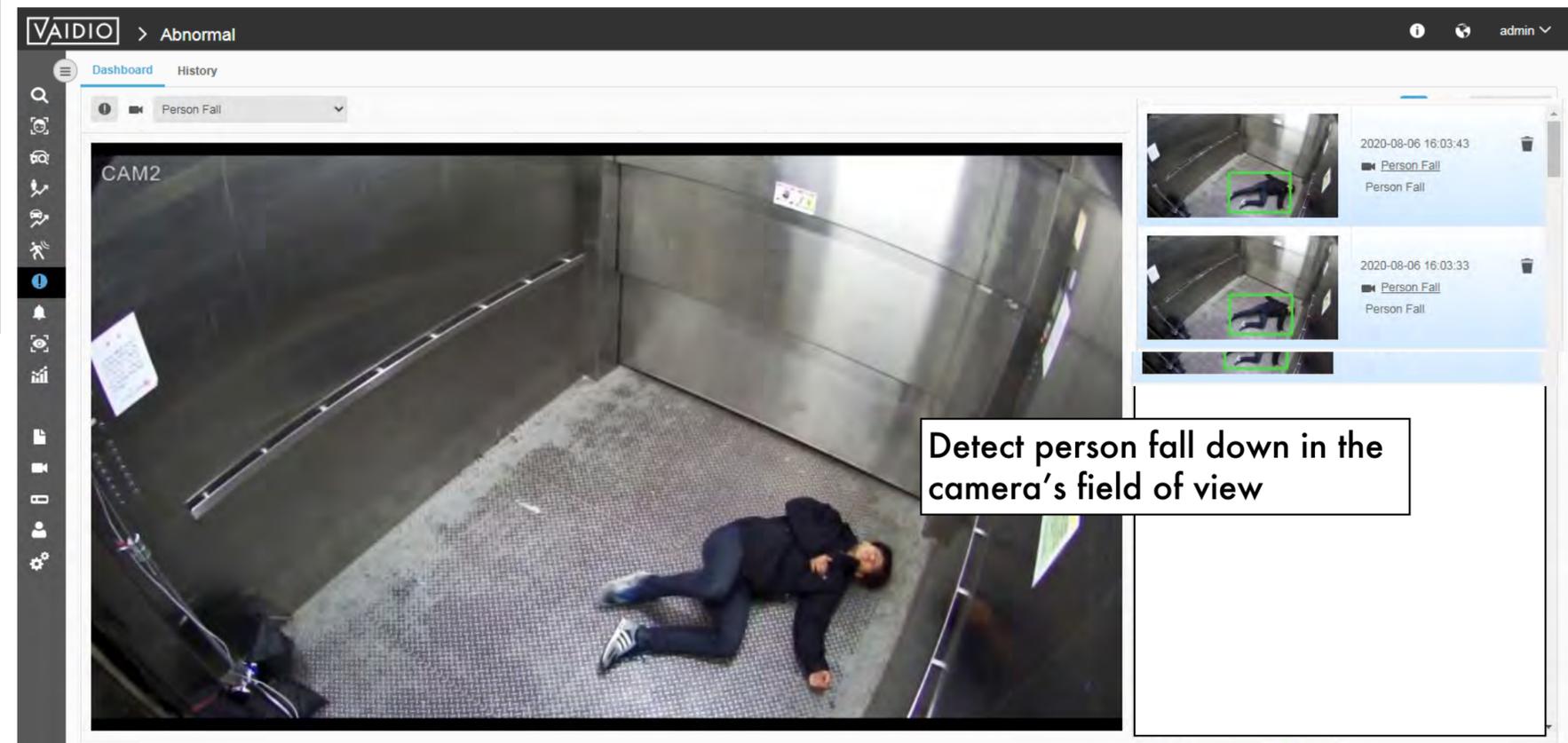


In **Camera Setting**, select/activate **Person Fall** from the dropdown list of **AI Engines**

Camera placement: should show the full body, not directly overhead

Real-time Alert:

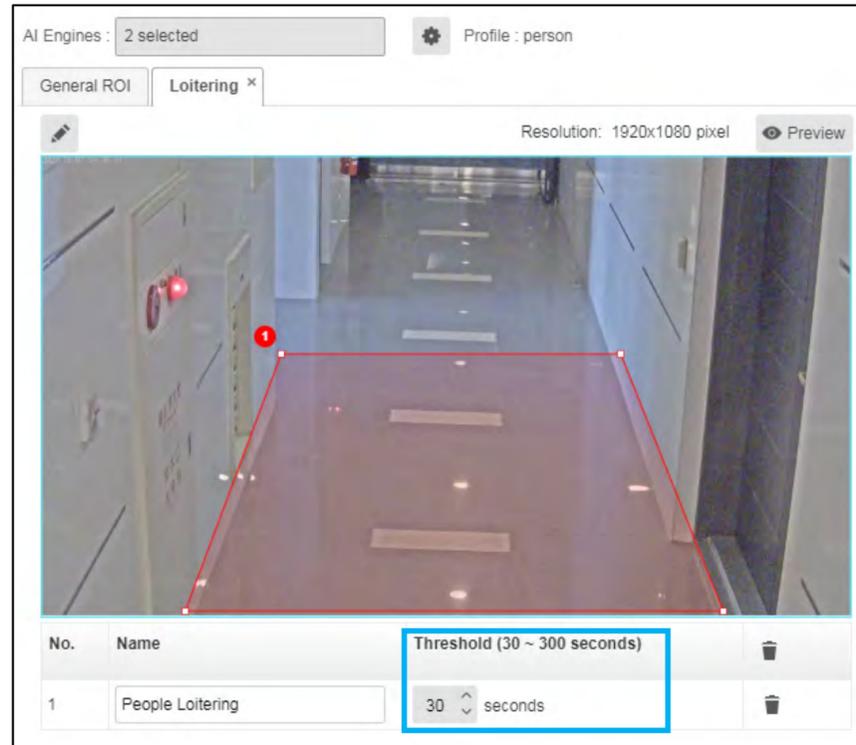
- ❑ When defining the alert rule, select **Person Fall** alert type to get real-time notifications when the event happens.
- ❑ Alert for person falling is only triggered after the person fell and remained on the ground for more than 10 seconds. Hence, the delay is 10s. Reasoning: if one can stand up and walk away shortly after falling, the fall typically did not cause serious injury and does not require attention.



[Return to Abnormal](#)

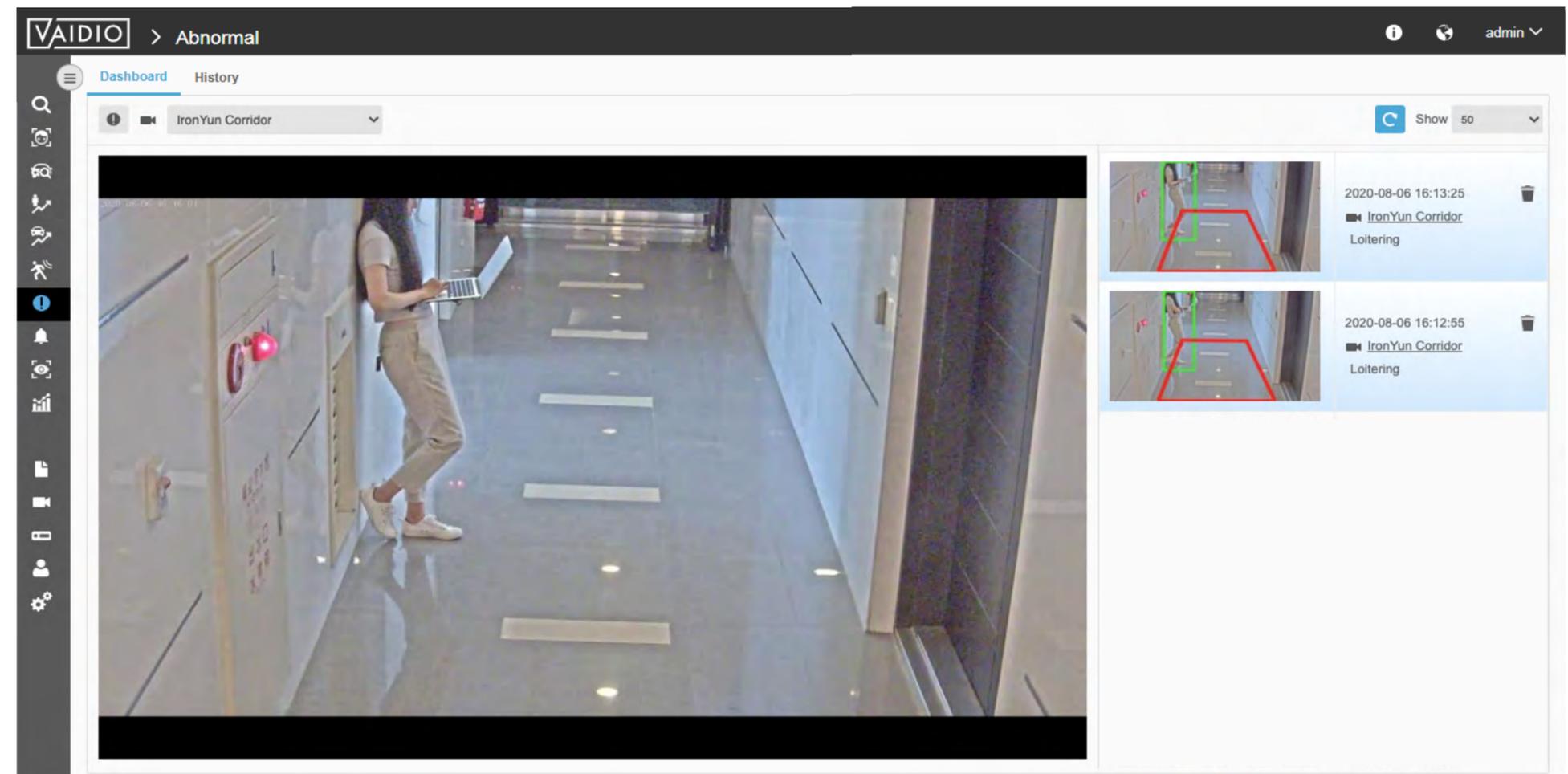
PERSON LOITERING

Real-time Alert:
 When defining the alert rule, select the **Person Loitering** alert type and choose the ROI to get the real-time notification when the event happens.



In **Camera Setting**, select/activate **Loitering** from the dropdown list of **AI Engines**. Draw the ROI (region of interest) to detect a person loitering in the specific area. Define the time threshold of the period to trigger the loitering alert.

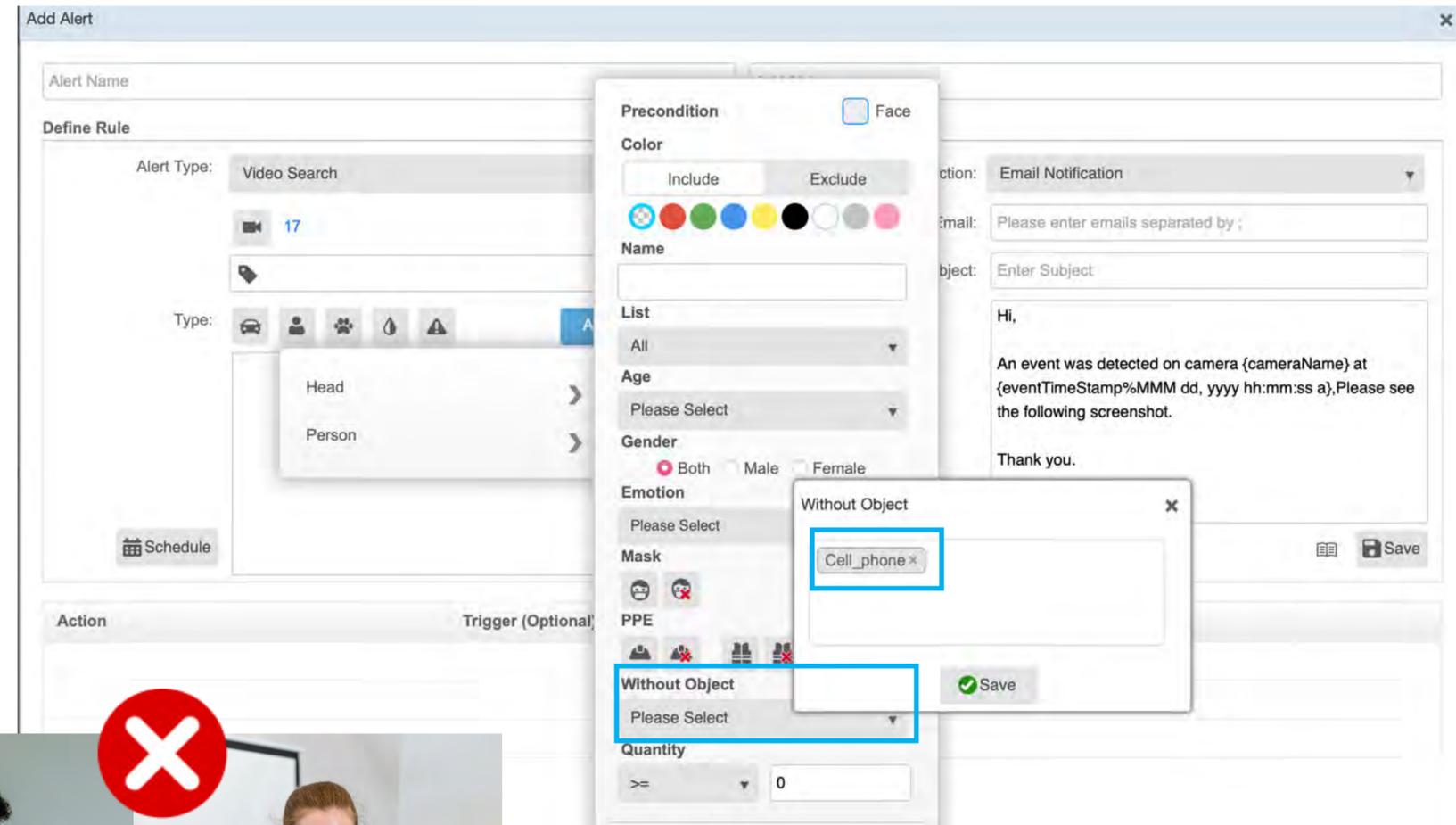
- Max threshold is 300 s for best performance. To have longer thresholds, contact Aicuda technical support team to discuss



[Return to Abnormal](#)

PERSON WITHOUT OBJECT

- ❑ Trigger an alert if a person is not wearing/carrying/in physical contact with an object of interest
- ❑ **Alert > Alert Rule > Add Alert > Select Alert Type > Person > click on the dropdown list for Without Object > type in the object(s) of interest**



Note:

- Objects selected here must also be activated in Camera > Profile > Object Type
- If more than 1 object is selected, i.e., the alert is for a person w/o multiple objects, the rule is **AND - the alert is triggered if any of the multiple objects is NOT detected.**

[Return to Abnormal](#)

PERSON WITHOUT OBJECT (EXAMPLES)



No Alert: Object of interest (**helmet**) is on the person



Alert Triggered: Detected person is not overlapped with the object of interest (**helmet**)



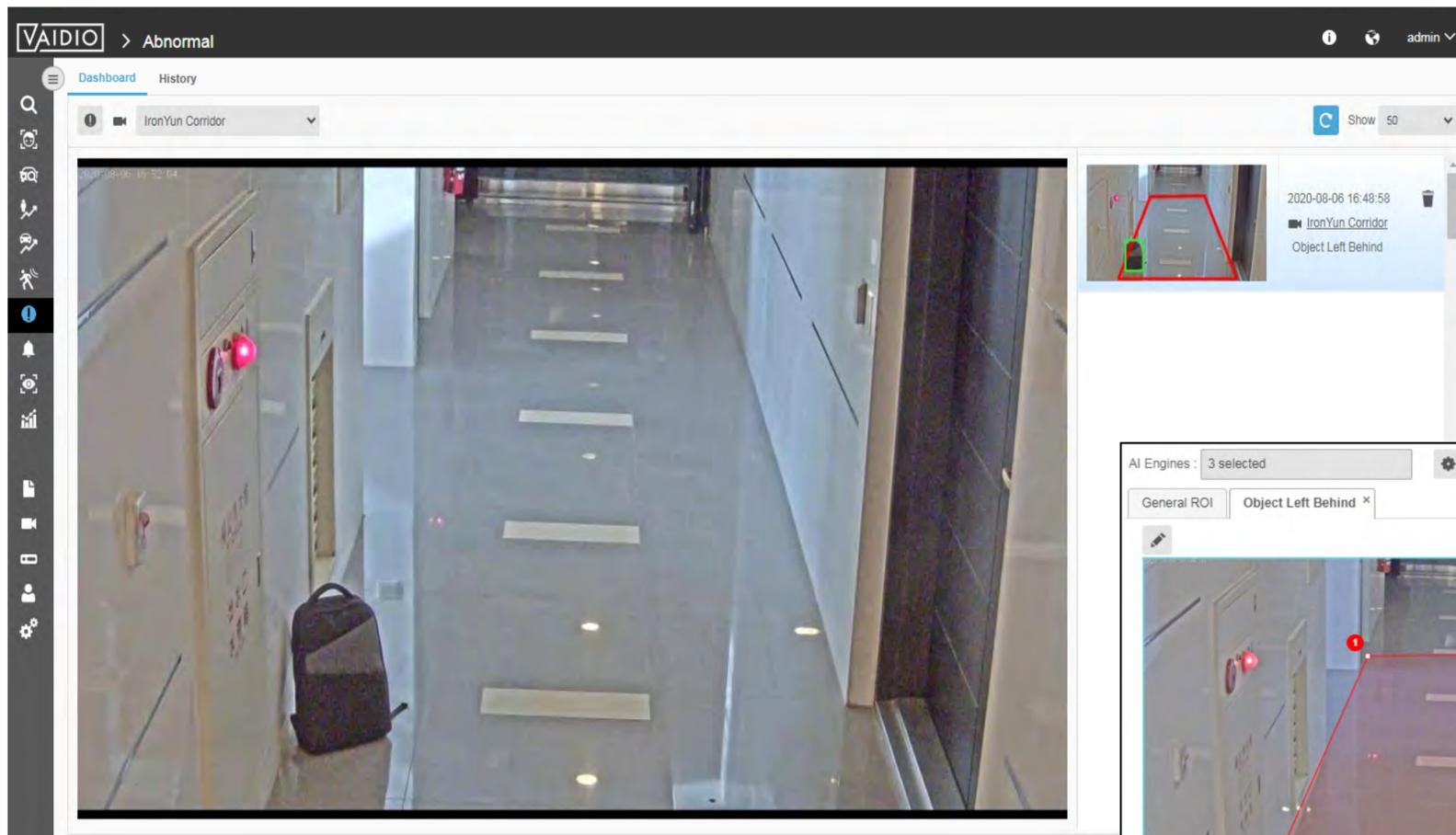
No Alert: Object of interest (**helmet**) is on/carried by/in contact with the person, even when it is not being worn



Alert Triggered: Person on the left is not in contact with the object of interest (**helmet**)

[Return to Abnormal](#)

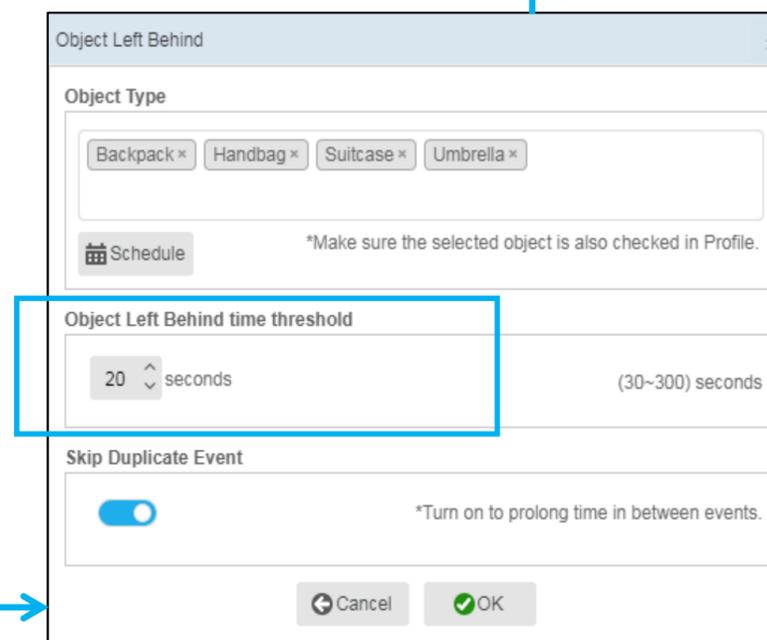
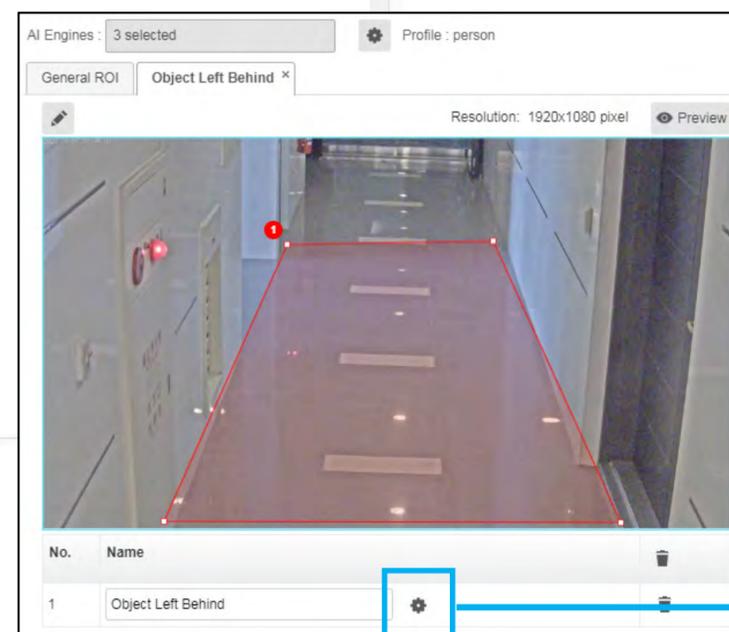
OBJECT LEFT BEHIND



In **Camera Setting**, select/activate the **Object Left Behind**.

The users can select the specific object type to be detected when the object is left in the ROI (region of interest).

- Adjust the threshold (30 - 300 secs) for the time period of the object being left and no one passing by to define as object left behind.



Real-time Alert:
When defining the alert rule, select **Object Left Behind** alert type and choose the ROI to get the real-time notification when the event happens.

[Return to Abnormal](#)

VEHICLE WRONG DIRECTION

1. In **Camera Setting**, select/activate **Vehicle Wrong Direction** from the dropdown list of **AI Engines**
2. Draw the line
3. Define the direction by click on the arrow (the direction of the arrow is the correct direction, the opposite direction is the wrong direction to trigger an event)

Object Type	Confidence[0.1 - 1.0]	Suggested Value	Minimum	Maximum
<input checked="" type="checkbox"/> Bicycle	0.55	0.55	40	--
<input type="checkbox"/> Boat	0.50	0.50	40	--
<input checked="" type="checkbox"/> Bus	0.30	0.55	40	--
<input checked="" type="checkbox"/> Car	0.30	0.55	40	--

Detect vehicles that travel in the wrong direction.

Real-time Alert:
When defining the alert rule, select **Vehicle Wrong Direction** alert type, and choose the preconfigured line to get real-time notifications when the event happens.

Adjust the **Profile** to detect all vehicles traveling in the wrong direction, or select a specific vehicle type.

[Return to Abnormal](#)

ILLEGAL PARKING

When a vehicle stays in the ROI longer than the defined period, the event is classified as illegal parking.

Real-time Alert:
When defining the alert rule, select **Illegal Parking** alert type and choose the ROI to get real-time notifications when the event happens.

In Camera Setting, select/activate Illegal Parking from the dropdown list of AI Engines
Draw the ROI (region of interest) in the non-parking area.
Define the specific vehicle type and time threshold of the vehicle stay

No.	Name	Vehicle Type	Threshold (30 ~ 300 seconds)
1	Illegal Parking Area	All Vehicle	30 seconds
2	Illegal Parking Area 2	All Vehicle	30 seconds

□ Max threshold is 300s for best performance. To have a longer time threshold, contact Aicuda technical support team to discuss

[Return to Abnormal](#)

ABNORMAL-SPEED DETECTION

- ❑ Speeding detection: estimate the speed of vehicles and classify whether a vehicle is traveling at a higher, equal, or lower speed compared to the average traffic in the camera FOV
- ❑ Subfunction of the AI engine **Vehicle Counting**
- ❑ Do not provide numerical speed values
- ❑ Limit:
 - ❑ 1 line to evaluate speed per camera FOV
 - ❑ Low-traffic areas only (neighborhood streets, no freeway)

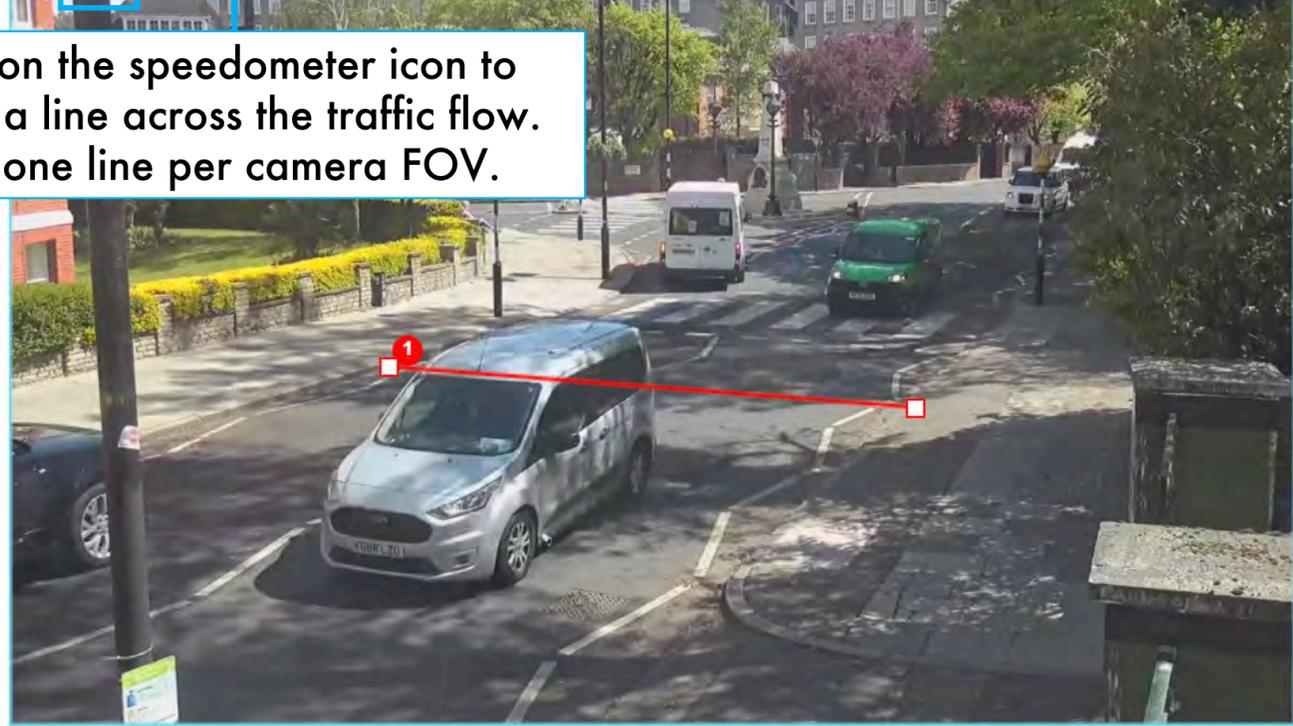
Advanced

AI Model : 1 selected AI Engines : 4 selected Profile : backpack dog

General ROI LPR × People Counting × Vehicle Counting ×

Resolution: 1920x1080 pixel Preview

Click on the speedometer icon to draw a line across the traffic flow. Limit: one line per camera FOV.



No.	Draw Type	Line Name	
1	Speed Detection		

[Return to Abnormal](#)

ABNORMAL-SPEED ALERT

- ❑ To set an alert for vehicles traveling at higher/lower speed than average traffic, select the Alert Type **Video Search**
- ❑ Select a vehicle type, e.g., **Car > Speed > Above Average/Average/Below Average**

The screenshot shows the 'Add Alert' interface in the Vaidio system. The 'Alert Name' field is empty. The 'Define Rule' section is active, with 'Alert Type' set to 'Video Search' and a duration of '30' seconds. The 'Type' section shows icons for Car, Person, Dog, and Water. A dropdown menu is open, listing vehicle types: Vehicle, Bus, Motorcycle, Bicycle, Car, and Truck. The 'Action' section is currently empty. The 'Trigger (Optional)' section is also empty. A 'Schedule' button is visible. A 'Color' selection dialog is open, showing 'Include' and 'Exclude' options with a color palette. The 'List' dropdown is set to '--'. The 'License Plate', 'Make', and 'Model' fields are empty. The 'Speed' dropdown is open, showing options: -- (checked), Above Average (highlighted), Average, and Below Average. 'Cancel' and 'Add' buttons are at the bottom.

[Return to Abnormal](#)

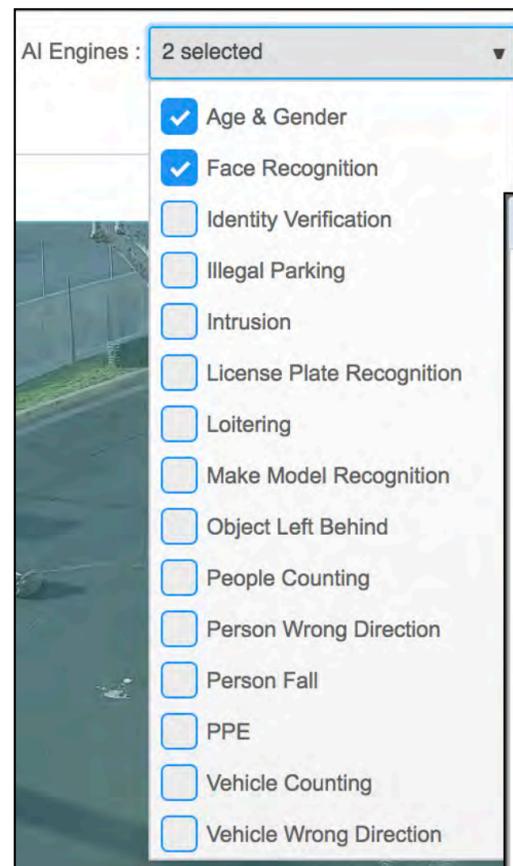
AGE & GENDER DETECTION

- [Activate Age & Gender Detection](#)

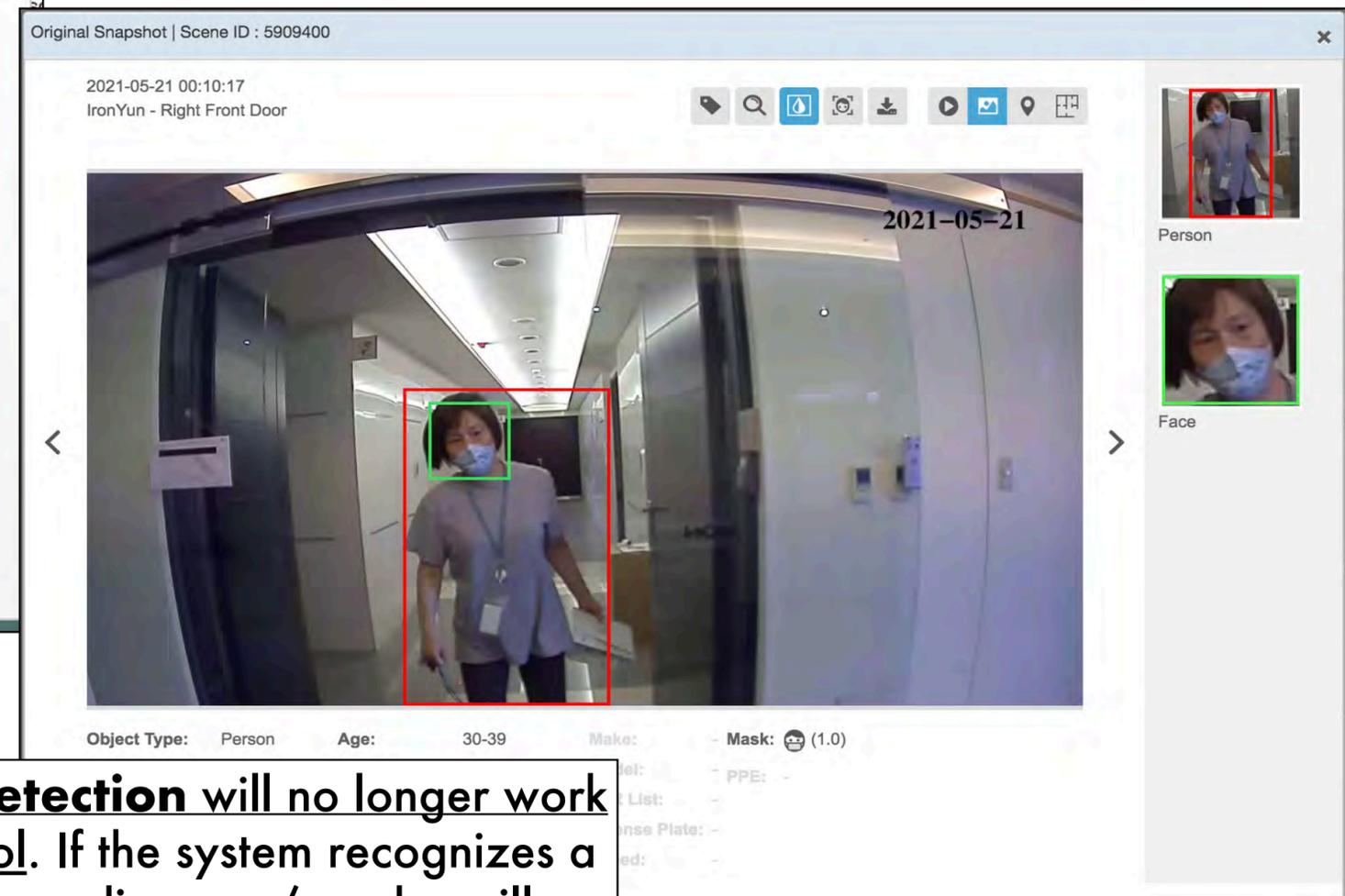
[Return to Table of Content](#)

ACTIVATE AGE & GENDER ENGINE

- ❑ In Vaidio 5.1.0, **Age & Gender** is separated from **Face Recognition** to address privacy concerns and save computing resource
- ❑ **For enhanced accuracy, Age & Gender should be activated with Face Recognition**
- ❑ To search for a person by age group and/or gender, go to **Search > Person >** select Age group and gender in the dropdown menu
- ❑ To see the collective demographic statistics of the cameras with **Age & Gender**, go to **Statistics > Demographic**



When adding the camera, activate both **Face Recognition** and **PPE** AI Engines for enhanced accuracy.



Note: In 6.0, **Age & Gender Detection** will no longer work with masks to ensure quality control. If the system recognizes a person wearing a mask, the corresponding age/gender will no longer appear as it does in this screenshot. This will ensure improved accuracy in age & gender detection.

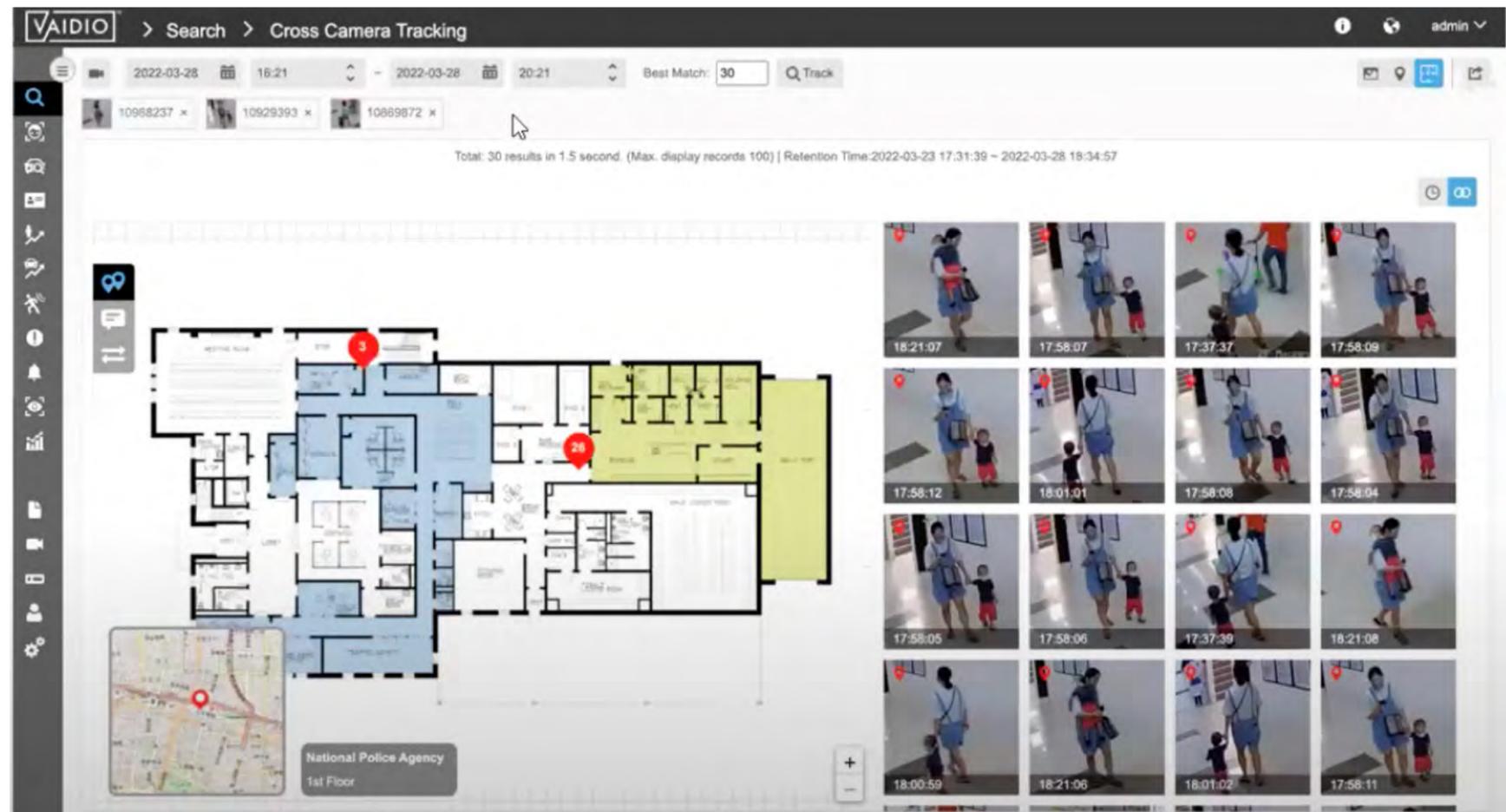
[Return to Age & Gender Detection](#)

CROSS CAMERA TRACKING

- [Dashboard](#)
- [Select target](#)
- [Refine results](#)
- [Map view](#)

[Return to Table of Content](#)

DASHBOARD



- Select and track a person through multiple cameras based on the **shape or pattern** of their clothing and wearable objects (e.g., backpack)
- View the person's path in map view (GPS and indoor floor plan)

[Return to Cross Camera Tracking](#)

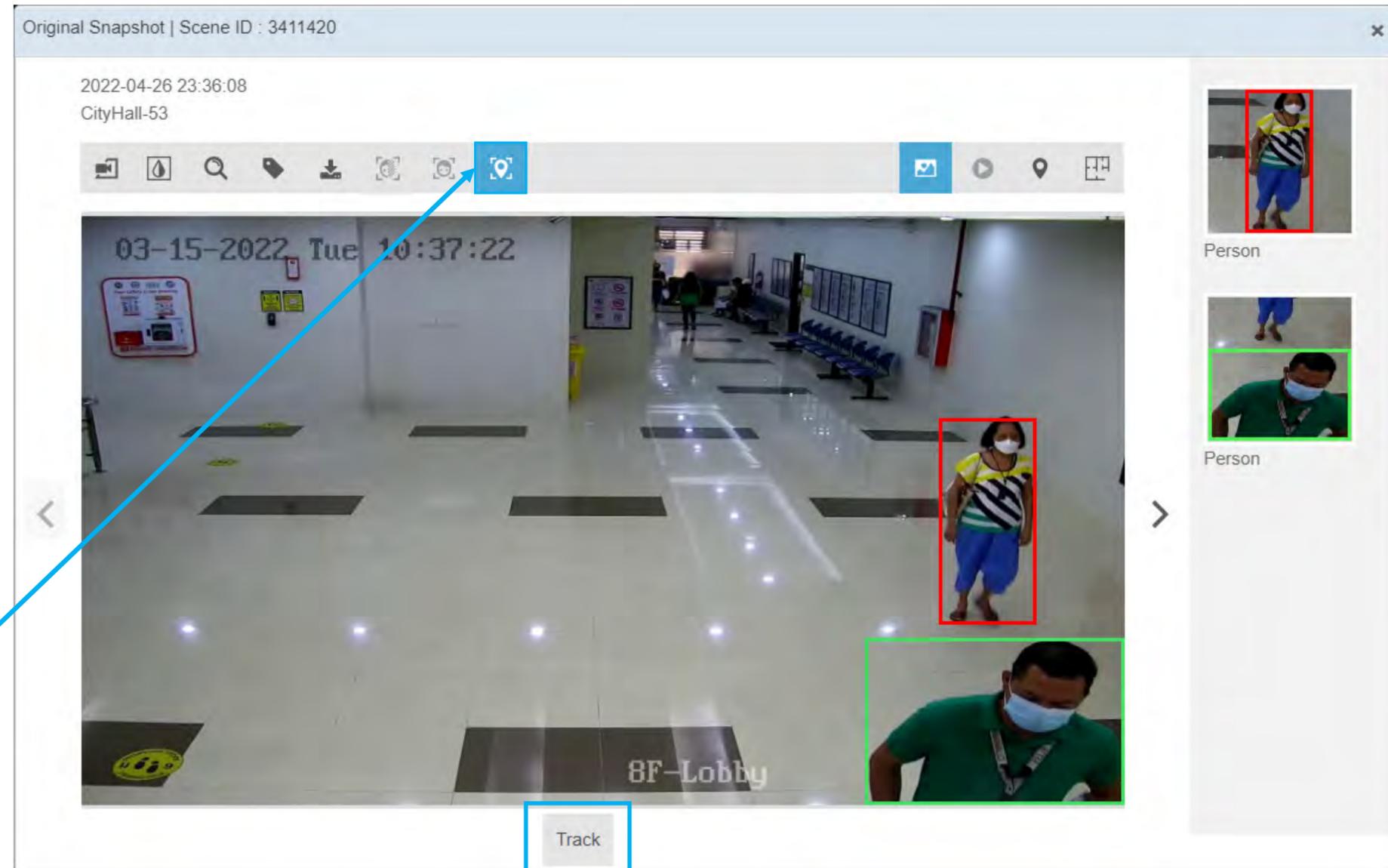
SELECT TARGET

Begin the **Cross Camera Tracking (CCT)** process by conducting a person search; e.g., person wearing blue and yellow.

Note: CCT is for **person tracking** and based on **shape & pattern** only. Do NOT add other attributes (age, gender, etc.) or object types (backpack, bicycle, etc.)

Once you have identified the person you want to track, click on

Then, click the **Track** button that appears at the bottom of the page to open the **Cross Camera Tracking** dashboard.



[Return to Cross Camera Tracking](#)

SELECT TARGET (CONT.)

When conducting **Cross Camera Tracking**, make sure to reset the search timeframe parameters at the top to ensure that the dates/time range of the search matches your initial search.

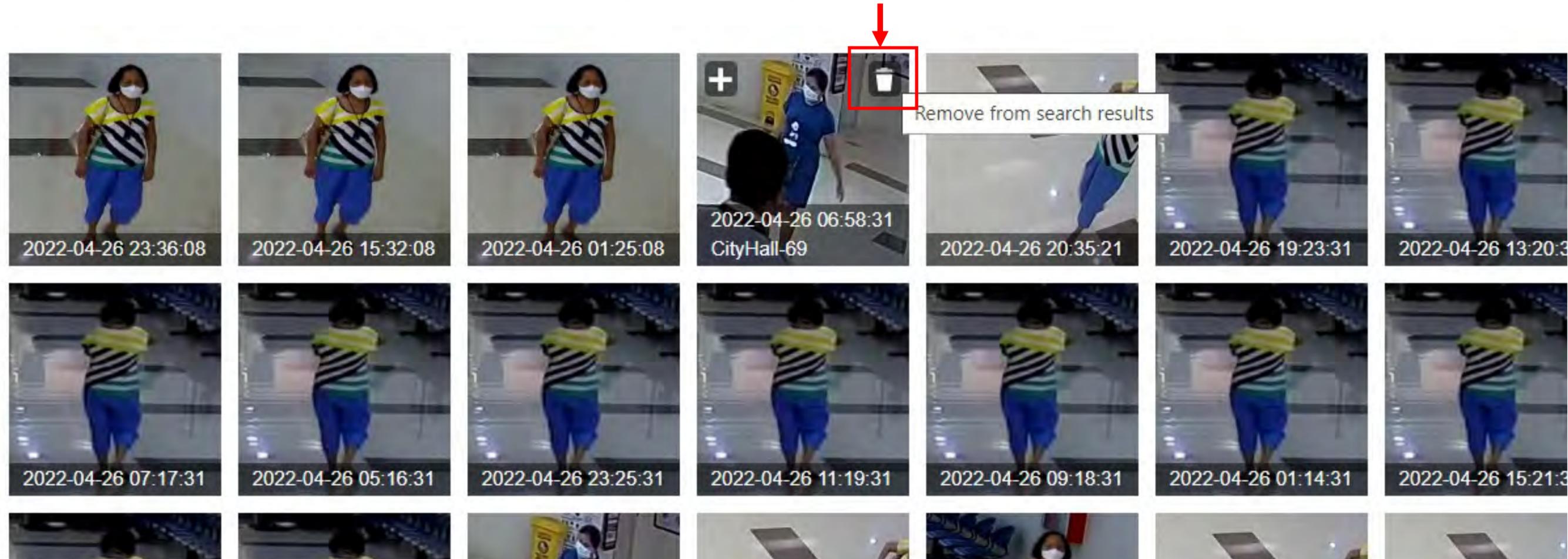
Best Match provides images that most closely match the appearance of the person in the initial search snapshot. The default amount is set to 30; i.e., 30 most similar images will be displayed. Adjust the number as needed.

The screenshot displays the Vaidio interface for Cross Camera Tracking. At the top, the breadcrumb navigation shows 'VAIDIO > Search > Cross Camera Tracking'. Below this, search parameters are set: the start date is 2022-04-27 at 04:36, and the end date is 2022-04-27 at 08:36. The 'Best Match' count is set to 30, and a 'Track' button is visible. A text box with a blue arrow pointing to the 'Track' button contains the instruction: 'Click **Track** to sync the search results with the desired timeframe (if the timeframe is already accurate, follow the steps in the next slide)'. Below the search bar, the results are displayed as a grid of video thumbnails. The first thumbnail shows a person in a yellow and black striped shirt and blue pants, with a timestamp of 2022-04-27 05:28:31. Other thumbnails show the same person in various locations and times, including 2022-04-27 07:29:31, 2022-04-27 04:39:20, 2022-04-27 08:30:30, 2022-04-27 08:29:56, 2022-04-27 07:39:54, 2022-04-27 05:38:54, and 2022-04-27 06:31:25. A status bar at the top of the results area indicates 'Total: 30 results in 2.6 second. (Max. display records 100) | Retention Time: 2022-04-20 06:00:00 ~ 2022-04-29 21:37:38'. The interface also includes a sidebar with various icons and a top right corner with user information 'alpha' and navigation icons.

[Return to Cross Camera Tracking](#)

REFINE RESULTS

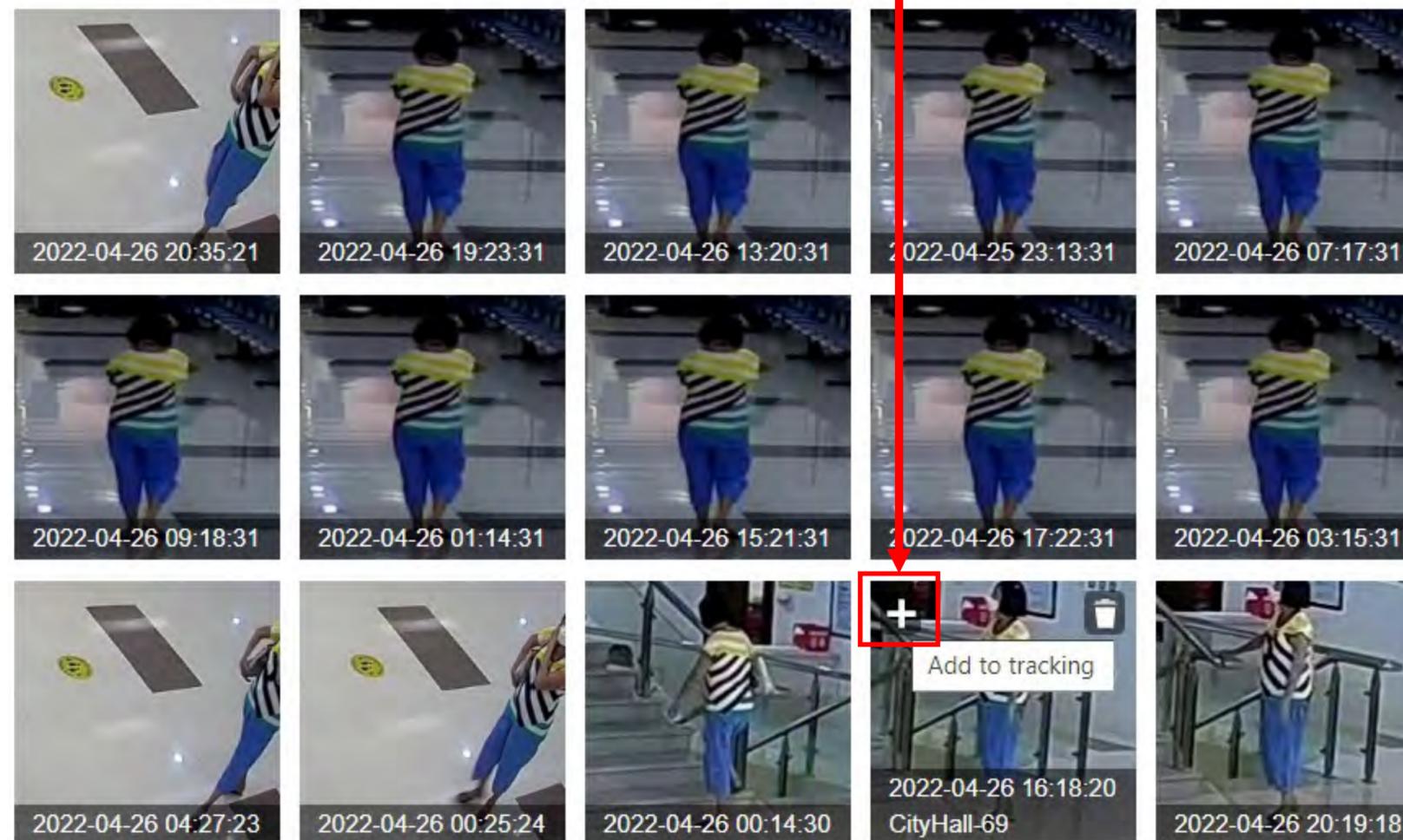
Refine Cross Camera Tracking results by removing all images that do not correspond to the person whom you want to track by clicking the Trashcan icon, which appears when you hover over the snapshot.



[Return to Cross Camera Tracking](#)

REFINE RESULTS

Refine Cross Camera Tracking results by adding different images of the person whom you would like to track by clicking the Plus (+) icon that appears when you hover over the snapshot. You can add up to 4 images to refine your search (5 total in addition to the original search image).



[Return to Cross Camera Tracking](#)

REFINE RESULTS

Click on **Track** (magnifying glass icon) once you have your image selections to receive a list of refined results.

Up to **5** images can be selected

The screenshot shows the VAIDIO search interface. At the top, there's a navigation bar with 'VAIDIO > Search > Cross Camera Tracking'. Below this, a search bar contains the date range '2022-04-25 00:00' to '2022-04-26 23:59', a 'Best Match: 30' indicator, and a 'Track' button with a magnifying glass icon. A blue box highlights the 'Track' button, with an arrow pointing to the text box above. Below the search bar, there are five image thumbnails with IDs: 24013474, 23569011, 21438533, 20583833, and 23561975. A blue box highlights these thumbnails, with an arrow pointing to the text box on the left. The main area displays a grid of search results, with a blue box around the entire grid and a label 'Search Results' pointing to it. The grid contains 28 thumbnails of a person in a yellow and blue striped shirt, with timestamps ranging from 2022-04-25 23:13:31 to 2022-04-26 12:31:22. A blue box highlights the first five thumbnails in the first row. At the bottom right, there is a link 'Return to Cross Camera Tracking'.

[Return to Cross Camera Tracking](#)

MAP VIEW

VAIDIO > Search > Cross Camera Tracking

2020-11-24 00:00 ~ 2020-01-01

IY Corridor x IY Front D... x

Total: 17 results

0:00 ~ 2

admin

Cross Camera Tracking can display the locations of a person via GPS or indoor floor plan. Click on the map view to show the path.

The screenshot displays the Vaidio Cross Camera Tracking interface. At the top, there's a navigation bar with the Vaidio logo and search filters. Below that, a date range selector shows '2020-11-24 00:00' to '2020-01-01'. The main area is a map view showing a street grid with various buildings and landmarks. A blue dashed line indicates a tracked path across the map. Three red circles with numbers 1, 2, and 3 are placed along the path, corresponding to camera thumbnails. A larger thumbnail in the center shows a person walking in a hallway, with a timestamp of '2021-11-24 10:28:30' and the location 'IY Corridor'. To the right, there's a vertical list of camera thumbnails, each with a timestamp of '2021-11-24 10:28:30'. A blue box highlights a set of icons (a camera, a location pin, and a floor plan) in the top right corner, with a blue arrow pointing from the map view to these icons.

[Return to Cross Camera Tracking](#)

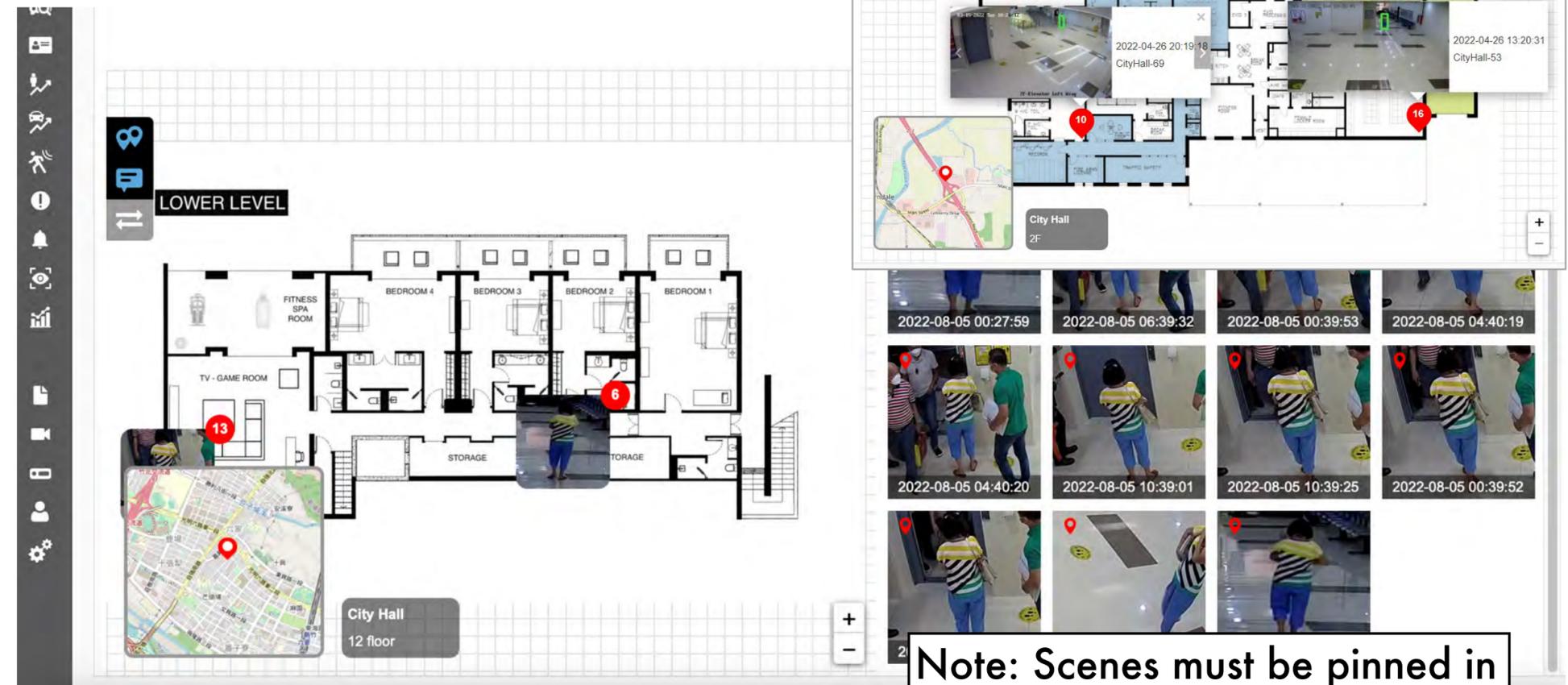
MAP VIEW

Click the map logo to see the locations of the snapshots and number of snapshots at each location

Click on the **Path** icon to trace the path of the person selected.



Click the **Map Pin All** button to bring up thumbnails of the snapshot. The user can scroll through these images using the right and left arrows that appear when hovering over the image



Note: Scenes must be pinned in order to receive results in the result display

[Return to Cross Camera Tracking](#)

IDENTITY VERIFICATION

- [IDV Matching Criteria](#)
- [IDV Camera Configuration](#)
- [Add ID Number to the Target Face](#)
- [Dashboard – Real-time Detection](#)

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IDV MATCHING CRITERIA

- Starting from Vaidio 5.1.0:
- Identity Verification (IDV) considers a detection is a match result only if:
 - The real person's face matches a target in a list in the FR database, AND
 - The driver license number matches the driver license number associated with that target in the list
- IDV only applies to driver licenses of one state at a time. User needs to specify the state and Aicuda Sales Engineering team will configure the format in the software license. For other forms of identification cards, please contact your Aicuda representative.
- IDV uses and requires a user-input Face Recognition database with face images and associated driver license numbers of the targets. The database resides in the Vaidio server inside the user's local network and is not shared with Aicuda or any other 3rd party without the user's permission.
- IDV does not match the real person's face with the face image on the driver license/identification card.

[Return to Identity Verification](#)

IDV CAMERA CONFIGURATION

Advanced

Vaidio: localhost AI Engines: 2 selected Profile: Default

General ROI FR x Identity Recognition x

Resolution: 2048x1536 pixel Preview

IPC

IPC

Name

Identity Recognition ROI

Drag and locate the Card ROI in the camera's field of view. The ID card must be placed and recognized within the Card ROI

Identity Verification engine must be activated with the **Face Recognition** engine.

Sample



In Vaidio 5.1.0, once the ID number is recognized, the system will match the detected face (real face, not the profile image on the ID card) with the corresponding face in the face database. Access is granted when the faces are matched.

[Return to Identity Verification](#)

ADD ID NUMBER TO THE TARGET FACE

The screenshot shows the VAIDIO Face Recognition interface. The 'List' tab is selected, and the 'Add Target' button is highlighted with a blue box and an arrow pointing to the 'Create New Target' dialog box. The dialog box contains a grid of five face images, each with a trash icon below it. Below the images are input fields for Name, List, Birth Year, Gender, and ID. The ID field is highlighted with a blue box. The 'Cancel' and 'OK' buttons are at the bottom of the dialog.

1. Go to the "List" tab under Face Recognition.

2. Add Target

3. input the ID number.

* Name :	Sandy-Peng	Description :	AI Team Staff List
* List :	office		
Birth Year :	1980		
Gender :	Female		
ID :	A012345678901		

[Return to Identity Verification](#)

DASHBOARD - REAL-TIME DETECTION

VAIDIO > Identity Recognition
admin

Dashboard History

ID Scan	Face Detected	Matched Face	Time
	Access Denied		2021-01-26 16:05:59
	Access Denied		2021-01-26 15:21:10
	Access Granted	Sandy-Peng List : office ID : A012-345-67-890-1 Description :	2021-01-26 15:20:35
	Access Granted	Sandy-Peng List : office ID : A012-345-67-890-1 Description :	
			2021-01-26 15:17:27

The result will appear on the dashboard in real time.

- ❑ **Access Granted:** The detected face and ID number match the target in the database.
- ❑ **Access Denied:** The detected face or ID number does not match the target in the database.

Create New Target

* Name : Sandy-Peng

* List : office

Birth Year : 1980

Gender : Female

ID : A012345678901

Cancel OK

[Return to Identity Verification](#)

DASHBOARD - REAL-TIME DETECTION (CONT.)

The screenshot shows the VAIDIO Identity Recognition dashboard in the 'History' tab. The interface includes a sidebar with navigation icons, a top navigation bar with 'Dashboard' and 'History' tabs, and a main content area. The main area displays a table of scan history with columns for 'ID Scan', 'Face Detected', and 'Matched Face'. Two scan entries are visible, both for 'Sandy-Peng' with ID 'A012-345-67-890-1'. A modal window is open over the table, allowing the user to add a new entry. The modal contains fields for 'Access' (set to 'Granted'), 'Name' (input field with 'Sandy-Peng'), 'List' (set to 'All'), and 'ID' (empty input field). 'Cancel' and 'Add' buttons are at the bottom of the modal.

ID Scan	Face Detected	Matched Face
A012-345-67-890-1	Granted	Sandy-Peng Sandy-Peng List : office ID : A012-345-67-890-1 Description :
A012-345-67-890-1	Granted	Sandy-Peng Sandy-Peng List : office ID : A012-345-67-890-1 Description :

In **History**, select and input specific criteria to get the target results.

[Return to Identity Verification](#)

PERSONAL PROTECTIVE EQUIPMENT (PPE)

- [PPE Detection](#)
- [PPE Detection with Intrusion Detection](#)
- [Alert Setups](#)

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PPE DETECTION

VAIDIO > Search

2021-05-20 00:00 ~ 2021-05-20 23:59

Advanced

Person

Precondition Face

Color

Include Exclude

Name

List

Age

Gender

Both Male Female

Mask

PPE

Quantity

>= 0

Cancel Add

Select to detect and search person with/without helmet (hardhat) or safety vest

Original Snapshot | Scene ID : 5893871

2021-05-20 23:22:25

Demo - PPE

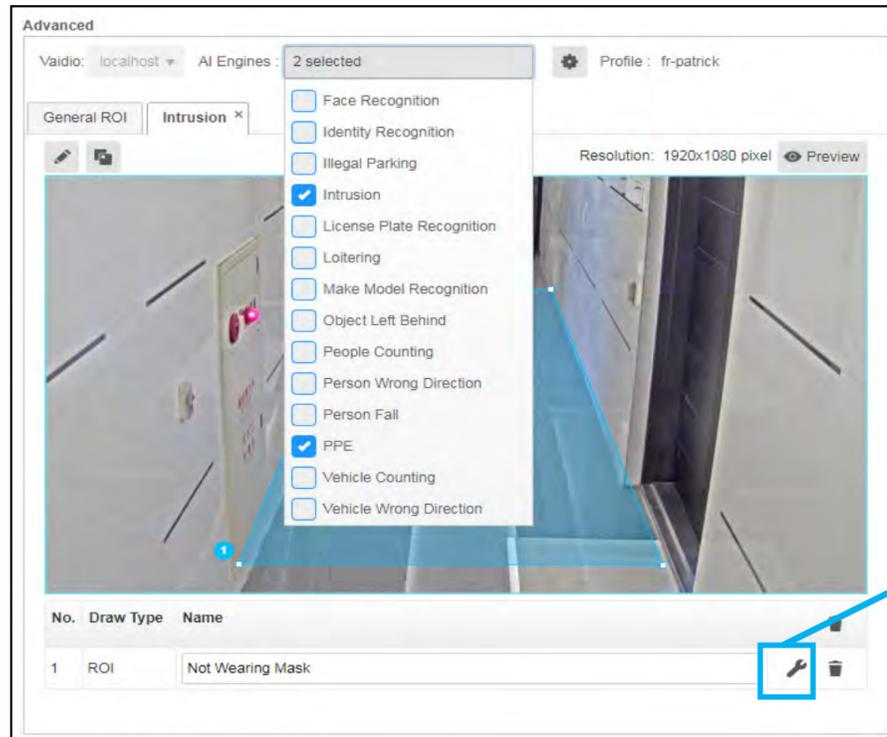
Person

Face

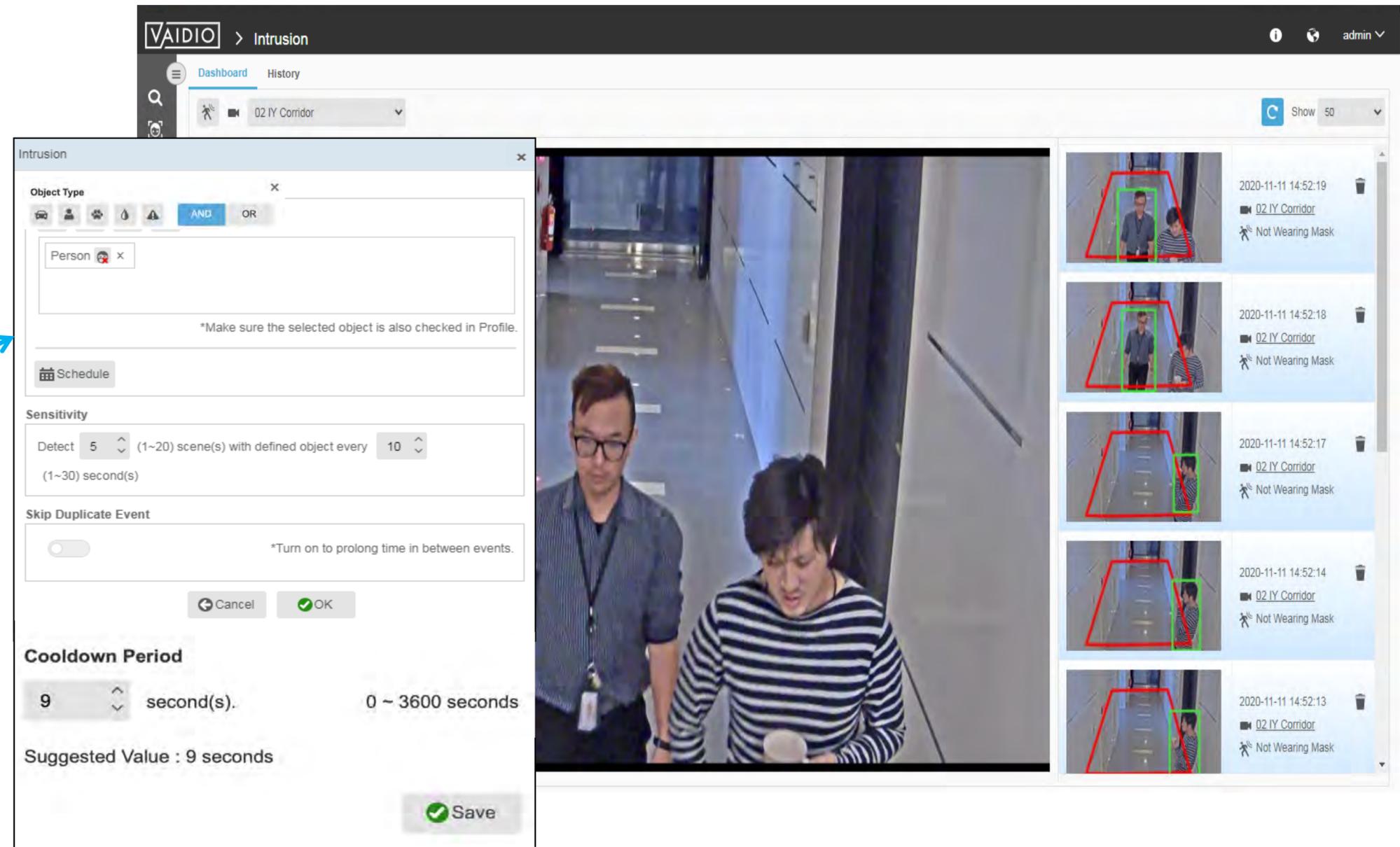
Object Type:	Person	Age:	-	Make:	-
Confidence:	1.0	Gender:	-	Model:	PPE: (1.0)
Color:	Black	FR List:	Not in list	LPR List:	(1.0)
Width:	345	Name:	-	License Plate:	-
Height:	844	Speed:	-		

[Return to PPE](#)

PPE DETECTION WITH INTRUSION DETECTION



For higher accuracy, in **Camera > Edit > Advanced > AI Engines**, activate both **Intrusion** and **PPE** AI Engines and define the object type to be detected. In this case, **select Person without mask, hard helmet, or/and safety vest.**



[Return to PPE](#)

ALERT SETUPS

1. PPE Alert using **Intrusion Detection**

The screenshot shows the Vaidio interface for setting up an alert. On the left, a video feed displays a hallway with a blue rectangular ROI overlaid. Below the video is a table with one entry: '1 ROI Not Wearing Mask'. In the center, an 'Add Alert' dialog is open, with 'Alert Type' set to 'Intrusion'. It shows '4 Cameras, 4 ROIs' selected and a 'Schedule' button. On the right, an 'Intrusion List' dialog is open, showing a list of ROIs: '02 IY Corridor' (checked), '1 Not Wearing Mask' (checked), and 'IronYun Corridor' (unchecked). Below this list is a 'people' category and an 'OK' button.

When adding the alert rule, select **Intrusion** as the alert type, then select the preconfigured ROI for PPE detection.

2. PPE Alert using **Video Search**

The screenshot shows the 'Add Alert' dialog in Vaidio. The 'Alert Type' dropdown is set to 'Video Search'. Below it, there are icons for various object types, including a person icon. A callout box with a black border and white text says: 'Select **Video Search** as the alert type, then define the specific scenarios for PPE detection.'

Note:
To have more accurate result of PPE detection, setup PPE detection with **Intrusion Detection**.

[Return to PPE](#)

WEAPON & FIRE DETECTION

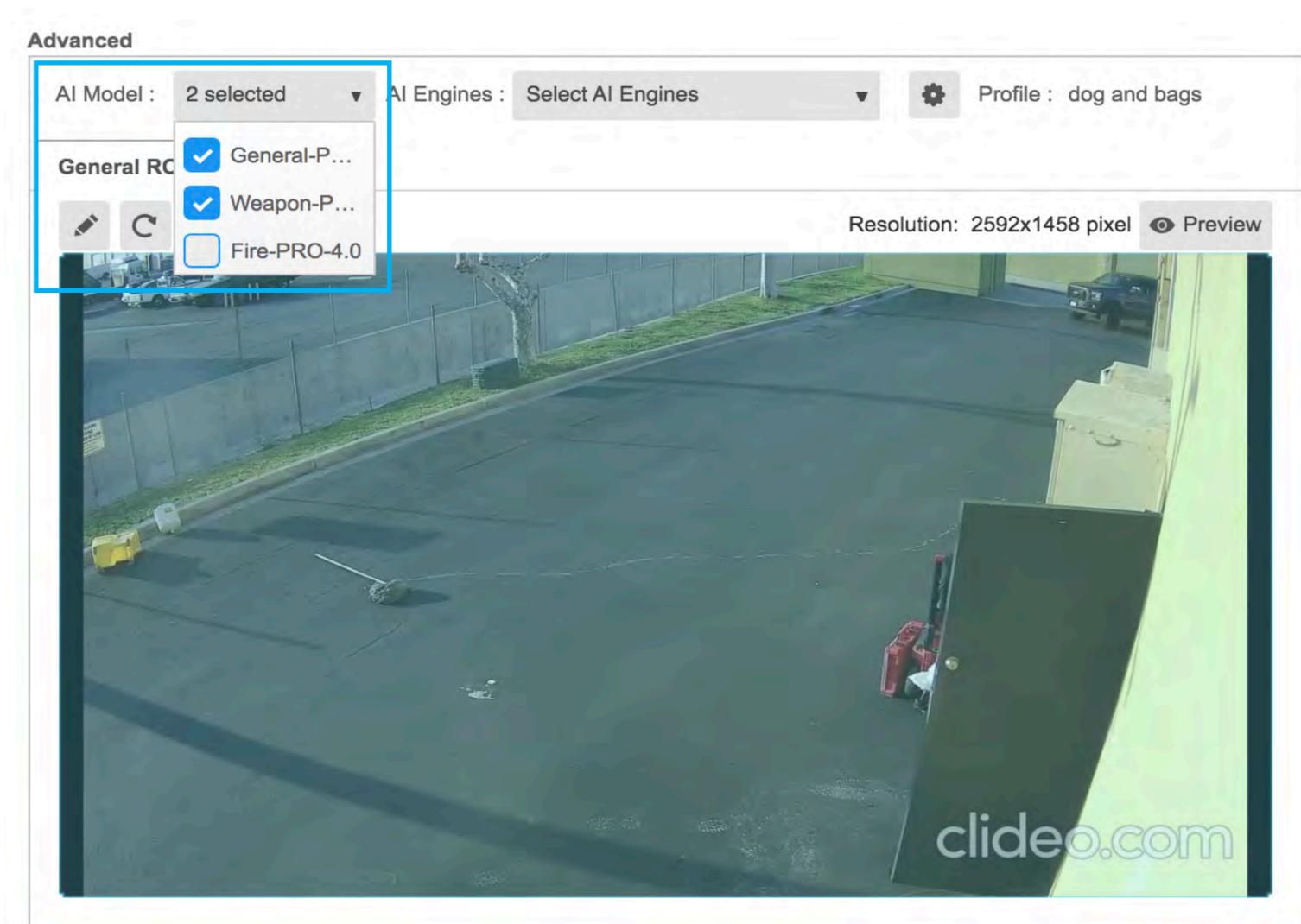
- [Activate AI Model](#)
- [Weapon Detection Results](#)
- [Fire Detection Results](#)

[Return to Table of Content](#)

ACTIVATE AI MODEL

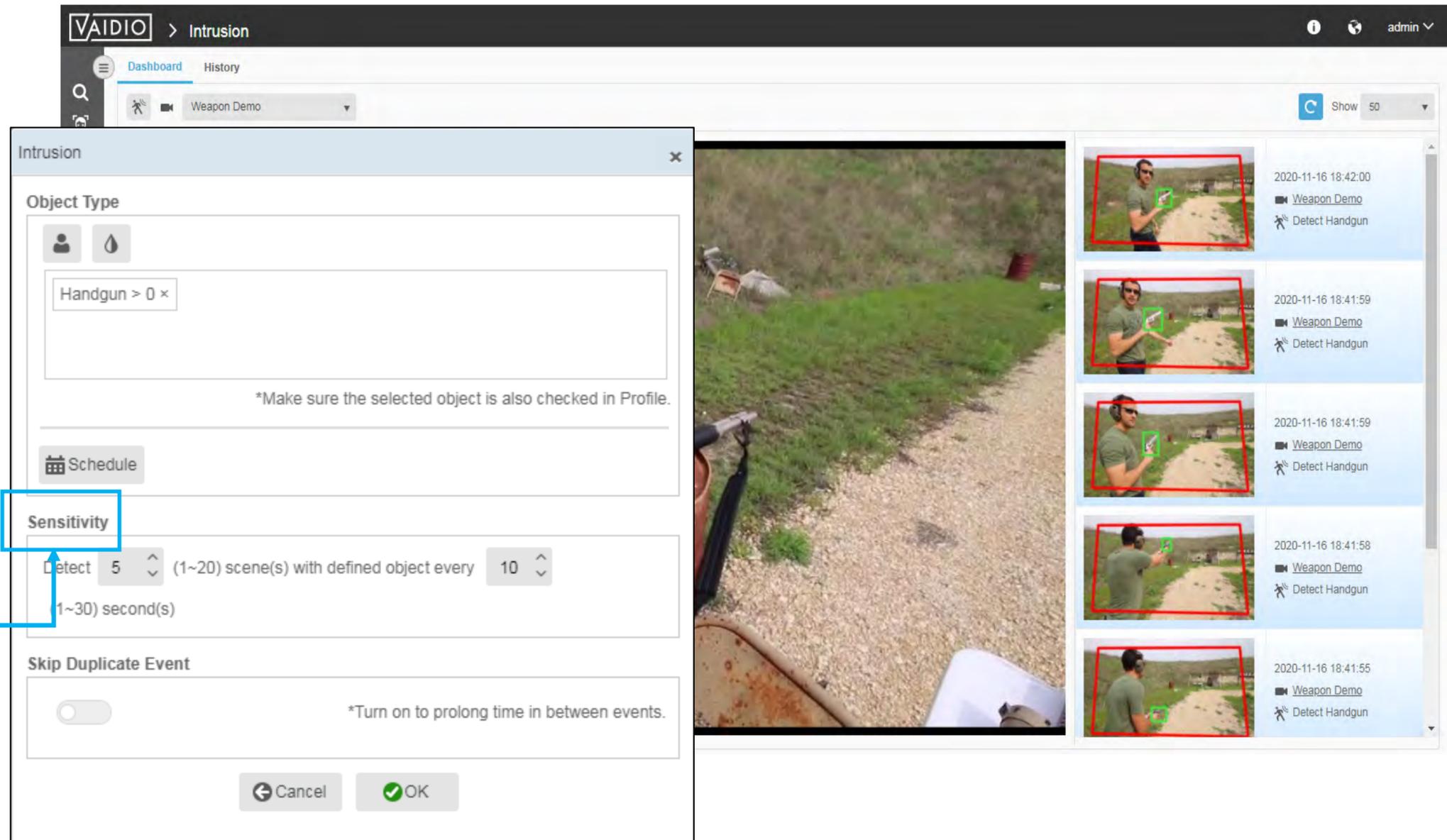
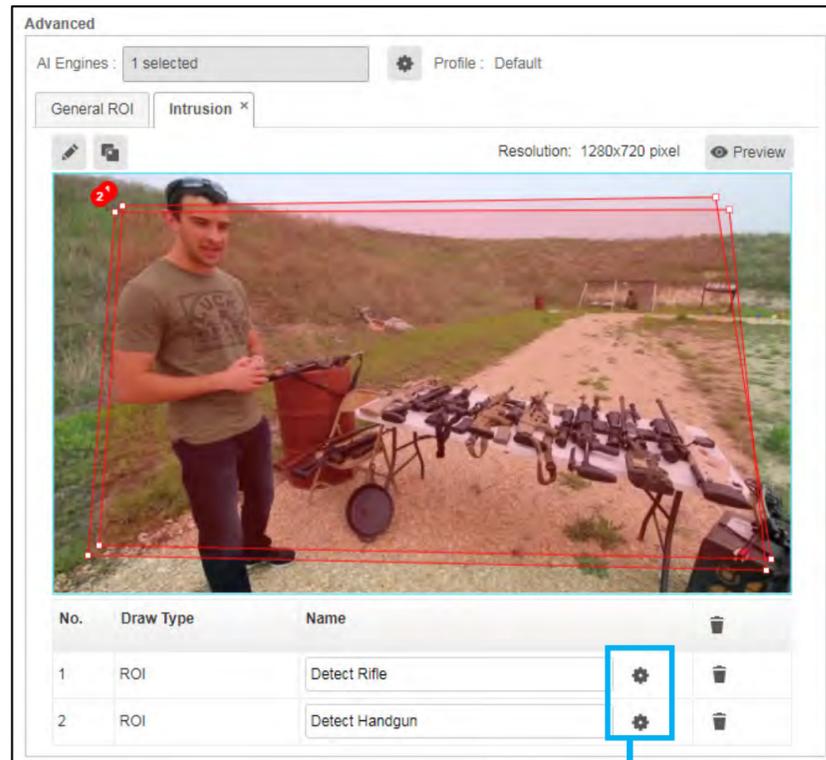
Weapon/Smoke & Fire Detection

1. In **System > AI Model**, activate the correct AI model: **Weapon, Fire, or Power Model** (make sure to verify that the model has the object types "handgun", "rifle" for weapon and/or "smoke", "fire" for fire detection – refer to the Setup Guide to see how)
2. In **Camera > Edit > Advanced > AI Model**, select the correct model from the dropdown menu
3. For Weapon, in **Camera > Edit > Profile > Object Type**, increase the Confidence level for "handgun" and "rifle" object types to above 90% and min size to above 100 px for best results



[Return to Weapon & Fire Detection](#)

WEAPON DETECTION



In **Camera > Edit > Advanced**, activate the **Intrusion** AI Engine, then draw the ROI in the camera's field of view and define the intrusion rule by selecting **Handgun/Rifle** as the object type.

- ❑ Set the **Sensitivity** to 3 frames every 3 seconds

[Return to Weapon & Fire Detection](#)

FIRE DETECTION

When a fire is detected in the preconfigured ROI, the event appears in the Intrusion dashboard in real time.

Advanced

AI Engines : 1 selected Profile : Fire and Smoke test

General ROI Intrusion x

Resolution: 1280x720 pixel Preview

No.	Draw Type	Name
1	ROI	Fire alert
2	ROI	Smoke alert

VAIDIO > Intrusion

Dashboard History

Fire Demo

Intrusion

Object Type

Fire > 0 x

*Make sure the selected object is also checked in Profile.

Sensitivity

Detect 3 (1-30) scene(s) with defined object every 4 (1-30) second(s)

Skip Duplicate Event

*Turn on to prolong time in between events.

Cancel OK

Time	Event
2020-11-16 17:44:07	Fire Demo Fire alert
2020-11-16 17:42:40	Fire Demo Smoke alert
2020-11-16 17:42:39	Fire Demo Smoke alert
2020-11-16 17:42:38	Fire Demo Smoke alert
2020-11-16 17:42:38	Fire Demo Smoke alert

In **Camera Setting**, activate **Intrusion** AI Engine, then draw the ROI in the camera's field of view and define the intrusion rule by selecting **Fire/Smoke** as the object type.

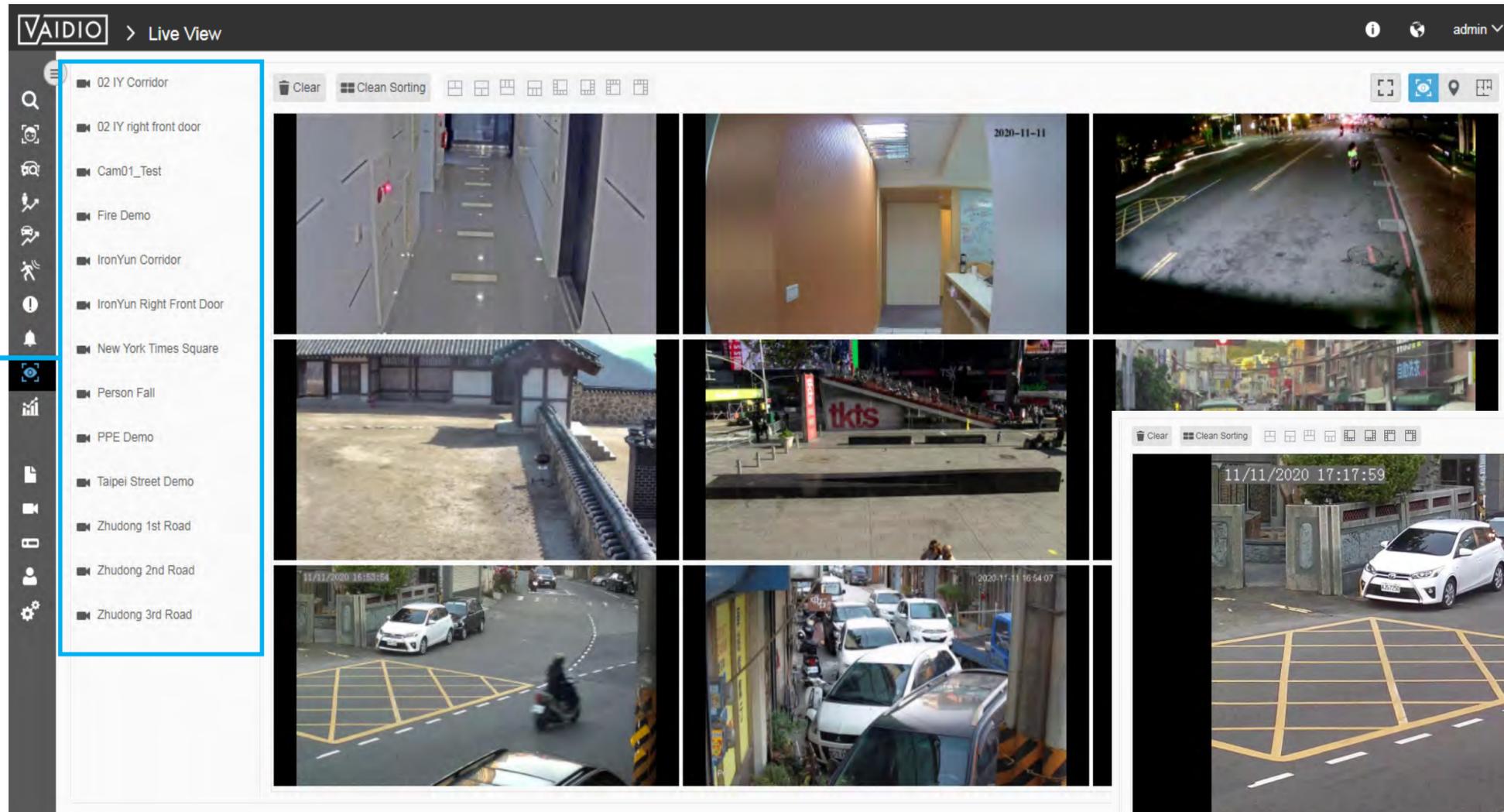
[Return to Weapon & Fire Detection](#)

LIVE VIEW

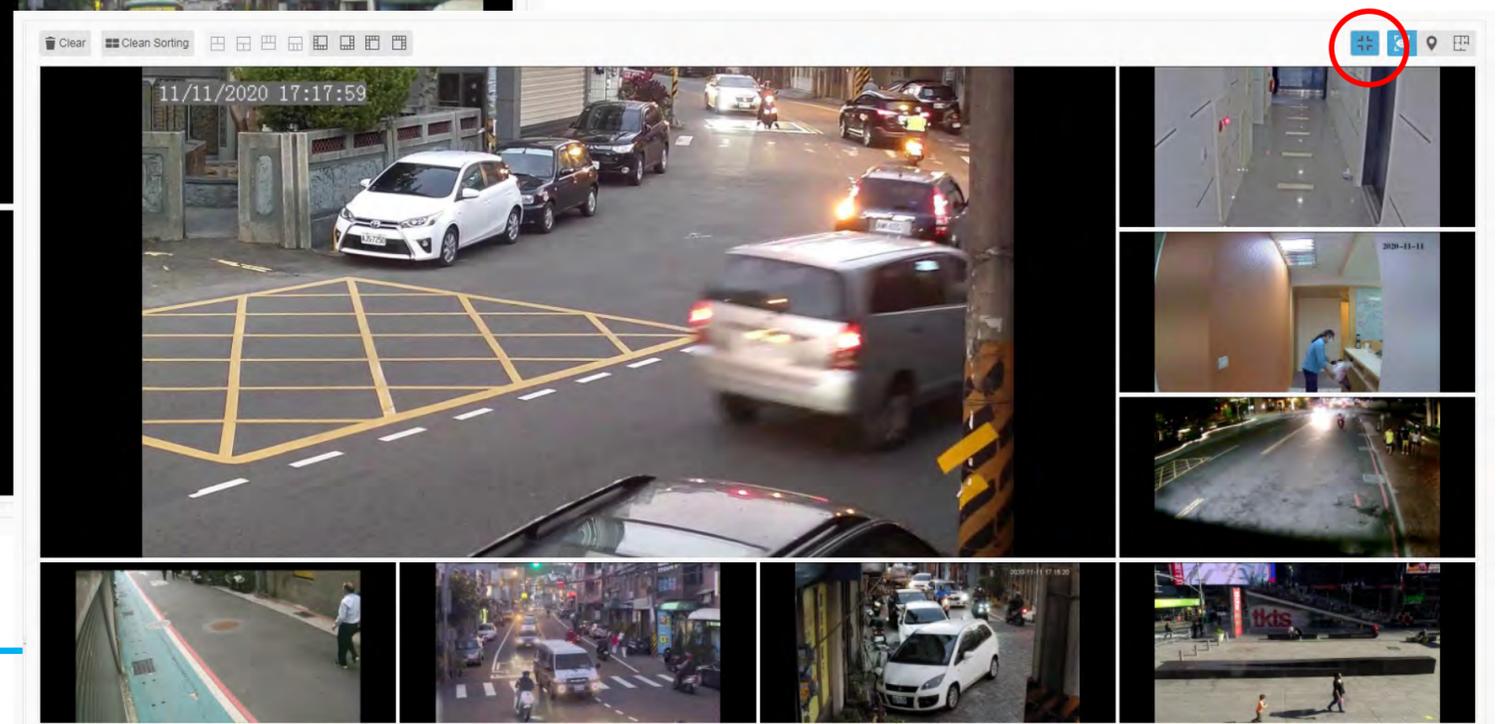
- [Live View as Video Wall](#)
- [AI Tracking](#)

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LIVE VIEW AS VIDEO WALL



Click the "Full Screen" icon to view live cameras in a video wall

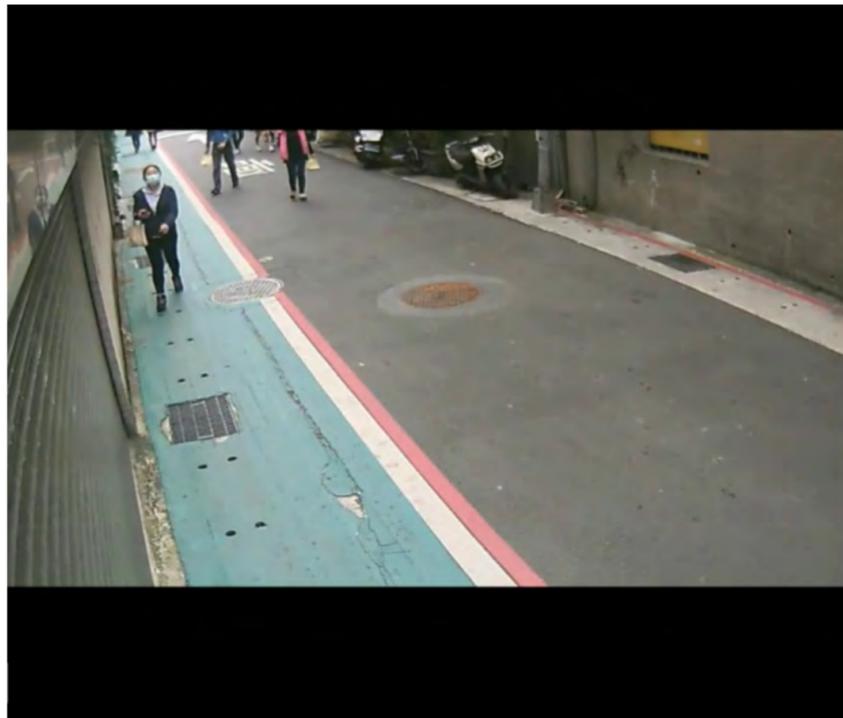


Add multiple cameras and monitor the events live on the same screen. The user can adjust the size and location of the scenes to create the preferred viewing layout or apply the pre-set format for the live view.

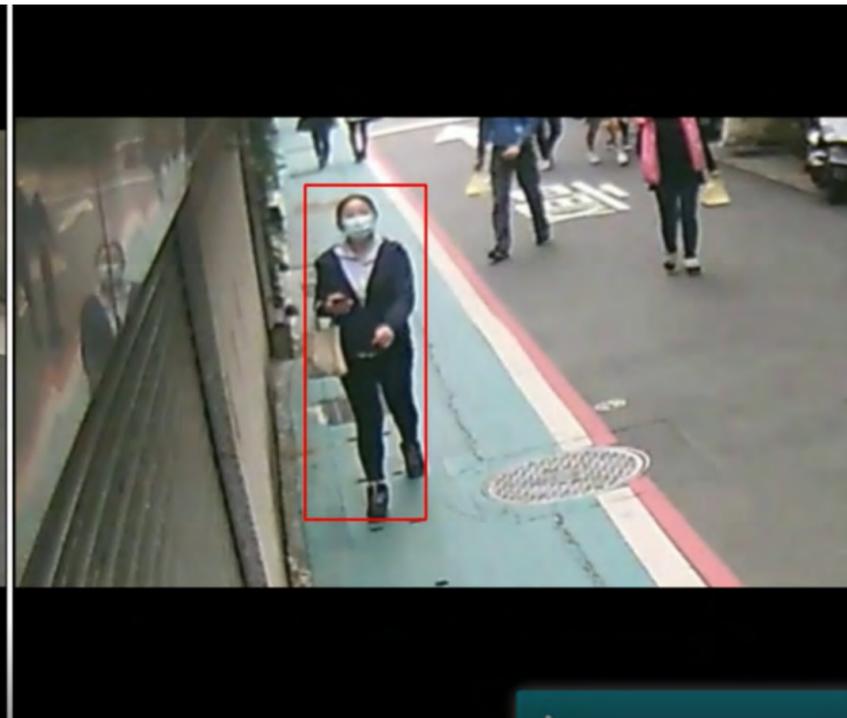
[Return to Live View](#)

AI TRACKING

AI Tracking OFF
(normal view)



AI Tracking ON
(zoom-in view)



Enabled for cameras with **People/Vehicle Counting**
Live View: toggle **AI Tracking** on/off at the top right corner of each camera view

- ❑ AI-software based virtual PTZ track and zoom
- ❑ Streaming rotation on tracked target
- ❑ User-selectable target
- ❑ Facilitate tracking with auto-zoom

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AI TRACKING (CONT.)



AI Tracking Screen:

1. Add the same camera twice and click the "AI Tracking" icon on one of the scenes to enable **AI Tracking**.
2. When motion is detected, the bounding box will appear in the zoom-in view and track the detected object automatically.
3. Compare and see two scenes at the same time to implement object tracking and predict its next movement.

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STATISTICS

- [Heatmap](#)
- [Demographics: Age & Gender](#)

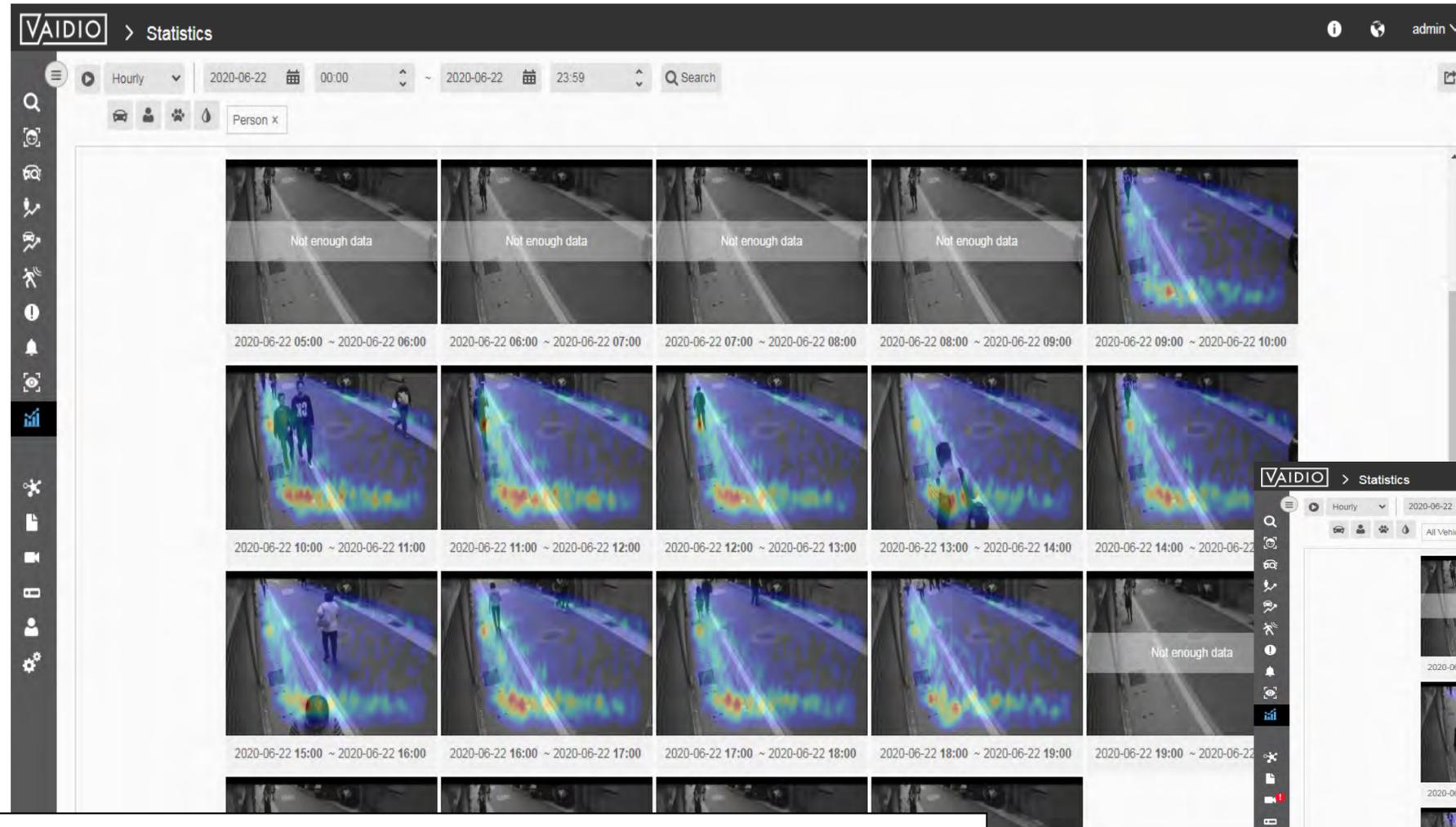
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HEATMAP

Heatmap for Person

The **Heatmap** function can generate heatmaps for any combination of object types in a 24-hour period. The results are displayed in the **Hourly** or **Aggregated** mode (1 image of the entire 24-hour period).

Heatmap for All Vehicles



- Note:
- ❑ One video source per heatmap search, e.g., the real-time stream from a camera or an uploaded video.
 - ❑ To have meaningful results to compare the activity in different hours, the video source should be longer than 1 hour.

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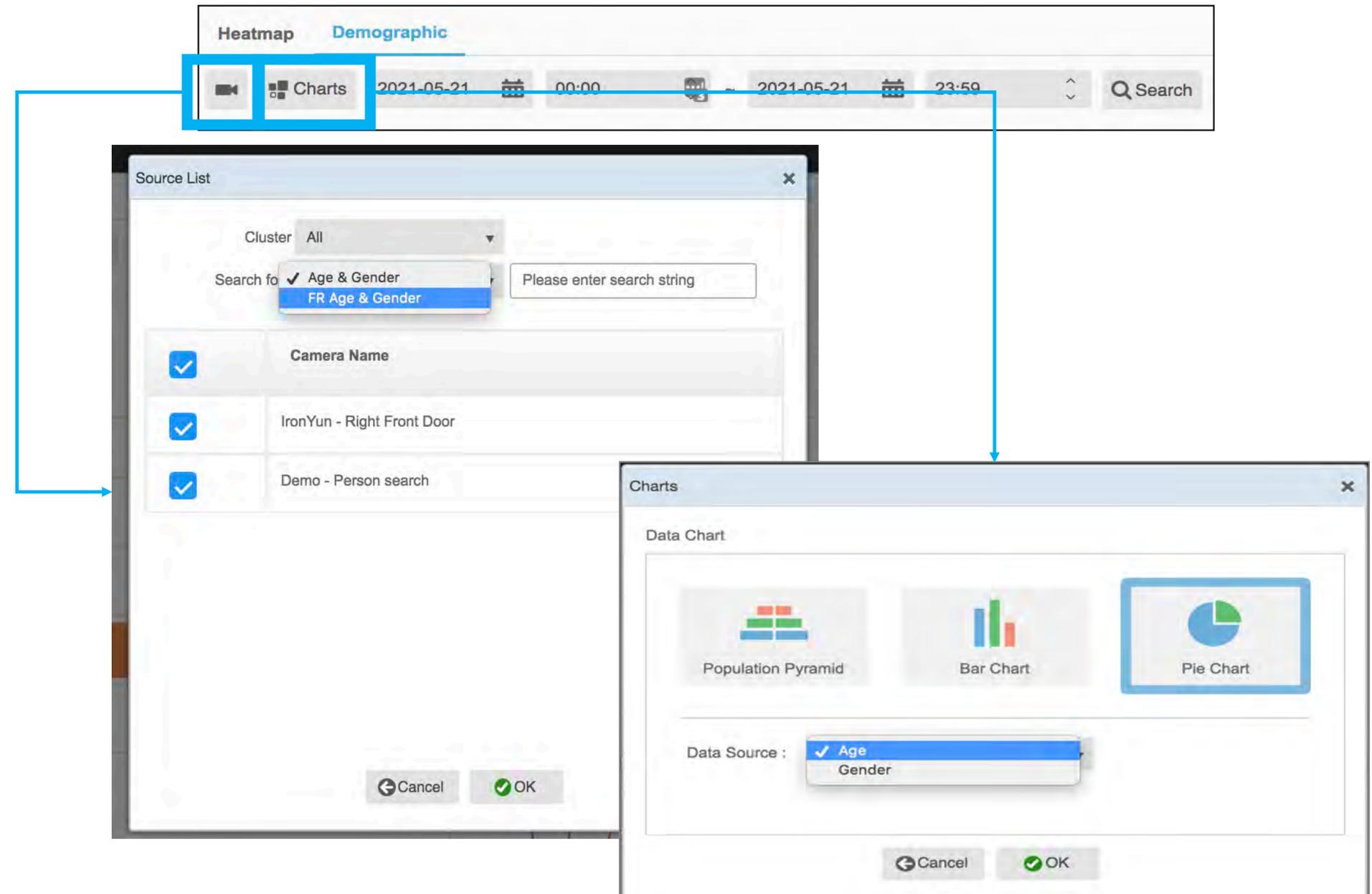
DEMOGRAPHIC

- ❑ In **Statistics > Demographic**, select the Camera icon to select the video source(s)
 - ❑ Cluster: select the Vaidio server(s) in the network. Default: all Vaidio servers.
 - ❑ **Age & Gender**: display all cameras that have **Age & Gender** activated
 - ❑ **FR Age & Gender**: display only cameras that have both **Face Recognition** and **Age & Gender**

- ❑ **Age & Gender** statistics without **FR**: more duplicates; i.e., the same person that appears in several frames will be counted several times

- ❑ **Age & Gender** statistics with **FR**: fewer duplicates.
 - ❑ Current time threshold for **FR** deduplication: 10 seconds. If user needs longer deduplication threshold, please contact the regional Aicuda representative.

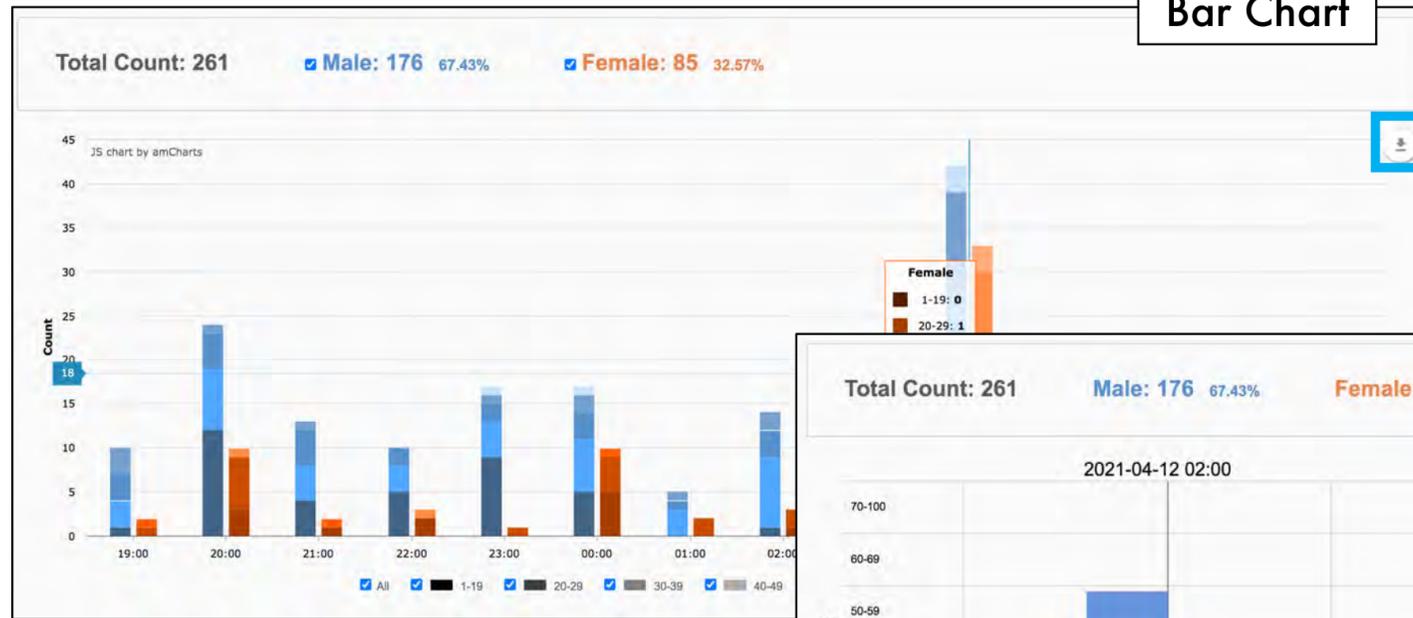
Note: NO demographic statistics is free from duplicates unless the deployment is at a choke point (e.g., check-in kiosk) and integrated with a customized check-in software



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DEMOGRAPHIC CHART TYPES

Bar Chart

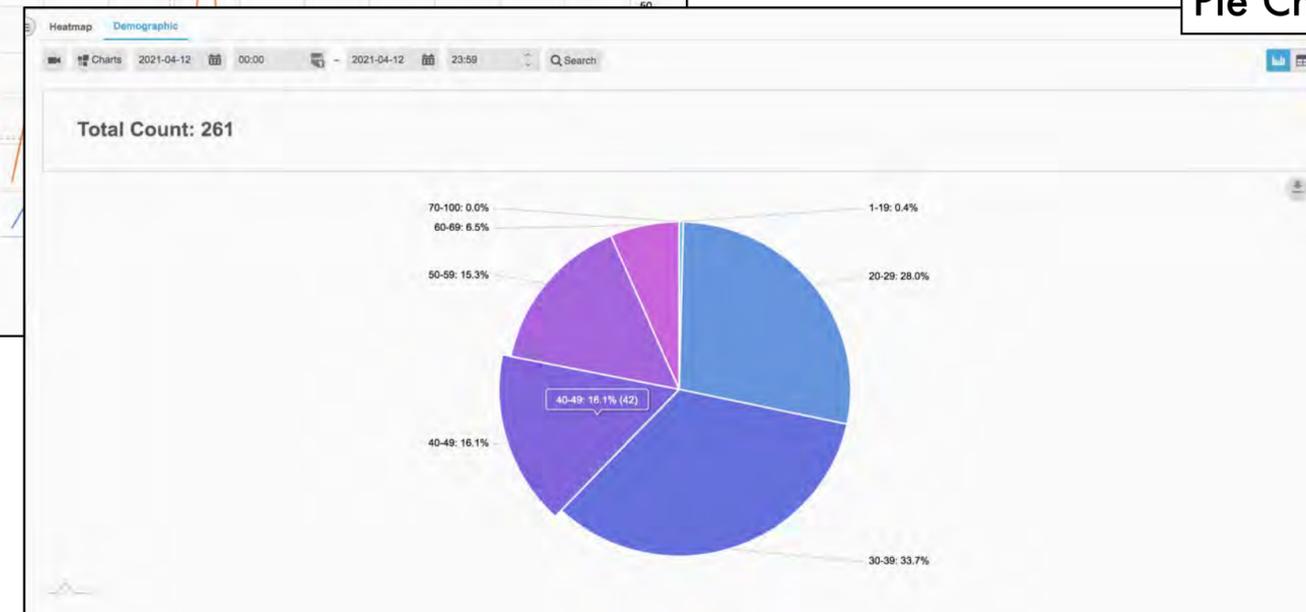


Click to download in .png or .pdf format

Pyramid Chart

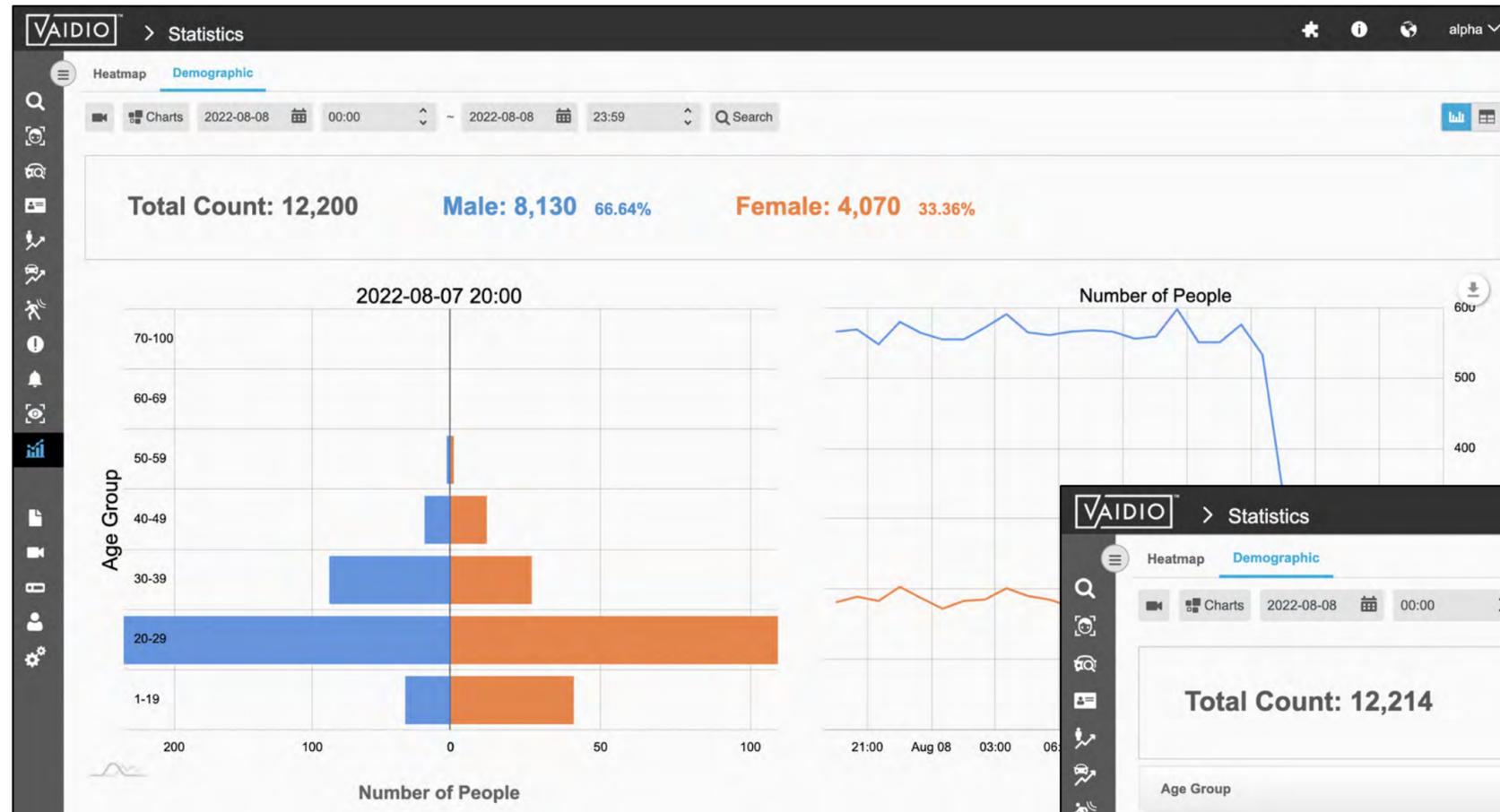


Pie Chart



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DEMOGRAPHIC CHART TYPES



Click to display data as a list

Total Count: 12,214 Male: 8,137 66.62% Female: 4,077 33.38%

Age Group	Male	Female
Age 1-19	766	848
Age 20-29	4,995	2,230
Age 30-39	1,883	748
Age 40-49	432	213
Age 50-59	55	33
Age 60-69	6	5
Age 70-100	0	0

Click to export data in .xlsx format

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THANK YOU

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